# Micro Economics

By

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# Introduction

- Think of any society. People in the society need many goods and services in their everyday life including food, clothing, shelter, transport facilities like roads and railways, postal services and other services like that of teachers and doctors.

# Introduction

- The allocation of the limited resources and the distribution of the final mix of goods and services are row of the basic economic problems faced by the society.

# Central problem of an economy

- Production, exchange and consumption of goods and services are among the basic economic activities of life.

# Examples

1. More food is produced - ?
2. Less food is produced - ?
3. Less housing facility - ?
4. Shortage of Teachers ?
5. Shortage of Doctors ?

The allocation of Scare resources and the distribution of the final goods and services are the central problems of any economy.

# Organization of Economic activities

1. The centrally Planned Economy
2. The Market Economy

In a centrally planned economy, the government or the central authority plans all the important activities in the economy. All important decisions regarding production, exchange and consumption of goods and services are made by the government.

Eg: Education or health service is not produced in adequate amount by the individuals on their own, the gov might try to induce the individuals to produce adequate amount of such a good or service.

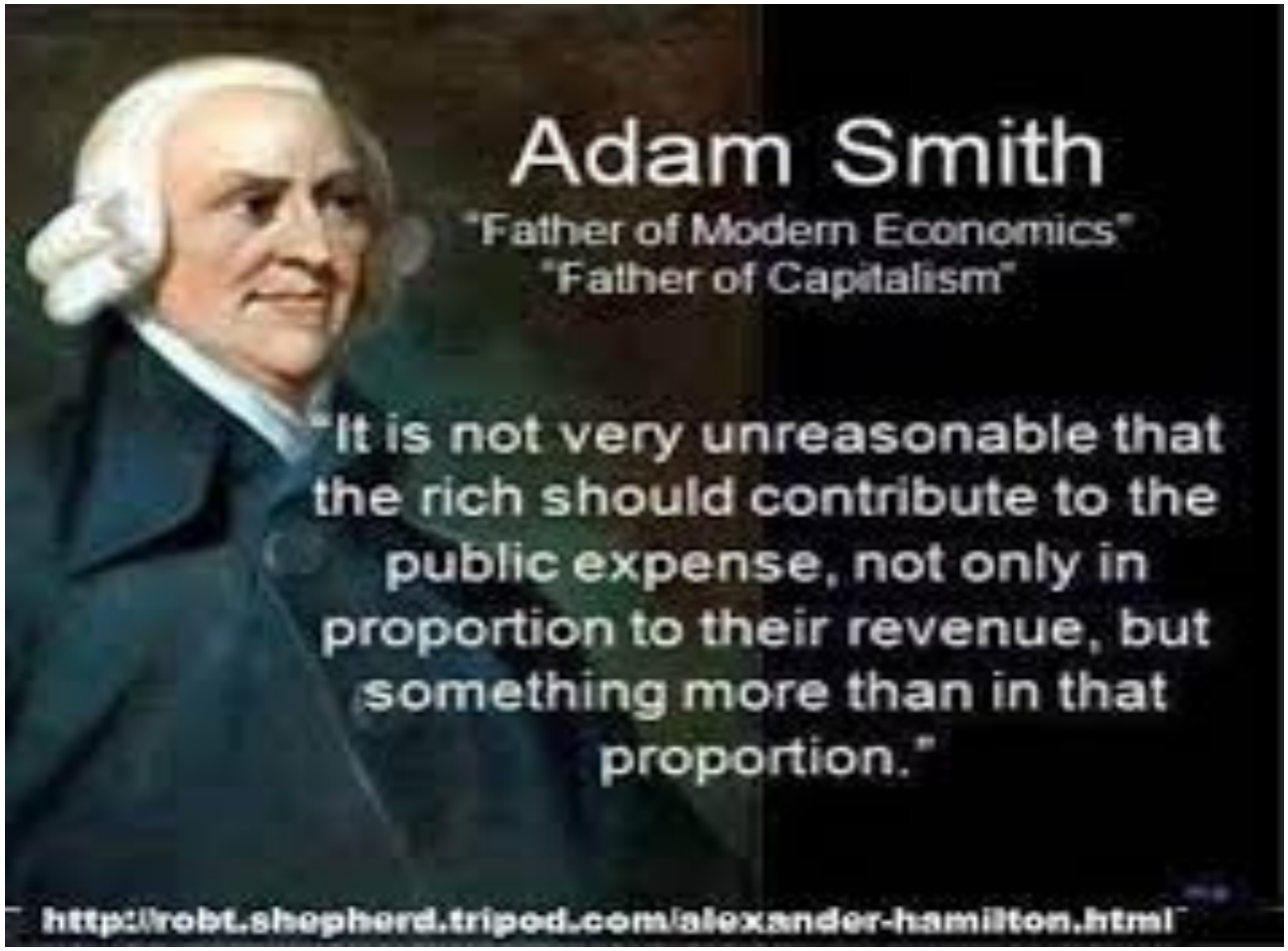
# Organization of Economic activities

What about  Market Economy  ?

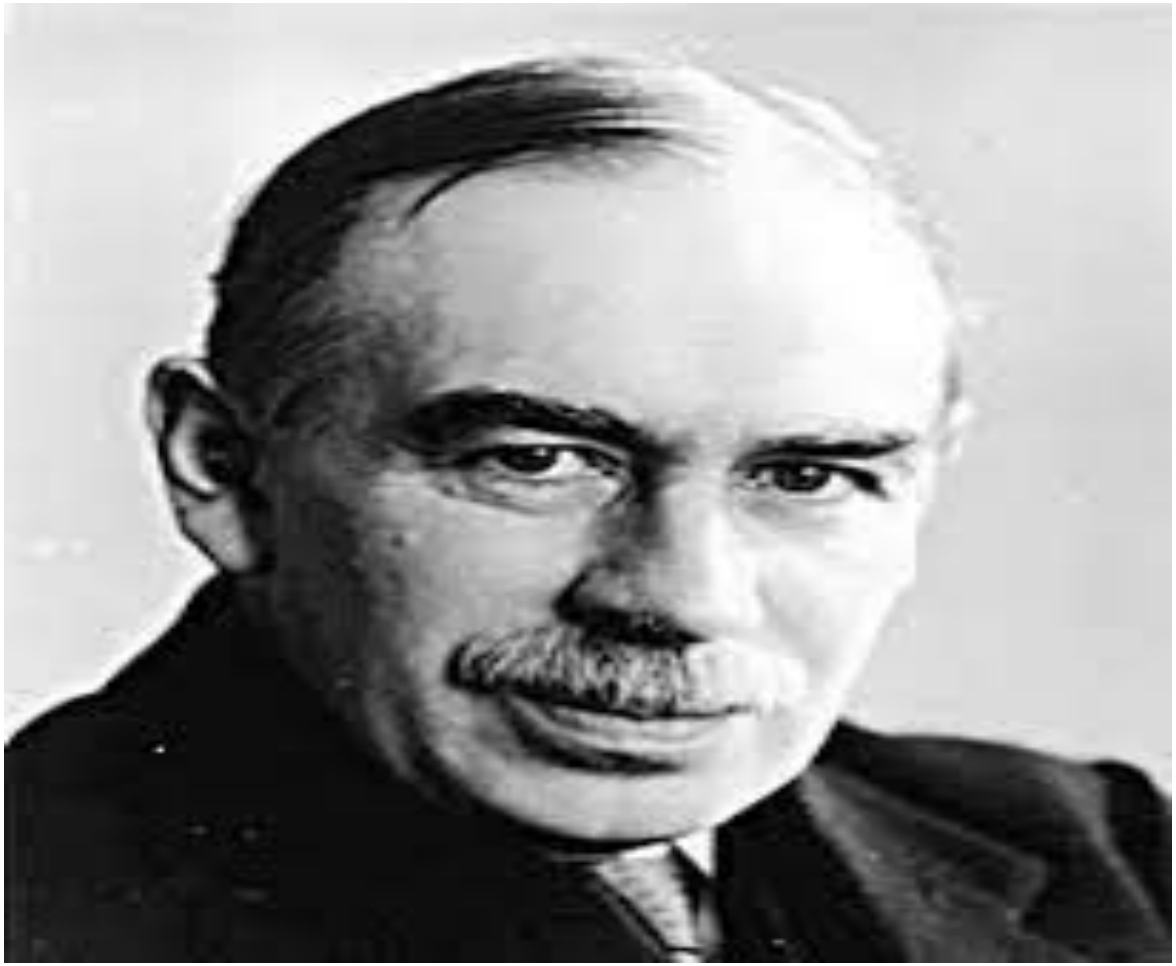
# Adam Smith and John Maynard Keynes

- Adam smith is regarded as the founding father of modern economics, He was a professor at the university of Glasgow, philosopher by training, his well know work An Enquiry into the Nature and cause of the wealth of Nations (1776) is regarded as the first major comprehensive book on the subject.
- John Maynard Keynes, British Economist wrote book General Theory of Employment, Interest and Money (1936) is regarded as one of the most influential economics books of the twentieth century.

# Adam Smith


Adam Smith
"Father of Modern Economics"
"Father of Capitalism"
"It is not very unreasonable that the rich should contribute to the public expense, not only in proportion to their revenue, but something more than in that proportion."
http://robt.shepherd.tripod.com/alexander-hamilton.html

# John Maynard Keynes



# Law of Demand

- Imagine consumers begin to buy fewer potatoes and more meat.
- It creates a demand for meat the price starts to go up and at the same time price of the potatoes starts to go down.
- We are concerned here supply and Demand
- Discussion : Onion prices, Tomato prices and egg prices

# Law of Demand

- Hence there exists at any one time a definite relation between the market price of a good (such as wheat) and the quantity demanded of that good. This relationship between price and quantity bought is called the demand schedule or demand curve.

# The supply schedule

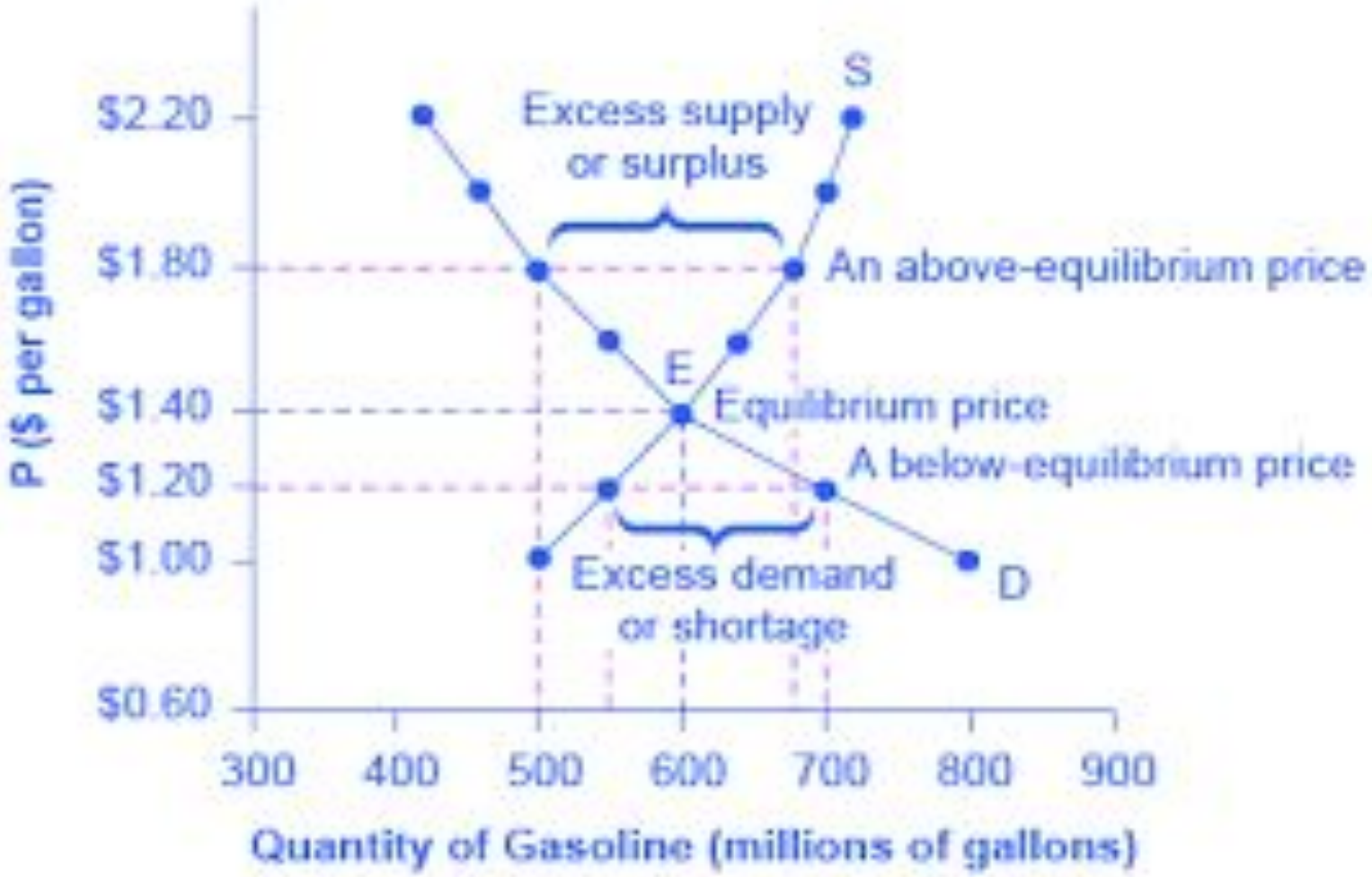
- By the supply schedule or curve is meant the relation between market prices and the amounts of the good that producers are willing to supply.

# Equilibrium of supply and demand

The equilibrium price i.e., the only price that can last, is that at which the amount willingly supplied and amount willingly demanded are equal.

Competitive equilibrium must be at the intersection point of supply and demand.

# Price of Gasoline



# Discussion about equilibrium

- Market equilibrium can take place only at a price where the quantities supplied and demanded are equal. At any price higher than the equilibrium intersection of the supply and demand curves, the quantity that producers will want to go on supplying will exceed the quantity that consumers will want to go on demanding , downward pressure on price will result as some of the excess sellers undermine the going price.

# Competitive pricing

- Competitive pricing rations out the limited supply of goods to those with desire or need backed by money votes.
- Examples – Discussed

# Organization of Economic Activities

1. Centrally Planned Economy
2. Market Economy

In Centrally Planned Economy, the government or central authority plans all the important activities in the economy. All important decisions regarding production, exchange and consumption of foods and services are made by the government. Eg. Education or health services –need based human resources

# Organization of Economic Activities

2. In market Economy , all economic activities are organized through the market.

In a market system, all goods or services come with a price ( which is mutually agreed upon by the buyer and seller) at which the exchanges take place.

In reality all economies are mixed economies which some important decisions are taken by the government and the economic activities are by and large conducted through the market.

# Organization of Economic Activities

Closest Example for The centrally Planned Economy - China

The market economy – USA

India - Can you guess ??

# Microeconomics Vs Macroeconomics

- In microeconomics  we study the behavior of individual economic agents in the markets for different goods and services and try to figure out how prices and quantities of goods and services are determined through the interaction of individuals in these markets.

# Microeconomics Vs Macroeconomics

- Economic agents means those individuals or institutions which take economic decisions. They can be consumers who decide what and how much to consume.
- They may be producers of goods and services who decide what and how much to produce.
- They may be entities like the government, corporation, banks which also take different economic decisions like how much to spend, what interest rate to charge on the credits, how much to tax, etc.,

# Microeconomics Vs Macroeconomics

- In macroeconomics , on the other hand we try to get an understanding of the economy as a whole by focusing our attention on aggregate measures such as total output, employment and aggregate price level.
- Some examples are
- What is the level of total output in the economy ?
- How the total output determined ?
- How does the total output grow over time ?
- Are the resources of the economy (eg labour) fully employed ?
- What are the reasons behind the unemployment of resources ?

# Microeconomics Vs Macroeconomics

- Who are macroeconomics decision makers ?

The government or statutory bodies like Reserve Bank of India, SEBI and similar institutions.

They try to direct the deployment of economic resources for such public needs. They are pursued for the welfare of the country and its people as a whole.

# Macro Economics

- Adam Smith most influential work – An Enquiry into the Nature and Cause of the Wealth of Nations.
- Questions are

1. What generates the economic wealth of a nation ?
2. What makes countries rich or poor ?

# Macro Economics

Question is

Why ?

1. Resources rich Africa and Latin America are poor ?
2. Many prosperous countries have scarcely any natural wealth ?

There was time even resources had to be transformed through a production process

# Macro Economics

- Answer for the question

1. The point is how natural resources are used in generating a flow of production and how as a consequence, income and wealth are generated from that process.
2. How does flow of production arise ?

People combine their energies with natural and manmade environment within a certain social and technological structure to generate a flow of production

Some examples : Japan wont import a needle used textile production

Recent problem faced by Garment industries due to machine item in Thirupur (TamilNadu)

# Macro Economics

3. Setting up of enterprises large and small provides employment for large number of people
4. Farmer producing cotton, sells to spinning mill to produce yarn and then will sell to textile mill.

Finally, item that is meant for final use and will not pass through any more stages of production or transformation is called a final good

# Macro Economics

- What is importance of final good ?

It has been sold it passes out of the active economic flow. ( because it will not undergo any further transformation at the hands of any producer)

Think of Green Tea leaves consumed by us ?

Cooked food is not sold to market instead it is sold to customer – Considered as value addition to economics

# Macro Economics

Consumption goods and Capital goods

-Goods like food, clothing and services like recreation that are consumed when purchased by their ultimate consumers are called consumption good or consumer goods.

Capital goods are durable character which are used in the production process. These are tools, implements and machines. While they make production of other commodities feasible, they themselves don't get transformed in the production process. They are also final products yet they are not final goods to be ultimately consumed.

Capital goods undergo wear and tear and thus are repaired and gradually replaced over time.

The stock of capital goods that an economy possesses is thus preserved, maintained and renewed partially or wholly over time.

# Macro Economics

- Some commodities television sets, automobiles, computers - one characteristic in common they are durable and have long life compared to articles such as food or even clothing. Hence we call these goods as consumer durables

# Macro Economics

- Some goods are called intermediate goods, mostly they are used as raw material or inputs for production of other commodities.
  For example  steel sheets are used for making automobiles and copper used for making utensils.

# Macro Economics

- Now we should a comprehensive idea of the total flow of production in the economy.
- We need to have a quantitative measure of the aggregate level of the final assessment – a measure of the total final goods and services produced in the economy.
- Sum of total of the monetary value of these diverse commodities gives us a measure of final output.

# Macro Economics

- Stocks Vs flows

Somebody salary is Rs. 20000 , means we think in terms of month (time)

Imagine some steel industry output is so many tonnes or so many rupees in value. ( Time is not defined, we may not know is it monthly or yearly)

Therefore we need to delineate a time period to get a quantitative measure of these.

Since a lot of accounting is done annually in an economy, many of these expressed annually like profits or production.

Flows are defined over a period of time.

# Macro Economics

- Capital goods continue to serve many cycles of production. Eg. Machines in a production plant.
- When machine is added to a production we call it as stocks. Stocks are defined at a particular point of time.
- We can measure a change in stock over a period of time.
- Think of scooter in your family as capital stock for many years later replaced with car.

# Macro Economics

# Macro Economics

- Analogy for stock variables and flow variables

Suppose a tank is being filled with water coming from a tap. The amount of water which is flowing into the tank from the tap per minute is a flow.

But how much water there is in the tank at a particular point of time is a stock concept

# Macro Economics

- Final output – that comprises of capital goods constitutes gross investment of an economy.
- These are machines, tools and implements; buildings, office spaces, storehouses or infrastructure like roads, bridges, airports or jetties.
- Old machines when replaced with new machines, which accommodate regular wear and tear of the capital, is called depreciation.
- Examples - ??? For discussion

# Macro Economics

- The new addition to capital stock in an economy is measured by net investment or new capital formation, which is expressed as

Net investment = Gross investment – Depreciation

Depreciation is an annual allowance for wear and tear of a capital good. In other words it is the cost of the good divided by number of years of its useful life.

It is an accounting concept.

# Macro Economics

- Purchase of consumer goods depends on the capacity of the people to spend on these goods which, in turn, depends on their income.
- The other part of the final goods, the capital goods are purchased by business enterprises. They are used either for maintenance of the capital stock because there are wear and tear of it or they are used for addition to their capital stock.

# Macro Economics

- Discussion

1. Sari production with manually weaving Vs modern machine
2. Historical monuments like pyramids, Taj Mahal Vs today with modern machines.

Higher production of capital goods enables the economy to expand.

Sale is demand for the products backed by purchasing power.

# Macro Economics

To buy commodities comes from

Labourer (earning wages)

Entrepreneur (earning profits)

Landlord (Learning rents)

Owner of the capital (earning interest)

# Circular flow of income and methods of calculating National Income

- Fundamentally four kinds of contributions that can be made during the production of goods and services

i) Contribution made by human labour, remuneration for which is called wage

ii) Contribution made by capital, remuneration for which is called interest

iii) Contribution made by entrepreneurship, remuneration of which is profit

iv) Contribution made by fixed natural resources (eg. Land) remuneration for which is called rent

# Circular flow of income and methods of calculating National Income

- In the simplified economy, there is only one way in which the households may dispose off their earnings – by spending their entire income on the goods and services produced by the domestic firms.
- The aggregate consumption by the households of the economy is equal to the aggregate expenditure on goods and services produced by the firms in the economy.

# Circular flow of income and methods of calculating National Income

- The entire income of the economy, therefore comes back to the producers in the form of sales revenue. There is no leakage.

# Circular flow of income and methods of calculating National Income

- In the next stage, imagine firms produce goods and services and pay remunerations to the factors of production.
- Hence next step aggregate income of the economy going through the two sectors – firms and households, in a circular way.
- This is shown in next slide in figure

# Circular flow of income and methods of calculating National Income

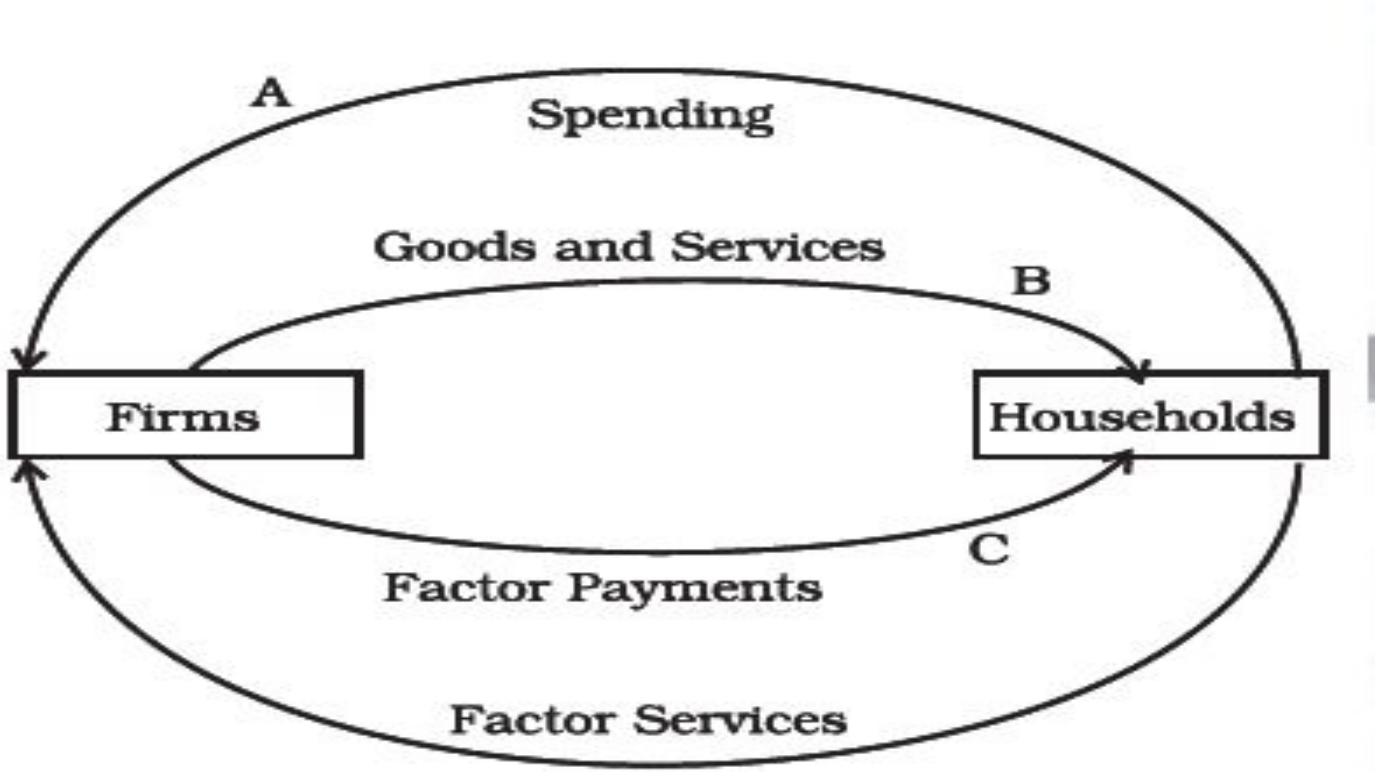



*Fig. 2.1: Circular Flow of Income in a Simple Economy*

# Circular flow of income and methods of calculating National Income

- When the income is being spent on the goods and services produced by the firms, it takes the form of aggregate expenditure received by the firms.
- Since the value of expenditure must be equal to the value of goods and services, we can equivalently measure the aggregate income by calculating the aggregate value of goods and services produced by the firms

# Circular flow of income and methods of calculating National Income

- The Uppermost arrow going from the households to the firms, represent the spending the households undertake to buy goods and services produced by the firms.
- The second arrow going from the firms to the households indicate what households are getting from the firms.
- In summary, top two arrows represents goods and services market – flow of payments and flow of goods and services.

# Circular flow of income and methods of calculating National Income

- The two arrows at the bottom represent the factors of production market.
- The lower most arrow going from the households to the firms symbolises the services that the households are rendering to the firms.
- Using these services firms are manufacturing the output.
- The arrow above this, going from the firms to the households, represent the payments made by the firms to the households for the services provided by the latter.

# Circular flow of income and methods of calculating National Income

To estimate the aggregate value of goods and services produced

-At point A - Uppermost arrow, aggregate value of spending that the firms receive for the final goods and services which they produce. This method will be called the expenditure method

# Circular flow of income and methods of calculating National Income

- If we measure the flow at B by measuring the aggregate value of final goods and services produced by all the firms, it will be called Production Method.
- At C, measuring the sum total of all factor payments will be called income method.

# Circular flow of income and methods of calculating National Income

- Case 1: What will happen ?

Imagine a household wants to spend more than their income to buy goods from service ( Assume they will borrow money from others)

Then think of consequence about

i) More goods have to be manufactured from the firms

ii) Income has to go to households also

# Circular flow of income and methods of calculating National Income

- Case 2: What will happen ?

Imagine the households saves the money from their income. Will it change the principal conclusion that aggregate estimate of the income ?

# The Product or Value Added Method

- In product method we calculate the aggregate annual value of goods and services produced.
- Let us imagine there are two kinds of producers in the economy.

1. Wheat producers
2. Bakers

Wheat producers sell to Bakers.

# The Product or Value Added Method

- Wheat producers (farmers) grow wheat and sell part of wheat to bakers
- Assume wheat producers grow Rs.100 and keeping Rs.50 for themselves and sold Rs.50 to bakers.
- Bakers buy Rs.50 from farmers and produce bread worth of Rs. 200.
- If we compute total economy using aggregate value of production from the sectors
- Rs.100 + Rs.200 = Rs. 300 ( which is not correct because Rs.50 is added twice by the farmer and bakers).
- Hence we have to subtract Rs.50 that is common in both then it become
- Rs.100 + Rs. 150( Wheat value is deducted) = Rs. 250

# The Product or Value Added Method

Table 2.1: **Production, Intermediate Goods and Value Added**

| | *Farmer* | *Baker* |
|---|---|---|
| Total production | 100 | 200 |
| Intermediate goods used | 0 | 50 |
| Value added | 100 | 200 – 50 =150 |

# The Product or Value Added Method

- If we assume farmers use fertilisers or pesticides to produce wheat.
- The value of these inputs have to be subtracted from the output  of wheat.
- We also studied concept of depreciation, which is also known as consumption of fixed capital.
- If we include depreciation in value added then the measure of value added that we obtain is called Gross Value Added.
- If we deduct the value of depreciation from gross value added we obtain Net Value Method.

# The Product or Value Added Method

- For example a firm produces Rs.100 worth of goods per year.
- Rs. 20 is the value of intermediate goods used by it during the year and Rs. 10 is the value of capital consumption.
- The gross value added of the firm will be Rs.100 – Rs. 20 = Rs.80 per year.
- The net value added will be Rs.100 – Rs.20 – Rs.10 = Rs. 70 per year.

# The Product or Value Added Method

- In economics, the stock of unsold finished goods or semi-finished goods or raw materials which a firm carries from one year to the next is called inventory.
- Inventory is a stock variable.
- Change of inventories of a firm during a year = Production of the firm during the year – Sale of the firm during the year

# The Product or Value Added Method

- For example that a firm has unsold stock worth of Rs.100 at the beginning of a year.
- During the year it had produced Rs.1000 worth of goods and managed to sell Rs.800 worth of goods.
- Therefore the change in inventories is

200 + 100 = Rs.300

Chang of inventories takes place over a period of time. Therefore it is a flow variable

# The Product or Value Added Method

- Inventories are treated as capital.
- Addition to the stock of capital of a firm is known as investment. Eg., Machines, factory buildings, business investment, housing facilities etc.,
- Change in inventories may be planned or unplanned. In case of an unexpected fall in sales, the firm will have unsold stock of goods which it had not anticipated.
- Hence there will be unplanned accumulation of inventories.
- In the opposite case where there is unexpected rise in the sales there will be unplanned documentation of inventories.

# The Product or Value Added Method

Example :

Raymond company manufactures shirts. It starts the year with an inventory of 100 shirts. During the coming year it expects to sell 1000 shirts. Hence it produces 1000 shirts.

However during the next year , they could able to sell about 600 shirts. Hence 400 shirts are unsold.

The firm ends up with 500 shirts is an example of unplanned accumulation of inventories.

On other hand , if they could able to sell 1050 shirts, the firm will have only 50 shirts in the inventory. This 50 unexpected reduction in inventories is an example of unexpected decummulation of inventories.

# The Product or Value Added Method

- Taking cognizance of change of inventories we may write

Gross value added of firm i(GVAi) = Gross value of the output produced by the firm i(Qi) - Value of intermediate goods used by the firm (Zi)

# The Product or Value Added Method

- GV Ai = Value of sales by the firm (Vi) + Value of change in inventories (Ai) – Value of intermediate goods used by the firm (Zi)

- The above simple inference is derived by using – Change in inventories of a firm during the year = Production of the firm during the year – Sale of the firm during the year

# The Product or Value Added Method

- Net value added of the firm i = GVAi – Depreciation of the firm i (Di)

Where GVAi is Gross value added of firm

# The Product or Value Added Method

- If we sum the gross value added of all the firms of the economy in a year, we get a measure of the value of aggregate amount of goods and services produced by the economy in a year.
- Such an estimate is called Gross Domestic Product (GDP).
- GDP = Sum total of gross value added of all the firms in the economy

# The Product or Value Added Method

- If there are N firms in the economy, each assigned with a serial number from 1 to N, then we can have

# The Product or Value Added Method

$$\equiv GVA_1 + GVA_2 + ..... + GVA_N$$

Therefore

$$\text{GDP} \equiv \sum_{i=1}^{N} GVA_i$$

# Expenditure Method

- An alternative way to calculate the GDP is by looking at the demand side of the products.
- This method is referred to as the expenditure method.
- Here we compute the value of the output in the economy by expenditure made by them.

# Expenditure Method

- In the case of case of Baker example, Rs. 50 worth of wheat which the bakers buy from the farmers counts as intermediate goods, hence it does not fall under the category of final expenditure.
- Therefore the aggregate value of output of the economy is Rs. 200 (final expenditure received by the baker) + Rs. 50 (final expenditure received by the farmer) = Rs. 250 Per Year.

# Expenditure Method

- Firm i can make the final expenditure on the following accounts
- (a) the final consumption expenditure on the goods and services produced by the firm Ci
- (b) the final investment expenditure Ii
- (c) the expenditure that the government makes on the final goods and services produced by firm Gi
- (d) the export revenues that firm I earns by selling its goods and services abroad Xi

# Expenditure Method

- Thus the sum total of the revenues that the firm I earns is given by
- RVi = Sum total of final consumption, investment, government and exports expenditures received by the firm I
- Rvi = Ci + Ii + Gi + Xi

# Income Method

- As you already know, the sum of final expenditures in the economy must be equal to the incomes received by all the factors of production taken together ( final expenditure is the be  spending on final goods, it does not include spending on intermediate goods).
- The idea is revenues earned by all the firms put together must be distributed among the factors of production as salaries, wages, profits, interest earnings and rents.

# Income Method

- Let there be *M number of households in the economy. Let Wi be the wages and*

  salaries received by the *i-th household in a particular year. Similarly, Pi, Ini, Ri*

  be the gross profits, interest payments and rents received by the *i-th household*

  in a particular year.

# Income Method (GDP Computation)

$$GDP \equiv \sum_{i=1}^{M} W_i + \sum_{i=1}^{M} P_i + \sum_{i=1}^{M} In_i + \sum_{i=1}^{M} R_i \equiv W + P + In + R$$

$$\text{Here, } \sum_{i=1}^{M} W_i \equiv W, \sum_{i=1}^{M} P_i \equiv P, \sum_{i=1}^{M} In_i \equiv In, \sum_{i=1}^{M} R_i \equiv R.$$

# Income Method (GDP Computation)

$$GDP \equiv \sum_{i=1}^{N} GV A_i \equiv C + I + G + X - M \equiv W + P + In + R$$

# GDP ( in all three methods)

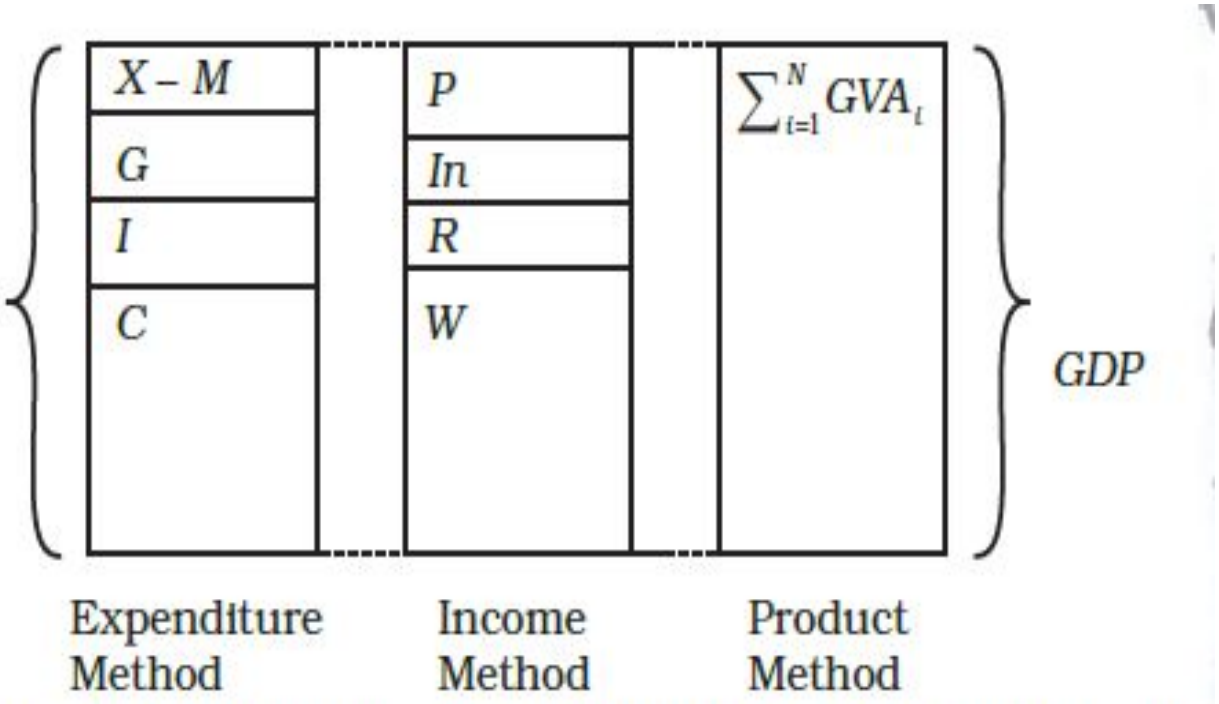



*Fig. 2.2: Diagramtic Representation of GDP by the Three Methods*

# Example

Example : There are two firms, A and B. Suppose A uses no raw material and produces cotton worth Rs.50. A sells its cotton to firm B, who uses it to produce cloth. B sells the cloth produced to consumers for Rs. 200.

Calculate GDP.

i)Production or the value added method

A = 50 – 0 = 50

B = 200 – 50 = 150

GDP = 50 + 150 = 200

# Example

Table 2.2: Distributions of GDPs for firms A and B

| | Firm A | Firm B |
|---|---|---|
| Sales | 50 | 200 |
| Intermediate consumption | 0 | 50 |
| Value added | 50 | 150 |

# Example

GDP using expenditure method

We know GDP = Sum of final expenditure or expenditures on goods and services for end use.

Here final expenditure is expenditure by consumers on cloth. Therefore GDP =200

# Example

GDP in the phase of distribution or Income method. Let us look firm A and Firm B.

Assume firm A gives Rs.20 to the workers as wages and keeps the remaining 30 as its profits.

Similarly B gives 60 as wages and keeps 90 as profits.

# Example

Table 2.3: Distributions of factor incomes of firms A and B

| | Firm A | Firm B |
|---|---|---|
| Wages | 20 | 60 |
| Profits | 30 | 90 |

# Example

- GDP in income method = sum of total factor incomes, which is equal to total wages received (workers of A and B) and total profits earned (by A and B) which is equal to 80 + 120 = Rs. 200

# Gross National Product (GNP)

- Imagine a situation people working in abroad, earns money or production owned by Indians.
- We must deduct the earnings of the foreigners who are working within our domestic economy or the payments to the factors of production owned by the foreigners.
- For example profits earned by the Korean-owned Hyundai car factory will have to subtracted from the GDP of India.

# Gross National Product (GNP)

- The macroeconomic variable which takes into account such additions and subtractions is known as Gross National Product (GNP).
- Hence
- GNP = GDP + Factors income earned by the domestic factors of production employed in the rest of the world – Factors income earned by the factors of production of the rest of the world employed in the domestic economy
- GNP = GDP + Net factor income from abroad

# Gross National Product (GNP)

- We have already noted that a part of the capital gets consumed during the year due to wear and tear. This wear and tear is called depreciation.
- If we deduct from GNP the measure of aggregate income that we obtain is called Net National Product (NNP).
- Thus
- NNP = GNP - Depreciation

# Overall Summary

Table 2.4: Basic National Income Aggregates

| | | |
|---|---|---|
| 1. | **Gross Domestic Product at Market Prices ($GDP_{MP}$)** | • GDP is the market value of all final goods and services produced within a domestic territory of a country measured in a year.<br>• All production done by the national residents or the non-residents in a country gets included, regardless of whether that production is owned by a local company or a foreign entity.<br>• Everything is valued at market prices.<br>$GDP_{MP} = C + I + G + X - M$ |
| 2. | **GDP at Factor Cost ($GDP_{FC}$)** | • GDP at factor cost is gross domestic product at market prices, less net product taxes.<br>• Market prices are the prices as paid by the consumers Market prices also include product taxes and subsides. The term factor cost refers to the prices of products as received by the producers. Thus, factor cost is equal to market prices, minus net indirect taxes. GDP at factor cost measures money value of output produced by the firms within the domestic boundaries of a country in a year.<br>$GDP_{FC} = GDP_{MP} - NIT$ |
| 3. | **Net Domestic Product at Market Prices ($NDP_{MP}$)** | • This measure allows policy-makers to estimate how much the country has to spend just to maintain their current GDP. If the country is not able to replace the capital stock lost through depreciation, then GDP will fall.<br>$NDP_{MP} = GDP_{MP} - Dep.$ |
| 4. | **NDP at Factor Cost ($NDP_{FC}$)** | • NDP at factor cost is the income earned by the factors in the form of wages, profits, rent, interest, etc., within the domestic territory of a country.<br>$NDP_{FC} = NDP_{MP} - Net\ Product\ Taxes - Net\ Production\ Taxes$ |

# Overall Summary

| | | |
|---|---|---|
| 5. | **Gross National Product at Market Prices ($GNP_{MP}$)** | • $GNP_{MP}$ is the value of all the final goods and services that are produced by the normal residents of India and is measured at the market prices, in a year.<br>• GNP refers to all the economic output produced by a nation's normal residents, whether they are located within the national boundary or abroad.<br>• Everything is valued at the market prices.<br>$GNP_{MP} = GDP_{MP} + NFIA$ |
| 6. | **GNP at Factor Cost ($GNP_{FC}$)** | • GNP at factor cost measures value of output received by the factors of production belonging to a country in a year.<br>$GNP_{FC} = GNP_{MP}$ - Net Product Taxes - Net Production Taxes |
| 7. | **Net National Product at Market Prices ($NNP_{MP}$)** | • This is a measure of how much a country can consume in a given period of time. NNP measures output regardless of where that production has taken place (in domestic territory or abroad).<br>$NNP_{MP} = GNP_{MP} - Depreciation$<br>$NNP_{MP} = NDP_{MP} + NFIA$ |
| 8. | **NNP at Factor Cost ($NNP_{FC}$)**<br>**Or**<br>**National Income (NI)** | • NNP at factor cost is the sum of income earned by all factors in the production in the form of wages, profits, rent and interest, etc., belonging to a country during a year.<br>• It is the National Product and is not bound by production in the national boundaries. It is the net domestic factor income added with the net factor income from abroad.<br>$NI = NNP_{MP}$ – Net Product Taxes - Net Production Taxes<br>$= NDP_{FC} + NFIA = NNP_{FC}$ |
| 9. | **GVA at Market Prices** | • GDP at market prices |
| 10. | **GVA at basic prices** | • $GVA_{MP}$ - Net Product Taxes |
| 11. | **GVA at factor cost** | • GVA at basic prices - Net Production Taxes |

THANK YOU