

DETERMINATION OF NATIONAL

INCOME

- The two broad topics covered in this chapters are:

1. NATIONAL INCOME ACCOUNTING

- Definition.
- Importance.
- Methods
- Types of goods
- GDP – NDP
- Types of incomes
- Methods to calculate NATIONAL INCOME

2. THE KEYNESIAN THEORY OF DETERMINATION OF NATIONAL INCOME

- Circular flow in a simple two - sector model
- Propensity to consume
- The investment multiplier
- Three sector economy
- Four sector model

Introduction and Definition of NATIONAL INCOME

National income is defined as the **Net** value of **all economic goods** and services produced within the **domestic territory** of a country and Net factor income from abroad (NFIA) in an **accounting**

NET VALUE

Here NET means net of **depreciation**.

ALL ECONOMIC GOODS

All economic goods refer to all **FINAL** goods. Final goods can be termed as all **finished goods**.

DOMESTIC TERRITORY

Domestic territory can be understood by **political and geographical** boundaries within the country.

ACCOUNTING YEAR

Just like in the case of **P&L account, Cash flow**. But Balance sheet is prepared as on or till date.

NORMAL RESIDENT

- Normal residents are those persons who are ordinarily resides in a country in which they live and whose economic interest lies in that country

USES AND SIGNIFICANCE OF NATIONAL INCOME

The major points discussing the need to calculate National Income:

To evaluate the **short term performance** of a country. It will indicate the economic development as well as demand for goods and services

To find the inequality (if any) in the economy and also **Distribution Pattern** of demands.

To calculate **Per capita Income**.
$$\text{Per capita Income} = \frac{\text{Total National income}}{\text{Total Population}}$$

Composition and structure of national income in terms of **different sectors**.

National income also provides **quantitative statistics for macroeconomics**.

Structural statistics such as **Ratios** of investment, taxes or government expenditure to GDP.

International comparisons are needed to evaluate a nation's growth and the room for improvement. It can be also used to **lend money**

National income gives the variable to forecast and to make **projection of business modules**.

SNA

UN (United Nations) formed an organization **System of National Accounting** (SNA) to provide a comprehensive conceptual and accounting framework for complying and reporting macroeconomics statistics for calculating National Income.

It gives the rules to calculate NI just like ICAI gives us standards and rules to maintain books of accounts.

CSO

Central Statistical organization is the body which calculates all kind of GDPs, NNPs and other factors of **INDIA**

Definition Gross Domestic Product (GDP MP)

- It is a measure of all final economic goods and services during a given period of time in market value
- GDP includes Depreciation.
- Within the domestic territory of a country
- Sum total of value added by all producing units.
- Excludes:-
 - Transfer payments
 - Illegal transaction
 - Gifts
 - Gambling etc.

DIFFERENCE BETWEEN NON ECONOMIC AND ECONOMIC ACTIVITIES

- It produces goods and services but don't command any market value (Hobbies, child rearing Facebook)
- Non-economic activities does not includes in national income
- Can be illegal activities.

1. All human activities which create goods and service.
2. It includes in national income.
3. Cannot be illegal activities.

Nominal GDP = GDP MP

GDP taken into consideration with market price

RealGDP = GDP constant price

GDP taken into consideration with constant price of a chosen base year.

The GDP will change according to the change in the average price level.

The real GDP changes only when production changes.

This misleading because it does not reflect the changes in the actual volume of output.

This reflects true and fair view of GDP.

GROSS NATIONAL PRODUCT (GNP)

$GNP_{MP} = GDP_{MP} + \text{Net Factor Income from Abroad}$

$GDP_{MP} = GNP_{MP} - \text{Net Factor Income from Abroad}$

NET DOMESTIC PRODUCT AT MARKET PRICES (NDP MP)

- $NDP_{MP} = GDP_{MP} - \text{Depreciation}$
- $NDP_{MP} = NNP_{MP} - \text{Net Factor Income from Abroad}$

NET NATIONAL PRODUCT AT MARKET PRICES (NNP_{MP})

4. $NNP_{MP} = GNP_{MP} - \text{Depreciation}$
5. $NNP_{MP} = NDP_{MP} + \text{Net factor Income from Abroad}$
6. $NNP_{MP} = GDP_{MP} + \text{Net factor Income from Abroad} - \text{Depreciation}$

Market price = Factor cost + Net indirect taxes
= Factor cost + net indirect taxes – Subsidies

Factor cost = Market price – Net indirect taxes
= Market price – Net indirect taxes + subsidies

Gross domestic product at factor cost (GDPFC)

= GDP_{MP} – Indirect taxes + subsidies
= compensation of employees
+ Operating surplus (rent + interest + profit)
+ Mixed income of self – employed
+ Depreciation

So, $GDPFC - \text{Depreciation} = NDPFC$

$NDPFC + NFIA = NNPFC$

$NNPFC = \text{National Income}$

PER CAPITA INCOME

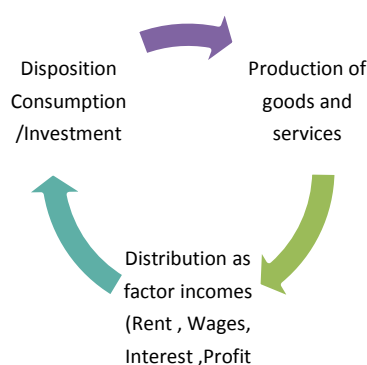
- GDP per capita is a measure of country's economic output per person.
- It is obtained by GDP adjusted by inflation and then divided by total population
- It reflects the standard of living of a country.

PERSONAL INCOME

- Income received by the household including non – profit serving household.
- Actual current income receipts of persons from all sources (may not be from productive activities)
- Examples
 - Pensions
 - Gifts
- Not included in NI

DISPOSABLE PERSONAL INCOME

- It is a measure of amount of the money in the hands of the individual available for their savings or use.
- It is derived from personal income by subtracting the taxes and other compulsory payments made to the government.



Households>>> (factor of production)>>>firms>>> (salary and wages)>>>Households>>> (buy goods and services)>>>firms.

This process is always continuing and the flow of income is circular in motion.

It is a simple two- sector model, assuming no government banks or foreign trade

Methods for calculating national calculation

Three methods of calculating national income

VALUE ADDED METHOD/PRODUCT METHOD/INDUSTRIAL ORIGIN METHOD/NET OUTPUT METHOD

National Income by value added method is the sum total of **NVA FC**.

So, there are 3 sectors of economy:

- Primary sector
- Secondary sector

Tertiary sector/service sector

Gross value added (GVA MP)

= Value of output – Intermediate Consumption
= (Sales + change in stock) – Intermediate consumption

GVA MP – Depreciation = Net value added (NVA MP)

NVA MP – Net indirect taxes = Net domestic product (NVA FC)

Net domestic product (NVA FC) + NFIA = NNPFC/National Income

Items should be included in this method are:-

- a) Own account production of fixed assets by government, enterprises and households.
- b) Production for self – consumption
- c) Imputed rent of owner occupied houses.

INCOME METHOD/FACTOR PAYMENT METHOD/DISTRIBUTED SHARE METHOD

- Production is carried out by the combined effort of all factors of production.
- Factors are paid factor incomes for the **services rendered**.
- It is calculated by summation of factor incomes paid out by all production units like **wages (in kind or cash), salaries, rent, interest and profits**.
- It includes payments to both **residents and**

NDP FC

= compensation of employees + operating surplus (rent + interest + profit) + Mixed income of self-employed

NNP FC/National Income

= compensation of employees + operating surplus (rent + interest + profit) + Mixed income of self-employed + **NFIA**

EXPENDITURE METHOD/INCOME DISPOSAL APPROACH

The sum total of final expenditure (GDP MP)

1. **Private final consumption expenditure**
2. **Government final consumption expenditure**
3. **Gross domestic capital formation:-**
 - **Gross fixed capital formation**
 - **Inventory investment (Closing – Opening)**
4. **Net exports (Exports – Imports)**

$GDP MP + NFIA = GNP MP$

$GNP MP - Indirect taxes = GNP FC$

$GNP FC - Depreciation = NNP FC$

Therefore, $NNP FC = National Income$

LIMITATIONS AND CHALLENGES OF NATIONAL INCOME COMPUTATION

CONCEPTUAL DIFFICULTIES:

1. **Lack of an agreed definition of national income.**
2. **Distinction between Final and Intermediate goods.**
3. **Issue of transfer payments.**
4. **Services of durable goods.**
5. **Incorporating distribution of income.**
6. **New good at constant price.**

7. Others:-

- **Inadequacy of data.**
- **Non – monetized sector.**
- **No records of income (illiteracy and ignorance)**
- **Lack of occupational classification.**
- **Consumption of fixed capital.**

THE KEYNESIAN THEORY OF DETERMINATION OF NATIONAL INCOME

↓

**The 2 sector model with
Investment AND
INVESTMENT MULTIPLIER**

↓

**Three sector
model
(Government)**

↓

**Four sector model
(Net Exports)**

Equilibrium output:-

An economy can be said to be in equilibrium when the **production** plans of the firms and the **expenditure** plans of the households **match**.

AVERAGE PROPENSITY TO CONSUME [APC] = C / Y

| Income(y) | Consumption (C) | APC (C/Y) |
|-----------|-----------------|-----------|
| 0 | 40 | - |
| 100 | 120 | 1.2 |
| 200 | 200 | 1 |
| 300 | 280 | 0.93 |
| 400 | 360 | 0.90 |

MARGINAL PROPENSITY TO CONSUME [MPC] = $\Delta C / \Delta Y$

| Income(y) | Consumption (C) | ΔC | ΔY | MPC ($\Delta C / \Delta Y$) |
|-----------|-----------------|------------|------------|-------------------------------|
| 0 | 40 | - | - | - |
| 100 | 120 | 80 | 100 | 0.80 |
| 200 | 200 | 80 | 100 | 0.80 |
| 300 | 280 | 80 | 100 | 0.80 |
| 400 | 360 | 80 | 100 | 0.80 |

AGGREGATE SUPPLY (AS)

The money value of goods and services that all the produces are willing to supply in an economy in the given period of time.

Aggregate supply (AS) = National Income (Y)

$AS = Y = C + S$

| Income(y) | Cons. (C) | Savings | AS |
|-----------|-----------|---------|-----|
| 0 | 40 | -40 | 0 |
| 100 | 120 | -20 | 100 |
| 200 | 200 | 0 | 200 |
| 300 | 280 | 20 | 300 |
| 400 | 360 | 40 | 400 |

DIS
SAVINGS

$Y = C$ [Breakeven point (no savings)]

INVESTMENT MULTIPLIER

It is believed that on initial increment in investment leads to greater increase in income. Multiplier expresses the relationship between increases in investment due to increase in income.

Multiplier (k) = $\frac{\text{change in income}}{\text{Change in investment}}$

$$= \frac{\Delta Y}{\Delta I}$$

Consumption function and saving functions

$Y = C + S$ ($S = I$, Assuming economy is in equilibrium)

$Y = C + I$

- $\Delta Y / \Delta Y = \Delta C / \Delta Y + \Delta I / \Delta Y$
- $= 1 = MPC + 1/K$
- OR, $1/K = 1 - MPC$
- $= K = 1 / (1 - MPC)$
- OR, $K = 1 / MPS$

On the contrary, higher the MPS, lower will be the value of multiplier and vice-versa. The maximum value of multiplier in infinity when the value of MPC is 1 i.e. the economy decides to consumes the whole of its additional income. We conclude that the value of the multiplier is the reciprocal of MPS.

INCOME LEAKAGES ON MULTIPLIER

Income that is not spent on currently produced consumption goods and services may be regarded as having leakage out of income stream. If the increased income goes out of the cycle of consumption expenditure, there is a leakage from income stream which reduces the effect of multiplier.

Reasons:-

- Progressive rates of taxation.
- Idle savings.
- Existing stocks or imports.
- Government securities.
- Undistributed profits.
- Inflation.
- Scarcity of goods and services despite having high MPC

DETERMINATION OF EQUILIBRIUM INCOME: THREE SECTOR MODEL

The three-sector, three-market circular flow model which accounts for government intervention highlights the role played by the government sector. The government sector adds the following key flows to the model:

- i) Taxes on households and business sector to fund government purchases
- ii) Transfer payments to household sector and subsidy payments to the business sector
- iii) Government purchases goods and services from business sector and factors of production from household sector, and
- iv) Government borrowing in financial markets to finance the deficits occurring when taxes fall short of government purchases.

DETERMINATION OF EQUILIBRIUM INCOME: FOUR SECTOR MODEL

The four sector model includes all four macroeconomic sectors:

1. The household sector,
2. The business sector
3. The government sector
4. The foreign sector

$$Y = C + I + G + (X - M) \quad (\text{Net exports})$$

IMPORTS AFFECT ON INVESTMENT MULTIPLIER:

The more open an economy is to foreign trade, (the higher v is) the smaller will be the response of income to aggregate demand shocks, such as:

1. Changes in government spending
2. Autonomous changes in investment demand
3. Additional leakage from the circular flow of (domestic) income