

**Agricultural Marketing, Trade and Prices
Practical Manual
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B.Sc. (Hons.) Agriculture**



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Contents

Practical No.	Particulars	Page No.
1.	Plotting and study of demand and supply curves and calculation of elasticities	4
2.	Estimation of marketed and marketable surplus of some important commodities	9
3.	Study of price behaviour over time for some selected commodities	11
4.	Study on relationship between market arrivals and price of some agricultural commodity	14
5.	Construction of index numbers:	19
6.	Visit to a local market to study various marketing functions performed by different agencies	22
7.	Identification of marketing channel for some commodity	23
8.	Collection of marketing data regarding marketing costs	25
9.	Collection of marketing data regarding margin and price spread	26
10.	Presentation of report in the class:	28
11.	Visit to market institutions -NAFED to study organization and functions	29
12.	Visit to market institutions -SWC to study organization and functions	30

13	Visit to market institutions -CWC to study organization and functions	31
14.	Visit to market institutions- Cooperative marketing society to study organization and functions	32
15.	Application of principles of comparative advantage of international trade.	33
	Schedule for collection of data on marketing of Vegetables	38

Practical No.-1

1. Plotting and study of demand and supply curves and calculation of elasticities

A. Plotting and study of demand and supply curves:

Demand normally means the desire or willingness for a good. But in economics simple desire or willingness for a good alone may not represent demand. Apart from the desire or willingness, consumer should be able to buy the good. More specifically demand is defined as a schedule that shows the amount of a product or service the consumers are willing and able to purchase at each price in a set of possible price during some specific time in a specified market. The quantity demanded of a good increases with the fall in the price of the good and decreases with the rise in price, other things remaining constant, i.e., the quantity demanded is inversely related to price (Law of demand). The demand curve shows the amount of goods consumers are willing to buy at each market price.

Demand Schedule: A demand schedule may be defined as a list showing the relationship between different quantities of a commodity and their respective demand prices at a particular place and time. An individual's demand schedule refers to the demand of an individual and a market demand schedule refers to collective demand of the entire individual constituting the market.

The following is a hypothetical demand schedule of a commodity A at Diamond Harbour on 01.02.20 at 09.00 AM is given in Table 1.1:-

Table 1.1- Hypothetical demand schedule of a commodity A

Price of Commodity A	Demand of the Commodity A (Units)
1	50
3	40
5	30
7	25
9	20
11	15

To draw the curve, we have to plot the values on a graph paper in which the quantity of commodity A is measured along X axis and price along Y axis. Draw a line passing through the points to get the linear demand curve which slopes downward to the right indicating the inverse relationship between price and quantity demanded.

Demand curve:

The graphical representation of a demand schedule is called demand curve. It represents the number of units that would be brought at different price. The units of commodity are measured along X-axis while price of commodity along Y-axis. The corresponding point plotted are joined by dotted lines and by joining these points, we get the demand curve.

Draw a demand curve:

(Use excel for plotting Demand Curve)

Supply:

Supply is the amount of a commodity that sellers are able and willing to offer for sale at different prices per unit of time. The supply of a commodity means how price of a commodity is related to the quantity which the sellers or producers are willing and able to make available in the market. Thus, supply indicates a relationship between the quantity and price of a commodity from the seller's viewpoint.

Supply Schedule: A supply schedule may be defined as a list showing the relationship between different supply of qualities of a commodity and their respective supply prices at a particular place and time. A hypothetical supply schedule for commodity A is given in Table 1.2

Table 1.2- Hypothetical demand schedule of a commodity A

Price of Commodity A	Supply of the Commodity A (Units)
1	15
3	20
5	25
7	30
9	40
11	50

SUPPLY CURVE:

It is the graphical representation of the supply schedule i.e. the different quantity of goods that the seller is offering in a market at various prices. Then just plotting the values of price along Y axis and quantities supplied along X and by joining the points we get the supply curve which is moving upward to the right indicating positive slope of the supply curve.

Draw a supply curve:

(Use excel for plotting Demand Curve)

b. Estimation of elasticity of demand and supply:

The term elasticity expresses the degree of correlation between demand and price. It is the rate at which the quantity demanded varies with a change in price.

It is measure of responsiveness of demand to changing prices. It can be defined as a measure of relative change in amount purchased in response to relative change in price. To be more precise, elasticity of demand is defined as '**the relative change in the quantity demanded to the relative change in the price**'.

Methods of Measuring Elasticity of Demand

There are three methods of measurement of elasticity of demand:-

- a. Total Outlay Method,
- b. Proportional Method, and
- c. Point elasticity of demand.

a. TOTAL OUTLAY METHOD:

In this method we compare total expenditure of the consumer before and after change in price. The elasticity of demand is unity when the total expenditure remains unaltered even though, there is price change. The demand is said to be elastic when the total expenditure increases with fall in price and decreases with rise in price. According to this method, we compare the total outlay of the purchaser (or the total revenue of the seller) before and after variation in price. Elasticity of demand is expressed in following three ways:-

- i. **Unity (unitary elasticity)**
- ii. **Greater than unity and**
- iii. **Less than unity**

Unity: It is unity when even the price has changed; the total amount spent remains the same. The rise in price is exactly balanced in purchases and vice-versa. by reduction A rectangular hyperbola represents unit elasticity.

Greater than unity: Elasticity is said to be greater than unity (i.e. demand is elastic) between prices when with fall in price total amount spent increases or the total amount spent decreases as price rises.

Less than unity: Elasticity between two prices is considered to be less than unity (i.e. demand is inelastic or less elastic) when the total amount spent increases with rise in price or the total amount spent decreases as price falls.

Sl No	Price of Banana per dozen (Rs)	Quantity demanded (dozens)	Total amount to be spent (Rs)	Nature of elasticity of demand
1	A	B	A x B=C	D
2	16	3	48	Greater than Unity
3	14	4	56	
4	12	5	60	
5	10	6	60	Unity
6	8	7	56	Less than unity
7	6	8	48	

b. Proportional Method:

In this method we compare the percentage change in price with the percentage change in demand. The elasticity is the ratio of percentage change in quantity demanded to the percentage change in price charged. For example, if the price of a particular brand of TV set falls from Rs 35000/- to Rs. 31500/- each, i.e. 10 percent. As a result of this fall in price, suppose the demand for TV set goes up from 200 to 400; i.e. 100 percent. Then the elasticity of demand would be 100/10 or 10 percent.

c. Point elasticity of demand:

The general formula for measurement of price elasticity of demand is

$$Elasticity = \frac{\text{Lower Segment (of the demand curve)}}{\text{Upper Segment (of the demand curve)}}$$

If we take a 45° line demand curve and select different point at different place s, the elasticity of demand is different at different points.

i. Ed at point 'A' = $\frac{\text{Lower Segment (of the demand curve)}}{\text{Upper Segment (of the demand curve)}} = \frac{AB}{0}$ this means $Ed = \infty$ (perfectly elastic)

ii) Ed at point 'M' = $\frac{\text{Lower Segment (of the demand curve)}}{\text{Upper Segment (of the demand curve)}} = \frac{MB}{AM}$ When MB > AM, hence Ed > 1 that is relatively elastic demand curve

iii) Ed at point 'P' = $\frac{\text{Lower Segment (of the demand curve)}}{\text{Upper Segment (of the demand curve)}} = \frac{PB}{AP}$

When PB = AP, hence, Ed = 1 that is unit elasticity of demand (This represent the dividing line between elastic and inelastic demand)

iv) Ed at point 'N' = $\frac{\text{Lower Segment (of the demand curve)}}{\text{Upper Segment (of the demand curve)}} = \frac{NB}{AN}$

Where NB < AN is Ed < 1 that means elasticity of demand is relatively inelastic demand.

v) Ed at point 'B' = $\frac{\text{Lower Segment (of the demand curve)}}{\text{Upper Segment (of the demand curve)}} = \frac{0}{AB}$

That is Ed = 0, that means it is perfectly inelastic demand curve.

Methods of Measuring Price Elasticity of supply:

Price elasticity of supply can be measured by the following method.

Percentage method: Percentage method or proportionate method is the commonly used method is the commonly used method of measuring price elasticity of supply. According to

this method, elasticity is measured in terms of rate of percentage change in supplied quantity to percentage change in price. Under this method, price elasticity of supply can be measured.

$$PES = \frac{\% \text{ change in quantity supplied}}{\% \text{ change in price}}$$

$$\text{Where, Percentage change in quantity supplied} = \frac{\text{New quantity}(Q_2) - \text{initial quantity}(Q_1)}{\text{initial quantity}(Q_1)} \times 100$$

$$\text{Percentage change in price} = \frac{\text{new price}(P_2) - \text{initial price}(P_1)}{\text{initial price}(P_1)} \times 100$$

Percentage method of calculation price elasticity of supply can be converted into proportionate method under following steps

$$PES = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}} = \frac{\frac{\text{Change in quantity supplied}}{\text{initial quantity supplied}} \times 100}{\frac{\text{Change in price}}{\text{initial Price}} \times 100}$$

$$\frac{\frac{\text{new quantity}(Q_2) - \text{initial quantity}(Q_1)}{\text{initial quantity}(Q_1)} \times 100}{\frac{\text{new price}(P_2) - \text{initial price}(P_1)}{\text{initial price}(P_1)} \times 100} = \frac{\Delta q}{\Delta p} \times \frac{p}{q}$$

For an example: A firm supplies 50 units of a commodity at Rs. 8 per unit. When the price rises to Rs 11, the firm increased its supply to 75 units. Here, price elasticity of supply can be measured as

$$PES = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}} = \frac{\frac{75-50}{50} \times 100}{\frac{11-8}{8} \times 100} = \frac{50}{37.5} = 1.33$$

Unlike, price elasticity of demand, price elasticity of supply is always a positive number. It is because quantity supplied and price of the commodity share direct relationship.

URL video link: <https://www.youtube.com/watch?v=Llg341RdfqE>

<https://www.youtube.com/watch?v=4bDIm3j-7is>

Practical No: 2

Estimation of marketed and marketable surplus of some important commodities

Marketable surplus represents the theoretical surplus available for disposal with which the producer is left after his genuine requirements of the family consumption, payment of wages in kind, feed and seed have been met. It is the proportion of the total output of a farm which should normally be brought for sales. In other words, excess of output over sectoral retentions refers to 'marketable surplus', sectoral retentions of farm output comprise of:

1. Consumption by the farm family,
2. Consumption by permanent labour engage on the farm,
3. Consumption by temporary labour occasionally employed on the farm,
4. Quantity retained for seed,
5. Quantity retained as feed for farm animals,
6. Quantity retained as barter,
7. Payments in kind to the following:
 - a) To permanent labour,
 - b) To temporary labour,
 - c) For machinery and equipment,
 - d) For customary payments
 - e) To land owners as rent
 - f) To land owners as share of produce,
 - g) For repayment of loan,
 - h) Irrigation charges
 - i) Others
8. Physical losses:
 - a) In threshing and winnowing
 - b) In transport from threshing floor to storage
 - c) In storage at producer's level

Marketed surplus refers to that portion of the marketable surplus which is actually being disposed off. Marketable surplus is an 'ex ante' concept referring to the surplus planned to be marketed, while marketed surplus is an 'ex post' concept referring to the actual amount marketed during a period (normally an agricultural year). In short, marketable surplus is subjective in its approach, whereas marketed surplus is objective. In the report of Directorate of Marketing and Inspection (2002), it is clarified that the term 'consumption by the farm family' of the cultivator households has two distinctions in so far as its impact on marketable surplus is concerned. In one case, it refers to the quantity actually retained for consumption by the family irrespective of the actual total requirements for the purpose. Another connotation refers to the quantity that ought to be retained by the farm family for its consumption or the quantity required for consumption. In case of marginal and small farmers, the quantity actually retained is less than the quantity actually required for consumption owing to the compulsions or constraints of the size of holding and production. They are therefore required to buyback quantities by which they fall short of their consumption requirements. They make up the deficit

with the help of borrowings, wages or gifts, etc. In any case, they back quantities from the stocks which move out of the farm. The term family consumption, in case of such farmers, therefore denotes the quantity that ought to be retained by a farm family for its consumption requirements for the whole year. The use of the term 'surplus' would thus be justified only if the quantity actually required for consumption, rather than the quantity actually retained for consumption is taken into account for arriving at the quantity of marketable surplus actually available for non-farm consumption. In case the quantity actually retained for consumption (and not the quantity actually required for consumption) is taken into account, the quantity of marketable surplus gets duly inflated, because the quantity sold will not include buybacks by the producers.

The marketable surplus will thus be according to the formula:

$$MS = A - B,$$

Where, A stands for production, and B includes all the items mentioned earlier except that 'quantity required for consumption' has been treated to include the quantity required for 'family consumption' as explained above and MS stands for 'marketable surplus'. This quantity is actually available for non-farm consumption and is, therefore, true Marketable Surplus.

So, the marketed and marketable surplus is calculated by the following formula.

Gross Marketed Surplus = Quantity actually sold in the market

$$\text{Gross Marketed Surplus ratio} = \frac{\text{Actual quantity sold}}{\text{Total production} - \text{crop loss}}$$

Net Marketed Surplus = Actual quantity sold – Purchased quantity

$$\text{Net Marketed Surplus ratio} = \frac{\text{Actual quantity sold} - \text{Purchased quantity}}{\text{Total production} - \text{crop loss}}$$

Marketable surplus = Total production – Total retention – Total loss

$$\text{Marketable surplus ratio} = \frac{\text{Total production} - \text{crop loss} - \text{total retention}}{\text{total production} - \text{total loss}}$$

To study the marketed and marketable surplus of some selected agricultural commodities, we have to collect field level primary data relating to the production of the crop / crops, family size, post-harvest losses, quantity retained for family requirements, etc from the sample households in a pre –tested schedule through personal interview method and presented in the following table. We can estimate family consumption requirement of cereals, pulses, oilseeds, fruits and vegetables etc. roughly from the family members by per capita per day prescribe requirement of these commodities and converting it to annual requirement, although there is variation across the age groups which is presented in the following table.

Table-3.1: Estimation of total physical loss of output across different farm size groups:

Farm Size	Losses							
	Harvesting		Threshing		Winnowing		Total	
	Qty.	%	Qty	%	Qty	%	Qty	%
Marginal								
Small								
Semi-medium								
Medium								
Large								
Total / average								

Table-3.2: Estimation of family consumption requirement of various farm products:

Food materials	No. of family	Per capita per day requirement (gm/ day) (on an average)	Total requirement (Kg/day)	Annual requirement (Kg/ year)
Rice, wheat (cereals)				
Pulses				
Fruits and vegetables				
Meat or Fish				

Table 3.3: Estimation of retention of commodities by sample households in India

Farm size	Production (qtl)	Self-consumption (qtl)		Seed (qtl)	Feed (qtl)	Others (wage in kind) (qtl)	Total retention (qtl)
		Retention	Purchased				
Marginal							
Small							
Semi-medium							
Medium							
Large							
Total / Average							

Table-3.4: Average marketable surplus and gross and net marketed surplus of rice on different categories of households in India

Farm size	Marketable surplus		Gross Marketed Surplus		Net Marketed Surplus	
	Quantity (qtl)	% of total Production	Quantity (qtl)	% of total Production	Quantity (qtl)	% of total Production
Marginal						
Small						
Semi-medium						
Medium						
Large						
Total / Average						

Use MS-excel also for calculation.

URL video link: <https://www.youtube.com/watch?v=FcdWYRRAPjs&t=700s>

Practical No: 3

Study of price behaviour over time for some selected commodities

Price of a commodity is the value expressed in terms of a standard monetary unit. Prior to the evolution of money, the price of a community is used to be expressed in terms of units of other commodities available in exchange. It is commonly known as barter system. The price of a commodity is an exchange value in term of money. The price of an agricultural commodity is the exchange value of the agricultural product measured in terms of money. Understanding the nature and causes of price movements is facilitated by a systematic analysis to time element in price. A time series of prices is a set of observations taken at specified times, usually at regular intervals (an hour, day, week, month, season and year). Mathematically a time series of prices is expressed as follows:

$$P_t = f(t)$$

Where, P_t is price of a commodity in time 't' and
t is time variable.

Based on the duration of the time period involve, the following six major time elements in prices have been identifies. These are often called components of a time series.

- a. Trend movements
- b. Cyclical price movements
- c. Seasonal price movements
- d. Year to year price movements
- e. Short period price movements, and
- f. Irregular price movements

The study of behaviour of each section requires the division of each element from the study to realize the basis and characters of price fluctuations.

- a. **Trend movements:** The tendency of price to move up and down over a longer period of time is termed as trend. A trend is price is usually established on the basis of at least 15 years data.
- b. **Cyclical price movements:** It refers to upswings or downswings or oscillations in price around a trend line over a fairly large number of years. It is generally observed that the price of any farm product decreases during the harvest season and continues to rise during the rest of the year until the next harvest season. In general, commodities whose supply can be adjusted easily in response to a cyclical change in demand would show narrow price fluctuations than that supply cannot be so adjusted. As part of the price forecasts, therefore, it may be useful and even necessary to make a forecast of general business conditions.
- c. **Year to year price movements:** Changes in prices from one year to another are known as the year to year fluctuations. Such fluctuations are observed for agricultural commodities mainly because of the annual nature of production. The area under and

yield of crop fluctuate from year to year, apart from other factors, due to changes in weather. Supply rather than demand plays the main role in price fluctuation.

- d. **Seasonal Fluctuation:** Seasonal price variations are regularly occurring increase and decrease in prices that occur within the year. We observed that just after the harvesting season, the price crop is decreased and increase in the off-season.
- e. **Short period price movements:** It refers to price dissimilarity within a very short time, within a season. Provisional changes in demand and supply of a specific day or within a week are the prime features resulting in short-term price variations.
- f. **Irregular price movements:** It represents the part of the activities of prices which is not regular. No simplification can be made about such price movements because of the variety in their character and abnormality is the reason and consequence connection in their incidence. The significant features accountable for such price movements are war, drought, floods, and other natural calamities.

Analysis of annual series of prices:

The annual price series is often available as farm harvest price for individual crops for a district, state, annual wholesale price for individual commodity or group of commodities and their indices. The annual time series is composed of three components trend, cyclical, and an irregular component. There are four approaches to determine the trend in annual series of price. The four approaches are as follows:

- a) **Graphical method:**
- b) **Moving average method:**
- c) **Semi-average straight line method, and**
- d) **Least squares trend line method**

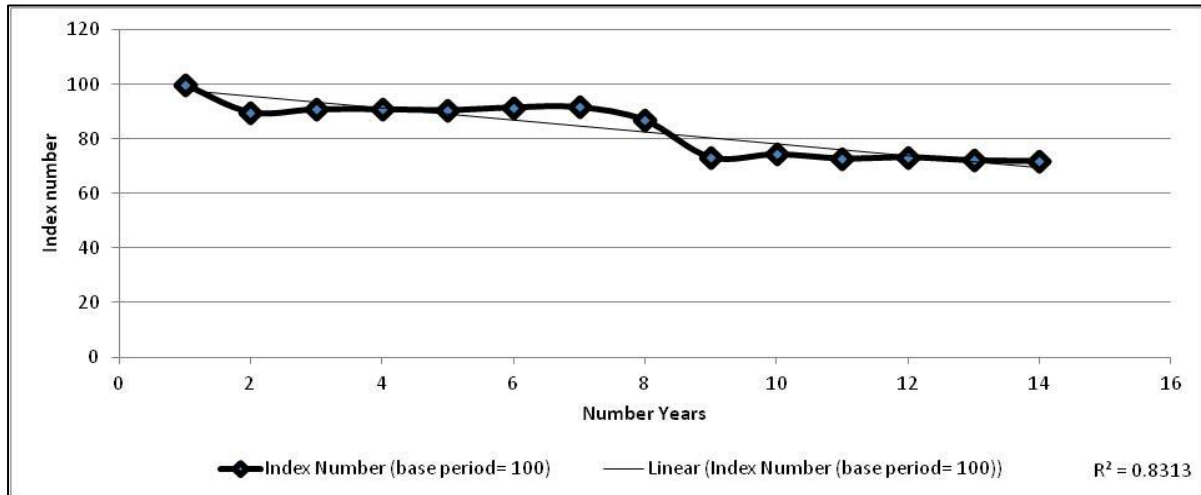
- a) **Graphical method:** It is most simple method. The method involves plotting the data in a two dimensional space with price on vertical axis and time or year along the horizontal axis. This provides a scatter diagram. To observe the general trend in prices, a straight line can be drawn in such a way that it is as close as possible to the scatter points and the departure of all points above the line is almost same as that of points below the line.

Table: 4.1 Wholesale prices of Rice along with index numbers for period in West Bengal 2001 -14

Year	Rs. / quintal	Index Number (base period= 100)
2001 - 02	1280.0	100
2002 - 03	1149.4	89.80
2003 – 04	1163.1	90.86
2004 – 05	1163.6	90.91
2005 – 06	1158.9	90.54
2006 – 07	1171.7	91.54
2007 – 08	1172.9	91.63
2008 - 09	1111.7	86.85
2009 – 10	937.9	73.28
2010 - 11	952.5	74.41
2011 - 12	932.6	72.86

2012 - 13	937.9	73.28
2013 - 14	924.3	72.21
2014 - 15	919.8	71.86

The graph illustrated clearly indicates the downward trend in prices of rice over the period 2001 – 15. (graph plotted with the help of MS- excel software)



A scatter diagram is generally used as a first step to decide the period and nature of trend line, because the method itself does not provide an objective measurement of the trend component.

b) Moving average method:

A moving average is a technique to get an overall idea of the trends in a data set; it is an average of any subset of numbers. The moving average is extremely useful for **forecasting long-term trends**. You can calculate it for any period of time. For example, if you have sales data for a twenty-year period, you can calculate a five-year moving average, a four-year moving average, a three-year moving average and so on. Stock market analysts will often use a 50 or 200 day moving average to help them see trends in the stock market and (hopefully) forecast where the stocks are headed.

An average represents the “middling” value of a set of numbers. The moving average is exactly the same, but **the average is calculated several times for several subsets of data**.

For example, if you want a two-year moving average for a data set from 2000, 2001, 2002 and 2003 you would find averages for the subsets 2000/2001, 2001/2002 and 2002/2003.

Moving averages are usually plotted and are best *visualized*.

Calculating a 5-Year Moving Average Example

Sample Problem: Calculate a five-year moving average from the following data set:

Year	Sales (Rs. in Millions)
2003	4
2004	6
2005	5
2006	8
2007	9
2008	5
2009	4

2010	3
2011	7
2012	8

The mean (average) sales for the first five years (2003-2007) are calculated by finding the mean from the first five years (i.e. adding the five sales totals and dividing by 5). This gives you the moving average for 2005 (the center year) = 6.4M: $(4M + 6M + 5M + 8M + 9M) / 5 = 6.4M$

Year	Sales (Rs. in Millions)
2003	4
2004	6
2005	5
2006	8
2007	9

The average sales for the second subset of five years (2004 – 2008), centred around 2006, is 6.6M:

$$(6M + 5M + 8M + 9M + 5M) / 5 = 6.6M$$

The average sales for the third subset of five years (2005 – 2009), centred around 2007, is 6.6M:

$$(5M + 8M + 9M + 5M + 4M) / 5 = 6.2M$$

Continue calculating each five-year average, until you reach the end of the set (2009-2013). This gives you a series of points (averages) that you can use to plot a chart of moving averages.

c. Semi-average straight line method

From the following series find the Trend by Semi Average method. Estimate value for the year 2021.

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Profit (in lakhs)	170	231	261	267	278	302	299	298	340

Answer:

Year	Values	4 yearly Semi-total	Semi Average
2012	170		
2013	231		
		929	232
2014	261		
2015	267		
2016	278		
2017	302		
2018	299		
		1239	310
2019	298		
2020	340		

$$\text{Therefore, } (310-232) = 78 = 78/5$$

Estimate of the year 2021: $310 + (5/2) \times (78/5) = 349$

So, the estimated value for the year 2021 is 349 lakhs.

d. Least squares trend line method:

Fit a straight line trend equation by the method of least square from the following data and estimate the profit for the year 2005

Year	1975	1980	1985	1990	1995	2000
Profit (in lakhs)	10	13	15	20	22	28

Answer:

Year (X)	Profit(Y)	Deviation (X* = X - 1987.5)	X* ²	X*Y
1975	10	1975 - 1987.5 = -12.5	156.25	(-12.5 x 10) = -125.0
1980	13	1980 - 1987.5 = -7.5	56.25	(-7.5 x 13) = -97.5
1985	15	1985 - 1987.5 = -2.5	6.25	(-2.5 x 15) = -37.5
1990	20	1990 - 1987.5 = 2.5	6.25	(2.5 x 20) = 50
1995	22	1995 - 1987.5 = 7.5	56.25	(7.5 x 22) = 165
2000	28	2000 - 1987.5 = 12.5	156.25	(12.5 x 28) = 350.0
N= 6	ΣY= 108		ΣX* ² = 437.5	ΣX*Y = 305

$$\frac{1985 + 1990}{2} = 1987.5$$

$$\text{So, } a = \frac{\sum Y}{n} = \frac{108}{6} = 18; \text{ and } b = \frac{\sum X^*Y}{\sum X^{*2}} = \frac{305}{437.5} = 0.697 \text{ (Approx)}$$

Therefore, profit for the year 2005

$$Y = a + bX$$

$$Y = 18 + 0.697 \times 17.5 \text{ (X = Year - 1987.5; 2005 - 1987.5 = 17.5)}$$

$$Y = 18 + 12.1975$$

$$Y = 30.1975$$

URL video link: <https://www.youtube.com/watch?v=8KltEg0fJic>

<https://www.youtube.com/watch?v=ADHMOBiBcFg>

<https://www.youtube.com/watch?v=Rfl5cxnf1UI>

Practical No.- 4

Study on relationship between market arrivals and price of some agricultural commodity

Market arrival is the important aspect in the determination of prices of an agricultural commodity. Market arrival is defined as the arrival of a commodity at a particular centre for sales from various villages and the storages at a given price level at a particular time. Price may be defined as the value of product attributes expressed in monetary terms which a consumer pays or is expected to pay in exchange and anticipation of the expected or offered utility. Pricing is a function of determining the product value in monetary terms by the marketing management of a company before it is offered to the target consumers for sales. The price fluctuation in agricultural products is a common phenomenon due to their seasonal nature of production, wide ecological imbalances compared to other crops and seasonal demand for agricultural commodities. Fluctuations in market arrivals largely contribute to price instability and price fluctuations of agricultural commodities.

The information about behaviour of the price in-terms of price level, trend and fluctuations is the most important factor in determining competitiveness of the commodity in the domestic and international level to draw influence for future prices and to formulate the long- term strategy on trade. The past trends in market arrivals of commodities are also useful in understanding the present and to forecast the future.

The difference between the lowest and the highest price within the year is termed as intra year price rise. The intra year price variation or rise was computed by using the following formula:

$$ASPV = \frac{HSPI - LSPI}{\frac{HSPI + LSPI}{2}} \times 100$$

Where, ASPV = Average Seasonal price Variation, HSPI = Highest Seasonal Price Index, LSPI = Lowest Seasonal Price Index

This Co-efficient has some advantages over IPR (Intra- year Price Rise) and indicates the average variations in prices during year.

Co-efficient of variation:

It express the variability of price from its average. It indicates or measures the stability or instability of given parameters. The standard deviation formula is similar to the variance formula

$$\sigma = \sqrt{\frac{1}{N \sum_{i=1}^N (xi - x^-)^2}}$$

σ = standard deviation

xi = each value of dataset

x^- = the arithmetic mean of data (This symbol will be indicate as mean from now)

N= the total number of data points

It was computed by using the formula:

$$C.V. = (SD/ AM) \times 100$$

To study the relationship between market arrivals and wholesale prices:

$$r = \frac{\sum (X_i - X) \cdot (Y_i - Y)}{\sqrt{\sum (X_i - X)^2 \cdot \sum (Y_i - Y)^2}}$$

Where,

r= Simple correlation coefficient between arrivals prices of A

X_i= Quantity of arrivals of A in the ith month / year (quintals)

X = Mean quantity of arrivals of A

Y_i= Price of A per quintal in ith month / year

Y= Mean value of price of pearl millet (quintal)

n = Number of observations.

Method of simple average is used to find out the seasonal indices which was used to worked out using the following formula

$$\text{Seasonal indices} = \frac{\text{Monthly average}}{\text{Average of monthly average}} \times 100$$

Some of the data for market arrivals and prices are also present in online.

URL Video link: https://www.youtube.com/watch?v=F5N9wVM_dn8

Practical No.: 5**Construction of index numbers:**

The value of money does not remain constant over time. It rises or falls and is inversely related to the changes in the price level. A rise in the price level means a fall in the value of money and a fall in the price level means a rise in the value of money. Thus, changes in the value of money are reflected by the changes in the general level of prices over a period of time. Changes in the general level of prices can be measured by a statistical device known as 'index number.'

Agriculture Price Index Number:

The word 'index' means indicator or pointer. An index number is the value of a variable at a point of time expressed as a percentage of its value at some base period. It is the devices for measuring differences in the magnitude of variables at different point of time or location.

Construction of price index numbers through various methods:**1. Simple Aggregative Method:**

In this method, the index number is equal to the sum of prices for the year for which index number is to be found divided by the sum of actual prices for the base year.

The formula for finding the index number through this method is as follows:

$$P_{01} = \frac{\sum P_1}{\sum P_0} \times 100$$

Where, P_{01} = Stands for the index number

$\sum P_1$ = Stands for the sum of the prices for the year for which index number is to found

$\sum P_0$ = stands for the sum of prices for the base year.

Commodity	Prices in Base Year 2011-12 (in Rs.) P_0	Price in current Year 2020 (in Rs.) P_1
A	10	20
B	15	25
C	40	60
D	25	40
Total	$\sum P_0 = 90$	$\sum P_1 = 145$

$$IndexNumber(P_{01}) = \frac{\sum P_1}{\sum P_0} \times 100; P_{01} = \frac{145}{90} \times 100; P_{01} = 161.11$$

2. Simple Average of Price Relatives Method:

In this method, the index number is equal to the sum of price relatives divided by the number of items and is calculated by using the following formula:

$$P_{01} = \frac{\sum R}{N}$$

Where, $\sum R$ = stands for the sum of price relatives i.e. $R = \frac{P_1}{P_0} \times 100$

N = stands for the number of items

Example:

Commodity	Base Year Price (in Rs.) P_0	Current Year Price (in Rs.) P_1	Price Relatives $R = \frac{P_1}{P_0} \times 100$
A	10	20	$\frac{20}{10} \times 100 = 200.0$
B	15	25	$\frac{25}{15} \times 100 = 166.7$
C	40	60	$\frac{60}{40} \times 100 = 150.00$
D	25	40	$\frac{40}{25} \times 100 = 160.00$
N=4			$\sum R = 676.7$

$$Index\ Number\ (P_{01}) = \frac{\sum R}{N} = P_{01} = \frac{676.7}{4} = P_{01} = 169.2$$

3. Weighted Aggregative Method:

In this method, different weights are assigned to the items according to their relative importance. Weights used are the quantity weights. Many formulae have been developed to estimate index numbers on the basis of quantity weights.

Some of them are explained below:

- a. **Laspeyre's formula:** In this formula, the quantities of base year are accepted as weights.

$$P_{01} = \frac{\sum P_1 q_0}{\sum P_0 q_0} \times 100$$

Where, P_1 is the price in the current year,
 P_0 is the price in the base year, and
 q_0 is the quantity in the base year

- b. **Paasche's formula:** In this formula, the quantities of the current year are accepted as weights.

$$P_{01} = \frac{\sum P_1 q_1}{\sum P_0 q_1} \times 100$$

Where, P_1 is the price in the current year,
 P_0 is the price in the base year, and
 q_1 is the quantity in the current year

- c. **Fisher's Formula:**

According to Fisher's method, two index numbers for each period are constructed using two different systems of weights and a geometric mean of the two is considered as the price index number. The base and current period quantity are used as weight for the two systems.

The formula is incorporate with the geometric mean of two indices one is laspeyre's index and other is Paasche's index.

The formula is represented as follows:

$$P_{01} = \sqrt{\frac{\sum P_1 q_0}{\sum P_0 q_0} \times \frac{\sum P_1 q_1}{\sum P_0 q_1}} \times 100 \quad P_{01} = \sqrt{L \times P \times 100}$$

Where, L is Lespeyre's Index and P is Paasche's Index

URL Video link: <https://www.youtube.com/watch?v=WE6YT6yNsYg>

Practical No.-6

Visit to a local market to study various marketing functions performed by different agencies

In this particular practical we need to visit nearest local market and gather as much as information from the different agencies involved in that particular market.

Date:

Mode:

Place:

Information regarding the market:

1. Market Area:
2. Market reach:
3. No. of farmers attend regular:
4. Which crops are mostly come for trading:
5. Transaction volume daily (in weight and monetary unit)
6. Farmers Charges:
7. Other charges:
8. Storage facility:
9. Grading facility:
10. Processing unit:
11. How many buyers are participating in the auction process:
12. For assurance of fair price for farmers what market has done:
13. Farmers are familiar with e-NAM:
14. e-NAM status of the market:
15. Any trading happens with e-NAM portal:
16. After trading in e-NAM, how many days generally require for final payment (seller):
17. After trading in e-NAM, what are the documents are given to the traders by market authority:
18. No. of wholesaler:
19. No. of Commission agent present in the market:
20. Direct marketing is allowed or not:
21. Address of the Market:

You can add any other information which is relevant for this agricultural Marketing, Trade and Price subject.

Conclusion:

URL video link: <https://www.youtube.com/watch?v=2g5Pu4kICs&t=7s>
<https://www.youtube.com/watch?v=gjcEggYu0Cs>
<https://www.youtube.com/watch?v=Twl4--EiYSM>
<https://www.youtube.com/watch?v=wzWDBViPkkU>

Practical No: 7

Identification of marketing channel for some commodity

Study on marketing channels at different stages of marketing of agricultural and horticultural are important both from producers and consumers point of view. Generally marketing channels refers to the routes or ways through which products move from producers to consumers. According to Moore *et al*, “The chain of intermediaries through whom the various agricultural products passes from producers to consumers constitutes their marketing channels.” Marketing channel is alternative routes of product follows from producers to consumers (Kohls and Uhli, 1980). Length of channels and time required during this process determines the share of price received by producers as a percentage of price paid by consumers i.e. farmers share in consumers rupee. Some Agricultural and horticultural commodities are being highly perishable in nature, its price at different stages of marketing fluctuates highly and automatically the price received by producers and price paid by consumers differs widely. So, in short, the lengths of marketing channels have same impact on the marketing efficiency of agricultural products.

For agricultural and horticultural commodities, marketing channels are vary from commodity to commodity, lot to lot and period over period.

Marketing Channels for Cereals:

- a. Farmer - consumers
- b. Farmer – Miller- Consumer
- c. Farmer – Miller- retail- consumer
- d. Farmer – wholesaler – miller - retailer – consumer
- e. Farmer – wholesaler – retail – consumer
- f. Farmer – village merchant – miller – retailer – consumer
- g. Farmer – co-operative marketing society to retailer - consumer
- h. Farmer – a government agency (FCI, etc) to fair price shop- owner- consumer

The channels for rice and pulses are almost the same, except that the rice millers and dal miller come into the channel before produce reaches to the end users.

Marketing channels of Jute:

Marketing channels of jute were identified in Nadia district of West Bengal -

- a. Farmer -Faria-Aratdar-Baler-Jute Mill

- b. Farmer -Aratdar -Baler -Jute Mill
- c. Farmer -Baler -Jute Mill
- d. Farmer-Faria-Baler-Jute Mill
- e. Farmer-Cooperative- Govt. Agency (JCI)-Jute Mill
- f. Farmer – Govt. Agency (JCI) -Jute Mill

Marketing Channels of Vegetables:

- a. Farmer – consumers
- b. Farmer – retailer – consumer
- c. Farmer – commission agents – retailer –consumer
- d. Farmer – Trader – commission agent – retailer- consumer
- e. Farmer- Primary wholesaler – secondary wholesaler- retailer – consumer

Marketing of Fruits:

- a. Farmer – consumers
- b. Farmer – Trader – consumer
- c. Farmer – commission agents – retailer –consumer
- d. Farmer – Pre-harvest contractor – retailer- consumer
- e. Farmer- Pre-harvest contractor – commission agents - retailer – consumer

These channels have great influence on marketing cost and marketing margins by intermediaries. Agricultural and horticulture being perishable crop, spoiling losses also increase with the increase in the length of marketing channels resulting higher prices to be paid by consumer to retailers per commodity rendering marketing channels more inefficient. So, finally that channel is consider as efficient which makes the produce available to the consumer at the cheapest price also ensures the highest share to the producer.

(Source: TANU Agri-tech Portal, Agricultural marketing and Agribusiness)

URL video link: <https://www.youtube.com/watch?v=b8Lgk2rC9aI>

Practical No. : 8**Collection of marketing data regarding marketing costs****Marketing Costs**

The movement of products from the producers to the ultimate consumers involves costs, taxes and cesses which are called marketing costs. These costs vary with the channels through which a particular commodity passes through. Eg: - Cost of packing, transport, loading, unloading, losses and spoilages.

Marketing costs would normally include:

- i. Handling charges at local point
- ii. Assembling charges
- iii. Transport and storage costs
- iv. Handling by wholesaler and retailer charges to customers
- v. Expenses on secondary service like financing, risk taking and market intelligence
- vi. Profit margins taken out by different agencies.

Producer's Price:

This is the net price received by the farmer at the time of first sale. This is equal to the wholesale price at the primary assembling centre, minus the charges borne by the farmer in selling his produce. If P_A is the wholesale price in the primary assembling market and C_F is the marketing cost incurred by the farmer, the producer's price (P_F) may be worked out as follows:

$$P_F = P_A - C_F$$

URL Video link: <https://www.youtube.com/watch?v=8h6nUcGN15k>

Practical No. :9**Collection of marketing data regarding margin and price spread****Marketing Margin of a Middleman:**

This is the difference between the total payments (cost + purchase price) and receipts (sale price) of the middleman (i^{th}) three alternative measures may be used.

1. Absolute margin of i^{th} middleman (A_{mi})

$$A_{mi} = P_{Ri} - (P_{Pi} - C_{mi})$$

2. Percentage margin of i^{th} middleman (P_{mi})

$$P_{mi} = \frac{P_{Ri}(P_{Pi} + C_{mi})}{P_{Ri}} \times 100$$

3. Percentage mark-up of the i^{th} middleman (M_i)

$$M_i = \frac{P_{Ri} - (P_{Pi} - C_{mi})}{P_{Pi}} \times 100$$

Where,

P_{Ri} = Total value of receipt per unit (sale price)

P_{Pi} = Purchase value of goods per unit (Purchase price)

C_{mi} = Cost incurred on marketing per unit

The total cost, incurred on marketing either in cash or in kind by the producer seller and by the various intermediaries involved in the sale and purchase of the commodity till the commodity reaches the end users or consumer, may be computed as follows:

$$C = C_F + C_{mi} + C_{m2} + \dots + C_{mn}$$

Where,

C = Total cost of marketing of the commodity

C_f = Cost paid by the producer from the time the produce leaves till he sells it

C_{mi} = Cost incurred by the i^{th} middlemen in the process of buying and selling the products.

Price spread

The difference between price received by farmers and price paid by consumers is commonly known as price spread. Sometimes, it is also termed as marketing margin (Acharyya, S.S., *et al.* 1999). This includes costs of performing various marketing function and

the profit the intermediaries involved in the whole process of marketing. The constituents of the costs of marketing are costs of transportation, grading, standardization, packaging, taxes, wastages etc. Concurrent margin and lagged margins are two concepts of measuring marketing margin. The differences between farmer's selling price and retail price on a specific date forms the total concurrent margin whereas lagged margin is the difference between the price received by a seller at a particular stage of marketing and the price paid by him at the earlier stage. For formulation of efficient pricing policy and successful implementation of marketing estimation of price-spread plays an important role. For computation of marketing margins and costs, different methods; namely, lot method, sum of average gross margin method, comparison of prices at successive levels of marketing etc are followed. Although each method has some of its own merits and demerits, generally lot method is used in vegetable and fruit marketing for estimation of marketing margin or price spread. In this method a specific lot is selected and chased throughout the marketing channels until it reaches in the hands of ultimate consumers and at each stage cost and margins are assessed. The instruments or items used in measuring price spread are, produces share in consumers rupee, marketing margin of middlemen. In the present study, producer's shares in consumers rupee will be employed to measure the price spread in different marketing channels by following lot method. This measure of producer's shares in consumers rupee may be expressed as follows:

$$Ps = \frac{PF}{Pr} \times 100$$

Where, Ps refers to produces share in consumers rupee, PF denotes the price received by farmers and Pr is used for price paid by the ultimate consumers. In short, in the present study, first we will identify the different marketing channels present in the study area by following lot method and then we will estimate price spread at different stages of marketing channels by using concurrent margin concept and then subsequently we will compute producers' share in consumer's rupee.

URL Video link: <https://www.youtube.com/watch?v=8h6nUcGN15k>

Practical No.-10

Presentation of report in the class:

Date:

Topic:

Crop Name:

Market Name:

Mode:

Required Instruments: PC's and Projector

Observations:

Suggestions:

Conclusion:

URL Video link: Not required (Student present this)

Practical No.- 11**Visit to market institutions -NAFED to study organization and functions:****Date:****Address:****Office in-charge:****Mode:**

National Agricultural Cooperative Marketing Federation of India Ltd was established on 2nd October 1958. NAFED is registered under the Multi State Co-operative Societies Act. It's a national level farmers cooperatives organisation for marketing of agricultural produce.

Objectives of NAFED:

The objectives of the NAFED shall be

Functions/activities:

The major functions of NAFED is follows:

Conclusion:

You can add any other information which is relevant for this agricultural Marketing, Trade and Price subject.

URL Video link: https://www.youtube.com/watch?v=vG_AllTzVsQ&t=9s

Practical No.- 12**Visit to market institutions -SWC to study organization and functions**

Date:-

Mode:-

Place:-

Example of Information regarding SWC

1. Establishment year: -
2. SWC Godown type: -
3. Main functions: -
4. Main storage product: -
5. Storage capacity: -
6. Stored grain pest control: -
7. Source of production: -
8. Hedging procedure: -
9. Storage loss: -
10. Pick time when godown is almost full :-
11. Time of distribution of the product: -
12. Total no. of SWC in west Bengal: -
13. SWC charged for storing goods unit:
14. Each rice bag size: -
15. Board of directors: -
16. Other involved organization: -

CONCLUSION: -

You can add any other information which is relevant for this agricultural Marketing, Trade and Price subject.

URL video link: <https://www.youtube.com/watch?v=gTb7G1YxuOo>

Practical No.- 13**Visit to market institutions -CWC to study organization and functions****Date:****Address:****Office in-charge:****Mode:**

Central Warehouse Corporation (CWC) is a premier warehousing agency in India, established during 1957 providing logistics support to the agricultural sector, and one of the biggest public warehouse operators in the country offering logistics services to a diverse group of clients.

Warehousing activities of CWC include:**Functions:**

The major functions of CWC are follows:

Conclusion:

You can add any other information which is relevant for this agricultural Marketing, Trade and Price subject.

URL Video Link: <https://www.youtube.com/watch?v=YttQk7Fxe0k>

Practical No.- 14**Visit to market institutions- Cooperative marketing society to study organization and functions:**

Cooperative marketing societies are established for the purpose collectively marketing the products of the member farmers. It emphasizes the concept of commercialization. Its economic motives and character distinguish it from other associations. These societies resemble private business organization in the method of their operations but they differ from the capitalistic system chiefly in their motives and organizations.

Functions/activities:

The major functions of **Cooperative marketing societies** are as follows:

Conclusion:

You can add any other information which is relevant for this agricultural Marketing, Trade and Price subject.

URL Video Link: <https://www.youtube.com/watch?v=a7yFzwTjXeM&t=42s>

Practical No.-15.**Application of principles of comparative advantage of international trade.****Introduction:**

The other most important classical theory of international trade is the comparative advantage theory. This theory was given by David Ricardo who went even further and argued that even if the countries did not have absolute advantage in any line of production over the others, international trade would be beneficial, bringing gains from trade to all the participating countries. Ricardo model is termed as comparative advantage model, as opposed to Smith's model of absolute advantage. Ricardo model is further refinement of Smith's model. This is discussed below.

Comparative advantage occurs when one country can produce a good or service at a lower opportunity cost than another. This means a country can produce a good relatively cheaper than other countries. The theory of comparative advantage states that if countries specialise in producing goods where they have a lower opportunity cost – then there will be an increase in economic welfare. Note, this is different to absolute advantage which looks at the monetary cost of producing a good. Even if one country is more efficient in the production of all goods absolute advantage than the other, both countries will still gain by trading with each other, as long as they have different relative efficiencies.

Suppose country A is better than country B at making software, and country B is better than country A at making bread. It is obvious that both would benefit if A specialized in software's, B specialized in bread and they traded their products. That is a case of absolute advantage.

But what if a country is bad at making everything? Will trade drive all producers out of business? The answer, according to Ricardo, is no. The reason is the principle of comparative advantage.

Let us again assume a world of two countries and two commodities. USA and India are two countries and two countries, rubber and textiles are the two commodities. The production possibilities (supply conditions) in the two countries are such that both countries can produce both goods if they wanted. In this model we assume that one country has the absolute advantage over the other country in both the lines of production, and the other country has absolute

disadvantage in both the lines of production (contrast to the Smith's model, where one country has absolute advantage in one line and the other country in the other line). In Ricardo's model, one country's comparative advantage is greater in one line of production and the other country's comparative disadvantage is smaller in the other line of production. International trade would bring production gains when these two countries enter into trade with each other. Let us see with the help of a numerical model, how that happens.

The following table shows the production possibilities in the two countries

Table .1. Production Possibilities in India and USA

Countries	Commodities		International Opportunity (cost ratios)
	Textiles (units)	Rubber (units)	
USA	120 or	120	1:1
India	40 or	80	1:2

With 'x' factors of production, India can produce 120 units of textiles or 120 units of rubber of any combination of textiles and rubber at the constant opportunity cost ratio of 1:1 i.e., India can produce 1 unit of rubber (or textiles) by giving up the opportunity of producing 1 unit of textiles (or rubber). India is equally efficient in the production of the two commodities.

USA on the other hand, is equally inefficient in either line of production compared with India; because, with 'x' factors of production it can produce either 40 units of textiles (compared with 120 units) or 80 units of rubber (compared with India's 120 units) or any combination of textiles and rubber at the constant opportunity cost ratio of 1:2. Here it can be noted that unit cost of producing rubber is less than the unit cost of producing textiles, when we measure unit costs in terms of the units of alternative commodity foregone.

In terms of comparative advantages and disadvantages following observations can be made.

1. India's comparative advantage over USA is greater in production of textiles (3:1) as compared to rubber (1.5:1). Therefore, India should specialize in the production of textiles rather than rubber, although India can produce both the goods equally efficiently.
2. USA's comparative disadvantage in relation to India is lower in the production of rubber (1:1.5) as against textiles (1:3). Hence USA should specialize in the production of rubber, not because it has absolute advantage over India in this line but because its

comparative disadvantage is less in this line of production than in the other line of production (textiles).

The theory of comparative advantage suggests that a country should specialize in the production and export of those goods in which either its comparative advantage is greater or its comparative disadvantage is less; and it should import those goods in the production of which its comparative advantage is less or comparative disadvantage is greater. Thereby, a country would be able to maximize its production and its consumption.

Before we examine the gains from trade for the two countries arising out of such specialization, let us consider what the production levels would be, for the two countries, in absence of trade. The table.2 represents this equilibrium under autarky. India produces and consumes 80 units of textiles plus 40 units of rubber, for a total production of 120 units. USA produces and consumes 20 units of textiles plus 40 units of rubber for a total production of 60 units. The world production is 180 units.

Table .2. Production and consumption levels under autarky

Countries	Commodities		Total production & consumption (Units)
	Textiles (units)	Rubber (units)	
USA	80	40	120
India	20	40	60
World	100	80	180

If, however, the two countries decide to enter into trade breaking their isolation, there would be international specialization in production, leading to increase in the world production. In the table 38.3 the production gains are shown. World production has gone up from 180 to 200 after the introduction of trade. This is entirely due to production gains resulting from specialization in USA, after trade. There are no production gains to be derived from specialization as far as India is concerned, because India's level of production is the same both before and after trade. This suggests that small countries tend to benefit more than the large countries from the standpoint of specialization in production resulting from the international trade.

Table.3. Production Levels after International Trade

Countries	Commodities		Total production & consumption (Units)
	Textiles (units)	Rubber (units)	
USA	80	40	120
India	20	40	60
World	100	80	180

Unless both countries stand to gain from trade, there can be no trade between them. Production gains have gone to only USA and India has no production gains from the trade. This means that Indian and USA must have some consumption gains in order that there is mutually beneficial trade between two. How much each country gains from trade in terms of consumption depends entirely on the terms of trade. Instead of considering different terms of trades let us take one case where in the terms of trade between India and USA are, say, 3:4 (i.e., 3 units of textiles have to be exported in order to import 4 units of rubber or vice versa). In this case, the both the countries will share the benefits equally. This is because these international terms of trade lie exactly between the two internal opportunity cost ratios of India and USA. The consumption gains resulting from such international terms of trade for the two countries are shown in table.4.

India after trade produces 120 units of textiles and consumes 90 units of it and exports the remaining 30 units to USA. By exporting 30 units of textiles, India receives 40 units of rubber as imports from USA at the terms of trade of 3:4. This means, when the trade transacting is completed, USA will have 30 units of textiles plus 40 units of rubber for its own consumption. Compare India's post-trade consumption of the two commodities in table.4. (viz 90+40) with their pre-trade levels in table.2 (viz. 80+40) and will notice that a net consumption gain of 10 units. Similarly the gain for USA will be 10 units.

Table.4. Consumption Levels after International Trade

Countries	Commodities		Total production & consumption (Units)
	Textiles (units)	Rubber (units)	
USA	80	40	120
India	20	40	60
World	100	80	180

Here you can notice that the world production gain of 20 units has resulted entirely from the production gain in USA, and the production gain has been in terms of USA product viz, rubber. Consumption gain for the two countries, 10 each for India and USA has been in terms of India's product viz, textiles. If the terms of trade are different gains for the countries will also differ.

Example of Comparative Advantage

- Assume two countries, UK and India
- They both produce textiles and books.
- Their relative production levels are shown in the table below.

Output without trade

	Textiles	Books
UK	1	4
India	2	3
Total	3	7

- For the UK to produce 1 unit of textiles it has an opportunity cost of..... books.
- However for India to produce 1 unit of textiles it has an opportunity cost of books
- Therefore India has a..... in producing textiles because it has a lower
- The UK has a comparative advantage in producing.....
- This is because it has a lower opportunity cost of..... (1/4) compared to India's..... (2/3)

URL Video link: <https://www.youtube.com/watch?v=Vvfzaq72wd0>

Schedule for collection of data on marketing of Vegetables

Name of the interviewee:

Address of the interviewee:

Mode of communication:

Distance from nearby town/ city:

Distance from the market:

Name of the crop:

A. Farmer's level	Channel-I	Channel- II	Channel-III
Farm gate price:			
Cost incurred:			
Transport:			
Bagging:			
Loading and unloading			
Spoilage			
Weighing			
Miscellaneous			
Selling price			
B. Foriya (Itinerant traders)			
Buying price:			
Cost incurred			
Transport:			
Bagging:			
Loading and unloading:			

Spoilage:			
Weighing:			
Miscellaneous:			
Selling price			
C. Primary Wholesaler:			
Buying price:			
Cost incurred:			
Transport:			
Bagging:			
Loading and unloading:			
Spoilage:			
Weighing:			
Handling :			
Miscellaneous:			
Selling price:			
D. Secondary Wholesaler:			
Buying price:			
Cost incurred:			
Transport:			
Bagging:			
Loading and unloading:			

Spoilage:			
Weighing:			
Handling :			
Miscellaneous:			
Selling price:			
E. Retailer			
Buying price:			
Cost incurred:			
Transport:			
Bagging:			
Loading and unloading:			
Spoilage:			
Weighing:			
Handling :			
Miscellaneous:			
Selling price or Consumer's price			