

Chapter- 8: INDEX NUMBERS

STATISTICS FOR ECONOMICS

1. **Meaning:** Index numbers is a statistical tool for measuring relative change in a group of related variables over two or more different times.

2. **Features of an Index Number**

- a. They are expressed in percentages.
- b. They are special types of averages.
- c. They measure the effect of change over a period of time.

3. **Problems in construction of Index Numbers**

- a. Defining the purpose of index numbers
- b. Selection of items
- c. Selection of base period
- d. Selection of prices
- e. Selection of weights
- f. Choice of an average
- g. Choice of the formulae

4. **Price index are of two types**

- a. Simple Index Number
- b. Weighted price Index numbers

5. **Construction of simple Index Numbers:-**

There are two methods

- a. Simple aggregate Method

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

- b. Simple Average of price relative method

$$P_{01} = \frac{\sum (P_1 / P_0 \times 100)}{N_1}$$

6. **Weighted Index Numbers**

There are two methods:-

- a. **Weighted Aggregate method:-** In this method commodities are assigned weights on the basis of quantities purchased.

$$P_{01} = \frac{\sum P_1 Q_0}{\sum P_0 Q_0} \quad (\text{Base year quantities as weight})$$

b. Weighted Average of Price Relative Method:-

Under this method commodities are assigned weight on the basis of base's year value ($W = P_0 Q_0$) or fixed weights (W) are used.

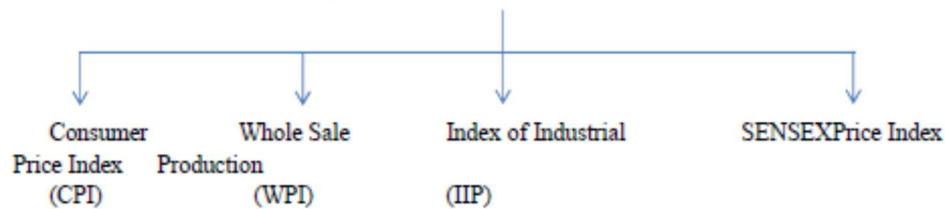
$$P_{01} = \frac{\sum RW}{\sum W}$$

Where $R = \frac{P_1}{P_0} \times 100$

$W =$ value in the base year ($P_0 Q_0$) or fixed weights

7.

Types of Index Numbers



a. Consumer Price Index:- (CPI) The methods of constructing CPI are

- Aggregate Expenditure Method $P_{01} = \frac{\sum P_1 Q_0}{\sum P_0 Q_0} \times 100$

- Family Budget Method $P_{01} = \frac{\sum RW}{\sum W} \times 100$

Where $R = \frac{P_1}{P_0}$

$W = P_0 Q_0$ or fixed weights

8. Uses of Consumer Price Index:- (CPI)

- It is used in calculating purchasing power of money
- It is used for grant of Dearness Allowance.
- It is used by government for framing wage policy, price policy etc.
- CPI is used as price deflator of income
- CPI is used as indicator of price movements in retail market.

9. Wholesale Price Index (WPI):-

- It measures the relative change in the price of commodities traded in wholesale market.
- It indicates the change in the general price level.
- It does not include services

Uses of WPI

- Basis of Dearness Allowance
- Indicator of changes in economy
- Measures the rate of inflation

10. Index Number of Industrial Production (IIP)

It indicates the changes in level of Industrial production or a percentage change in physical volume of output of commodities in following industries

- a. Mining
- b. Quarrying
- c. Manufacturing
- d. Electricity etc.,

$$\text{Formula IIP} = \frac{\sum (q_1 / q_0) \cdot W}{\sum W}$$

W = relative importance of different output.

q₀ = Base year quantity.

q₁ = Current Year Quantity.

11. Uses of Index Numbers.

- a Helps us to measure changes in price level
- b Help us to know changes in cost of living
- c Help government in adjustment of salaries and allowances
- d Useful to Business Community
- e Information to Politicians
- f Information regarding foreign trade

12. SENSEX

SENSEX is the short form of Stock Exchange Sensitive Index with 1978-79 as base. It is a useful guide for the investors in the stock market. It deals with 30 stocks represented by 13 sectors of the economy.

Index Numbers: -

MEANING OF INDEX NUMBERS: -Index numbers are devices which measure the change in the level of a phenomenon with respect to time, geographical location or some other characteristic. An index number is a statistical device for measuring changes in the magnitude of a group of related variables. It is a measure of the average change in a group of related variables over two different situations