Ch 6 : Determination of National Income

Unit 1: National Income Accounting

What is National Income Accounting?

- National Income Accounting is the system of macro-economic accounts that tracks the production, distribution, and final consumption of goods and services within a country's borders.

- National Accounts help us to understand how the various transactions from the stage of production of goods and services to the stage of their final disposal are interrelated and give us an idea of the working of an economy.

- National Income Accounting was pioneered by Nobel prize-winning economists Simon Kuznets and Richard Stone.

What is National Income Accounting?

- The Central Statistical Organisation (CSO) in the Ministry of Statistics and Programme Implementation (MoSP&I) is responsible for the compilation of National accounts statistics.

- At the State level, State Directorates of Economics and Statistics (DESs) have the responsibility of compiling their State Domestic Product and other aggregates.

Usefulness and Significance of National Income Estimates

- Forecasting demand
- Understanding Economic Composition
- Basis for Economic Policies
- Macroeconomic Modeling and Analysis
- Income Distribution and Inequality
- International Comparisons:
- Policy Making for Growth and Inflation

Different Concepts of National Income

GDP (Gross Domestic Product) – Nominal GDP

- Gross domestic product (GDP) is the value of all final goods and services produced in the country within a given period.

- It includes the value of goods produced, such as houses and mobiles, and the value of services, such as telecom, health, insurance.

- The output of each of these is valued at its market price, and the values are added together to get GDP_{MP}.

For Example:

- Nominal GDP at current market price in (Q1 2022-2023)- Rs 64.95 lakh crores
- Nominal GDP at current market price in (Q1 2021-2022)- Rs 51.27 lakh crores

Real GDP

Nominal GDP increases over time for two reasons:

1. The production of most of goods increases over time
2. The prices of most goods also increase over time.

If our goal is to measure production and its change over time, we need to eliminate the effect of increasing prices on our measure of GDP. That's why real GDP is constructed as the sum of the quantities of final goods times **constant price** (rather than current prices)

For example: Real GDP or Gross Domestic Product (GDP) at Constant (2011-12) Prices:

Real GDP - Q1 2022-23 = ₹ 36.85 lakh crore
Real GDP - Q1 2021-22 = ₹ 32.46 lakh crore
Growth: 13.5 %

Nominal GDP - Rs 64.95 lakh crores
Nominal GDP - Rs 51.27 lakh crores
Growth: 26.7%

GDP Deflator

- The GDP deflator is a measure of inflation calculated by comparing the nominal GDP to the real GDP of a given year.

- Formula:

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

- The GDP deflator helps to remove the effects of inflation from GDP, giving us a more accurate measure of economic growth.

- The GDP deflator measures how much prices have changed since the base year. In the base year, the GDP deflator is always 100 because nominal GDP and real GDP are the same.

- For other years, the GDP deflator tells us how much prices have gone up or down compared to the base year.

- A deflator above 100 is an indication of price levels being higher as compared to the base year.

- If the GDP deflator is greater than 100, then nominal GDP is greater than real GDP.

- If the GDP deflator next year is less than the GDP deflator this year, then the price level has fallen; if it is greater, price levels have increased.

Inflation Calculation:

- Inflation Rate in Year 2= $\frac{\text{(GDP deflator in year 2- GDP deflator in year 1)}}{\text{(GDP deflator in year 1)}} \times 100$

For example, if the GDP deflator in 2023 is 167.94 and in 2022 it was 154.87:

$$\text{Inflation Rate in 2023} = \frac{(167.94 - 154.87)}{154.87} \times 100$$

$$= 8.439\%$$

Net Domestic Product (NDP)

Net Domestic Product (NDP) is a measure that takes into account the depreciation of capital while calculating the total value of goods and services produced within a country over a specific period.

Formula:

NDP = GDP−Depreciation

- NDP subtracts the value of this depreciation from GDP to give a more accurate measure of the net production within a country.
- Other considerations such as asset obsolescence and complete destruction are also taken into account by the NDP.
- Net vs. Gross: The difference between "gross" and "net" is depreciation or the consumption of fixed capital.

Gross National Product

GNP is the total value of all final goods and services produced by a country's residents, both domestically and abroad, during a specific time period.

Difference between GDP and GNP:

- GDP measures the total value of goods and services produced within a country's borders, regardless of who produces them.
- GNP includes the income earned by a country's residents from their investments and work abroad, while excluding the income earned by foreign residents within the country.

Example: If Apple earns profits from its manufacturing operations in India, these profits are included in India's GDP but are part of the USA's GNP because Apple is a U.S. company.

Formula to Calculate GNP at Market Price:

$GNP_{MP} = GDP_{MP}$ + Net Factor Income from Abroad (NFIA)

- NFIA is the difference between the aggregate amount that a country's citizens and companies earn abroad, and the aggregate amount that foreign citizens and overseas companies earn in that country.

- If Net Factor Income from Abroad is positive, then GNP_{MP} would be greater than GDP_{MP}

- You might have noticed that the distinction between 'national' and 'domestic' is net factor income from abroad.

National = Domestic + NFIA

Net National Product

Net National Product at Market Prices (NNP_{MP}) is a measure of the market value of all final economic goods and services, produced by normal residents including Net Factor Income from Abroad during an accounting year excluding depreciation.

NNP_{MP} = GDP_{MP} + Net Factor Income from Abroad – Depreciation

NNP_{MP} = GNP_{MP} – Depreciation

NNP_{MP} = NDP_{MP} + Net Factor Income from Abroad

Gross Domestic Product at Factor Cost (GDP FC)

- Factor cost refers to the total cost of factors of production used in the production process. Factors of production include labor, capital, land, and entrepreneurship.
- Factor cost include: Wages and salaries, rent, interest, etc.
- Market Price = Factor Cost + Net Indirect Taxes
- Factor Cost = Market Price - Net Indirect Taxes
- Gross domestic product (GDP) at factor cost is GDP at market prices minus net indirect taxes. $GDP_{FC} = GDP_{MP}$- Net Indirect Taxes
- The basis of distinction between market price and factor cost is net indirect taxes (i.e., Indirect taxes - Subsidies).

Factor Cost Vs. Basic Price Vs. Market Price

- Basic price = Factor cost + Production taxes – Production subsidy
- Market Price = Basic Price + Product tax – Product Subsidy
- GDP at Basic Price excludes any taxes on products the producer receives from the purchaser and passes on to the government (Eg: GST or Sales Tax or Services Tax) but includes any subsidies the producer receives from the government and uses to lower the prices charged to purchasers.
- In simple terms, the basic price is the subsidized price without tax.

Net Domestic Product at Factor Cost (NDP FC)

- Net Domestic Product at Factor Cost (NDPFC)is the sum of domestic factor incomes or domestic income net of depreciation.

- NDPFC = GDP FC – Depreciation

  or,

- NDPFC = NDP MP – Net Indirect Taxes

Net National Product at Factor Cost (NNP FC) or National Income

- NNPFC = FID (factor income earned in domestic territory) + NFIA.
- National income is the value of factor income generated within the country plus factor income from abroad in an accounting year.
- If NFIA is positive, then national income will be greater than domestic factor incomes.

Per Capita Income

- The GDP per capita is a measure of a country's economic output per person.
- It is obtained by dividing the country’s gross domestic product, adjusted by inflation, by the total population.
- It serves as an indicator of the standard of living of a country.

Personal Income

While national income is income earned by factors of production, Personal Income is the income received by the household sector including Non-Profit Institutions Serving Households.

Personal Income = NI + Income Received but Not Earned – Income Earned but Not Received

Income Received But Not Earned

- Transfer payments such as social security benefits, unemployment compensation, welfare payments, etc.

Income Earned But Not Received

- Undistributed corporate profits, contribution of employers to social security, retained earnings, indirect business taxes, corporate income taxes and contributions towards social security.

Net Interest Payment By Households

- Households receive interest payments from the firms and governments; they also make interest payments to firms and governments.
- As such, the net interest paid by households to firms and government is also deducted from national income.

- PI = NI + income received but not earned – income earned but not received.
- PI = NI +Transfer Payments to the households from firms and government- Undistributed profits - Corporate Tax – Net interest payments made by households
- An important point to remember is that national income is not the sum of personal incomes because personal income includes transfer payments (eg. pension) which are excluded from national income.
- Further, not all national income accrues to individuals as their personal income.

Disposable Personal Income

Disposable personal income is a measure of the amount of the money in the hands of the individuals that is available for their consumption or savings.

Disposable personal income is derived from personal income by subtracting the direct taxes paid by individuals and other compulsory payments made to the government.

DI = PI - Personal Income Taxes – Non tax payments

1. Net National Disposable Income (NNDI)

- NNDI = Net National Income + other net current transfers from the rest of the world (Receipts less payments)
- NNDI = NNI + net taxes on income and wealth receivable from abroad + net social contributions and benefits receivable from abroad.

2. Gross National Disposable Income (GNDI)

GNDI = NNDI + CFC

GNDI = GNI + other net current transfers from the rest of the world (Receipts less payments)

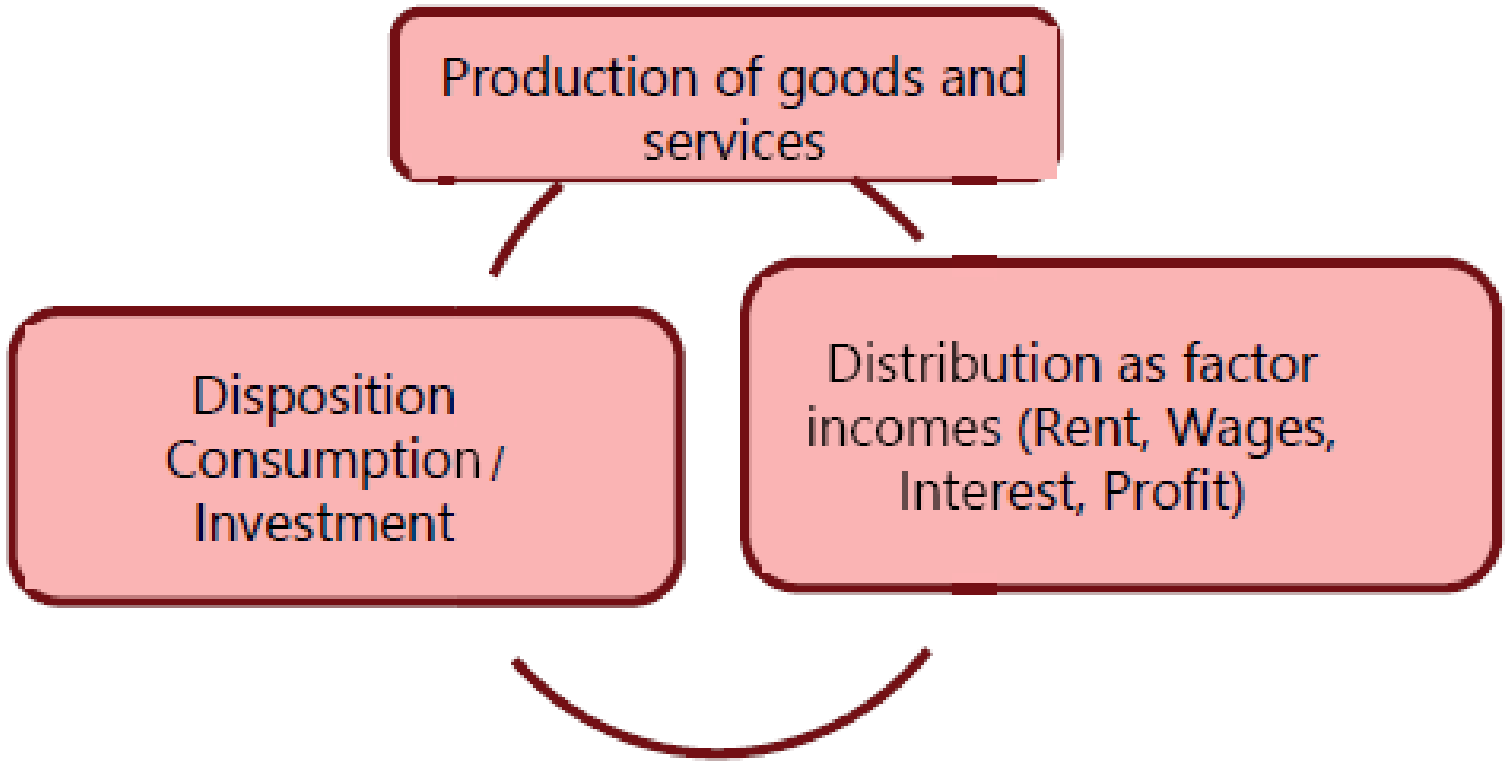
Private Income

- Private income is a measure of the income (both factor income and transfer income) which accrues to private sector from all sources within and outside the country.

- Private Income = Factor income from net domestic product accruing to the private sector
  + Net factor income from abroad
  + National debt interest
  + Current transfers from government
  + Other net transfers from the rest of the world.

Measurement of National Income in India

The Circular Flow of Income



The circular flow of income keep going on simultaneously and enable us to look at national income from three different angles namely:

1. as a flow of production or value added
2. as a flow of income and
3. as a flow of expenditure.

Corresponding to the three phases, there are three methods of measuring national income. They are:

1. Value Added Method (alternatively known as Product Method);
2. Income Method; and
3. Expenditure Method

Method	Data required	What is measured
Phase of Output: Value added method (Product Method)	The sum of net values added by all the producing enterprises of the country	Contribution of production units
Phase of income: Income Method	Total factor incomes generated in the production of goods and services	Relative contribution of factor owners
Phase of disposition: Expenditure method	Sum of expenditures of the three spending units in the economy, namely, government, consumer households, and producing enterprises	Flow of consumption and investment expenditures

Value Added Method (Product Method)

- National income by value added method is the total sum of net value added at factor cost across all producing units of the economy.
- The value added method measures the contribution of each producing enterprise within the country's domestic territory for a specific accounting year.
- It involves consolidating the production of each industry after subtracting intermediate purchases from all other industries.
- This method of measurement reveals the unduplicated contribution of each industry to the total output of the economy.

Steps Involved in Value Added Method

Step 1: Identifying the producing enterprises and classifying them into different sectors according to the nature of their activities

- All the producing enterprises are broadly classified into three main sectors namely:
- (i) Primary sector,
- (ii) Secondary sector, and
- (iii) Tertiary sector or service sector

- These sectors are further divided into sub-sectors and each sub-sector is further divided into commodity group or service-group.

Steps Involved in Value Added Method

Step 2. Estimating the gross value added (GVA_{MP}) by each producing enterprise (This is the same as GDP_{MP})

- Gross value added (GVA_{MP}) = Value of output – Intermediate consumption
  = (Sales + change in stock) – Intermediate consumption

- Note that imports are included in the value of intermediate consumption if total purchases are given. If domestic purchases are specifically mentioned, then imports will also be added.
- Also, sales include exports, if domestic sales are separately mentioned, exports need to be added

Steps Involved in Value Added Method

Step 3 : Estimation of National income

- National Income (NNP FC) or (NVA FC) = GDP MP –Depreciation +NFIA- Net Indirect Tax

- The values of the following items are also included in National Income:

(i) Own account production of fixed assets by government, enterprises and households.

(ii) Imputed value of production of goods for self- consumption, and

(iii) Imputed rent of owner occupied houses.

(iv) Change in stock(inventory)

Income Method

- Under Factor Income Method, also called Factor Payment Method or Distributed Share Method, national income is calculated by summation of factor incomes paid out by all production units within the domestic territory of a country as wages and salaries, rent, interest, and profit.

- By definition, it includes factor payments to both residents and non-residents.

- NNP FC or National Income= Compensation of employees
  + Operating Surplus (rent + interest+ profit)
  + Mixed Income of Self- employed
  + Net Factor Income from Abroad

1. Compensation of employees (Labour income)

- Wages, salaries, bonus, dearness allowance, commission.
- Employers' contribution to provident fund.
- Imputed value of compensation in kind.

2. Operating Surplus

- Rent (actual and imputed).
- Interest on loans for productive services.
- Profit =Corporate taxes+ dividend retained (undistributed profit)+ earnings
- Profits of unincorporated enterprises and government enterprises.

- **3. Mixed Income of Self-employed:**
  - Incomes earned by individuals who provide both labor and capital services (self-employed people like lawyers, engineers, traders, proprietors, etc.).

- **4. Net Factor Income from Abroad**

(Commissions, Brokerages, Imputed value of services provided by owners of production units.)

Income Method Exclusion:

- Pensions of retired workers
- Interest paid by the government on public debt
- Interest on consumption loans
- Interest paid by one firm to another are excluded.
- Capital gains
- Windfall profits
- Transfer incomes
- Income from sale of second-hand goods and financial assets
- Payments out of past savings

Expenditure Method (Disposal Approach)

- National income is calculated as the aggregate final expenditure in an economy during an accounting year.
- GDPMP = ∑ Final Expenditure
- In this approach, we consider the demand side of the products, adding up the value of goods and services purchased by each type of final user.

Components of Expenditure Method

1. Final Consumption Expenditure
   a) Private Final Consumption Expenditure (PFCE)
   b) Government Final Consumption Expenditure

2. Gross Domestic Capital Formation

3. Net Exports

1 a. Private Final Consumption Expenditure

It includes the volume of final sales of goods and services to consumer households and non-profit institutions serving households acquired for consumption (not for use in production).

Includes:

- Goods and services purchased by consumer households.
- Primary products produced for own consumption by households.
- Payments for domestic services one household renders to another.
- Net expenditure on foreign financial assets or net foreign investment.

Excludes:

Land and residential buildings purchased or constructed by households (included in gross capital formation).

1. b. Government Final Consumption Expenditure

- It includes the money spent by the government in the production of collective services such as defence, education, healthcare, etc.

- Excludes:
  - Government expenditure on pensions, scholarships, unemployment allowance, etc. (transfer payments).

2. Gross Domestic Capital Formation

- Gross domestic fixed capital formation (Gross Investment) is the part of a country's total expenditure that is not consumed but added to the nation's fixed tangible assets and stocks.

- It consists of the acquisition of fixed assets and the accumulation of stocks (changes in stock of raw materials, fuels, finished goods, and semi-finished goods awaiting completion).

- Includes:
  - Final expenditure on machinery and equipment.
  - Own account production of machinery and equipment.
  - Expenditure on construction.
  - Expenditure on changes in inventories.
  - Expenditure on the acquisition of valuables such as jewelry and works of art.

3. Net Exports:

- Net exports are the difference between exports and imports of a country during the accounting year.
- It can be positive or negative.

How do we arrive at national income or NNPFC using the expenditure method?

GDP_{MP} = C+ GDFC + NX

NNP_{FC} = GDP_{MP} - NIT + NFIA - Depreciation

- Ideally, all the three methods of national income computation should arrive at the same figure but that does not always happen.

- Each method is subject to measurement errors, but using multiple methods allows us to check the accuracy of the others.

- By calculating total output in several different ways, we can arrive at a more accurate measure of national income.

Suitability of Different Methods:

Income Method:

- Most suitable for developed economies where people properly file their income tax returns.

Expenditure Method:

- With growing facility in estimating expenditures, an increasing proportion of national income is estimated using this method.

National Income Calculation in India

- Many countries, like India, are unable to estimate their national income using only one method.

- Different sectors use different methods:

  - **Agricultural sector** Net value added is estimated by the production method.
  - **Small-scale sector:** Net value added is estimated by the income method.
  - **Construction sector**: Net value added is estimated by the expenditure method.

The System Of Regional Accounts In India

Purpose of Regional Accounts:

- Regional accounts provide an integrated database on the numerous transactions occurring in the regional economy. They help decision-making at the regional level.

State Income Estimates:

- Practically all states and union territories of India compute state income estimates and district-level estimates.

- State Income or Net State Domestic Product (NSDP) is a measure in monetary terms of the volume of all goods and services produced in the state within a given period of time (usually a year) without duplication.

- Per Capita State Income is obtained by dividing the NSDP (State Income) by the midyear projected population of the state.

Preparation of State Level Estimates:

- State level estimates are prepared by the State Income Units of the respective State Directorates of Economics and Statistics (DESs).
- The Central Statistical Organisation assists the States in the preparation of these estimates by providing advice on conceptual and methodological problems.

Supra-Regional Sectors:

- Certain activities such as railways, communications, banking and insurance, and central government administration cut across state boundaries.
- The economic contribution of these activities cannot be directly assigned to any one state.
- These activities are known as the 'Supra-regional sectors' of the economy.
- Estimates for these supra-regional activities are compiled for the economy as a whole and allocated to the states based on relevant indicators.

GDP And Welfare

GDP measures exclude the following which are critical for the overall wellbeing of citizens.

1. Income distribution and welfare disparity
2. Quality improvements and technological innovations
3. Hidden productions (e.g., illegal activities)
4. Nonmarket production and non-economic contributors to well-being
5. Disutility of loss of leisure time
6. Economic "bads" (e.g., crime, pollution)
7. Volunteer work and unpaid services
8. Other contributors to economic welfare (e.g., fairness, gender equality)
9. Externalities (both positive and negative)
10. Distinction between production that improves welfare and production that merely prevents welfare decline

Limitations And Challenges Of National Income Computation

There are many conceptual difficulties related to measurement which are difficult to resolve, such as:

a) lack of an agreed definition of national income,

b) accurate distinction between final goods and intermediate goods,

c) issue of transfer payments,

d) services of durable goods,

e) difficulty of incorporating distribution of income,

f) valuation of a new good at constant prices, and

g) valuation of government services

Other challenges relate to:

a) Inadequacy of data and lack of reliability of available data,
b) presence of non-monetised sector,
c) production for self-consumption,
d) absence of recording of incomes due to illiteracy and ignorance,
e) lack of proper occupational classification, and
f) accurate estimation of consumption of fixed capital

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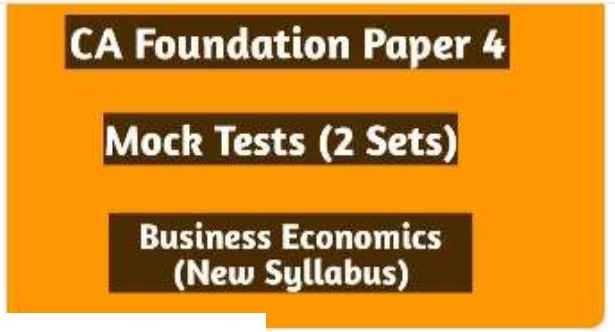

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