CHAPTER 2

NATIONAL INCOME

In this Chapter, I will learn

- MEASURES OF NATIONAL INCOME
- METHODS OF MEASURING NATIONAL INCOME
- ESTIMATES OF NATIONAL INCOME IN INDIA
- RELATED TERMS

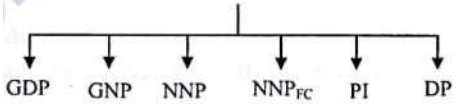
National income of a country is the total value of all final goods and services produced in the country in a particular period of time usually, one year. The growth of national income helps to know the progress of the country.

This chapter covers the measures of national income, methods of measuring the national income and estimates of the national income in India.

MEASURES OF NATIONAL INCOME

There are various measures of National income. Each of these measures the national income in a different perspective. They are similar to one another and shown in the following figure 2.1.

Fig 2.1 Measures of National Income



1. Gross Domestic Product (GDP)

Here the catch word is "domestic". It refers to the geographical area. Gross Domestic Product is the total value of all final goods and services produced within the boundary of the country during a given period of time, generally one year. Here the produce of resident citizens as well as foreign nationals who reside within that geographical boundary is considered.

GDP = Q x P

Where, Q is the total quantity of final goods and services produced in the country (both by Indians and foreigners residing within Indian boundary)

P is price of the final goods and services,

Take an example, there are 40 Crore Indians who earn ₹ 400 Crore in Indian Territory and there are 1 Crore foreigners who earn ₹ 10 Crore in Indian Territory and send the money to their respective country. At the same time there are 2 Crore Indians living abroad who earn ₹ 40 Crores and send the money to India. The GDP is only ₹ 410 Crores, because here we include the income earned in the Indian Territory i.e. ₹ 400 Crores earned by Indians and ₹ 10 Crores earned by foreigners.

2. Gross National Product (GNP)

Here the catch word is "national". It refers to all the citizens of the country. Gross National Product is the total value of the total output or production of final goods and services produced by the nationals of a country during a given period of time, generally one year. In this case, the income of all the resident and non-resident citizens of a country is included whereas the income of foreign nationals who reside within the geographical boundary of the country is excluded.

This can be calculated from the GDP.

GNP = GDP +(X-M)

Where, GDP = Gross Domestic Product

X (export) = inward remittances of a country in respect of the goods produced and services rendered (exported) by nationals of a country abroad.

M (import) = outward remittances of a country from the goods produced and services rendered by foreign nationals of the country in the domestic area.

X-M is called as Net Factor Income from Abroad (NFIA). So,

GNP = GDP + net factor income from abroad.

Take the same example cited in GDP. The ₹40 Crores earned by Indians abroad and sent/remitted to India is X (export) and ₹ 10 Crores income earned and sent/remitted by foreigners to their respective country is M (Import). So the GNP is 440 Crores.

₹ 440 Crores = ₹ 410 Crores + (₹ 40 Crores – ₹ 10 Crores)

Here the income earned by foreigners in India is excluded and income earned by Indians abroad is included. Finally, the GNP contains the income earned by Indian Nationals (both in Indian Territory and abroad) only.

3. Net National Product (NNP)

Net National Product is arrived after deducting depreciation from gross national product. Depreciation means wear and tear of goods produced. This deduction is done because a part of current produce goes to replace the depreciated parts of the products already produced. This part does not add value to current year's total produce. It is used to keep the products already produced intact. So, it is deducted.

NNP = GNP – Depreciation

Here, the Net National Product is calculated with market price. The market price includes indirect taxes and excludes subsidies that are made to produce goods and services. The market price is less than the cost by the amount of subsidies. So, subsidies are deducted to arrive at market price.

For example, the cost of production of a product is ₹ 100. If government gives a subsidy of ₹ 20, the price of product will be reduced by ₹ 20, that is ₹ 80. This is called NNP at Market Price (NNP_{MP}).

4. NNP at factor cost (NNP_{FC})

The NNP at factor cost calculates national income only on the basis of cost incurred to produce the goods and services. This cost is the payment made to the factors of production. The factors of production are land, labour, capital and entrepreneur. For this, the indirect tax is deducted from $NNP_{at\ market\ price}$. Then the subsidies given to produce goods and services are added.

$NNP_{at\ factor\ cost}$ = $NNP_{at\ market\ price}$ – Indirect taxes + subsidy

In fact, for NNP at factor cost we use the term National Income.[1]

1 Macroeconomics, theory and policy, thoroughly revised edition, H. L Ahuja, P. 26

Likewise, $GDP_{at\ factor}$ cost also can be calculated.

$GDP_{at\ factor\ cost}$ = $GDP_{at\ market\ price}$ – Indirect taxes + subsidy

5. Personal Income (PI)

Personal Income is the sum of all the income received by the entire people of the country in one year[2]. The whole national income is not available to individuals of a country. Some parts of national income are not available to individuals of the country. At the same time, some monetary payments made to them is not included in national income. So, to calculate Personal Income, parts of national income that are not available to individuals of the country is deducted from the national income. The monetary payments made to them but not included in national income are added to the national income.

Personal Income = National income + [(Transfer payments) – (Undistributed profits of corporate + Payments for social security provisions)]

Personal Income = National income + net transfer payment

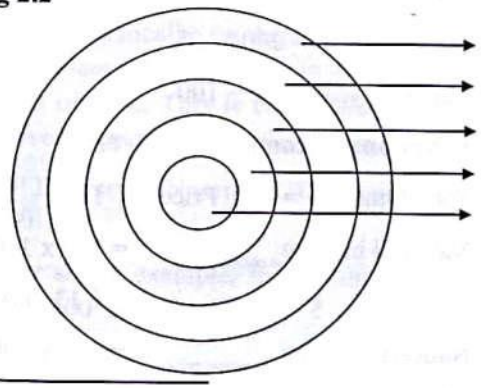
Usually the corporates do not distribute the whole profit to shareholders. A portion of profit is kept with them to meet future expenditure and expansion. This is called undistributed profits of the corporates.

Payment for social security provisions are payments made by employees towards pension and provident fund.

Transfer payments means the payments that are made not against any productive activity on the part of the receiver. The examples are old age pension, unemployment compensation, disaster

A graphical representation that shows relationship between various measures[3]

Fig 2.2



2 Macroeconomics, theory and policy, thoroughly revised edition, H. L Ahuja, P. 26

3 In the figure if net transfer payment is negative the personal income will be higher than $NNP_{at\ factor\ cost}$

relief payment, interest paid on public debt, etc.

6. Disposable Personal Income (DPI)

Disposable Personal Income means the income that is available to individuals that can be disposed (spent) at their will. All the personal income cannot be spent by individuals. They have to make direct tax payments like income tax. These have to be deducted to arrive at the Disposable Personal Income.

Disposable Personal Income = Personal Income – Direct Taxes

National Income at Constant Price and Current Price

To calculate and compare the national income of various years, the national income is calculated with reference to a particular year. That is called the base year. The price in this year is called price of base year or constant price.

The national income at constant price means the total quantity of all final goods and services produced in a particular year multiplied by the price of base year (constant price). The national income calculated by this method is called the real income.

National income$_{\text{at constant price}}$ = Total quantity of all final goods and services produced in a particular year **x** the price of base year (constant price).

National Income at current price means the total quantity of all final goods and services produced in a particular year multiplied by the price of that particular year (current price). The national income calculated by this method is called the nominal income.

National income$_{\text{at current price}}$ = Total quantity of all final goods and services produced in a particular year **x** the price of the goods and services in that particular year (current price)

For example, take 2004-05 as base year.

National income for 2008-09$_{\text{at constant price}}$ = Total quantity of all final goods and services produced in 2008-09 **x** the price of 2004-05

National Income for 2008-09 at current price = Total quantity of all final goods and services produced in 2008-09 x the price of 2008-09

The reason behind calculating National Income at constant price is to check whether the National Income has grown or not. Take the following example.

The base year = 2004 - 05

The base year price = 100

1. National income for 2007- 08

Total Quantity = 120; Price = ₹ 110

National income$_{\text{at current price}}$ = 120 x 110

= ₹ 13,200

National income$_{\text{at constant price}}$ = 120 x 100

= ₹ 12,000

2. National income for 2008-09

Total Quantity =110; Price = ₹ 130

National income$_{\text{at current price}}$ = 110 x 130

= ₹ 14,300

National income$_{\text{at current price}}$ = 110 x 100

= ₹ 11,000

The National Income for 2008-09 at current price is ₹ 14300 which is higher than the National Income for 2007-08 at current price of ₹ 13200. But National income for 2008-09 at constant price is ₹ 11000 which is less than the National Income for 2007-08 at constant price of ₹ 12000. This is because, the actual quantity produced in 2008-09 is less than that of 2007-08. It means, no real growth has taken place in 2008-09. The high income at current price is due to the increase of price in the year 2008-09.

GDP Deflator

The GDP deflator (implicit price deflator for GDP) is a measure of the level of prices of all domestically produced final goods and services in an economy in a particular period of time. This is calculated to find the overall rise in the level of price.

GDP Deflator = Nominal GDP/Real GDP x 100

In our above example, the nominal GDP is ₹ 14300 and real GDP is ₹ 11000 for 2008-09

GDP Deflator = 14300/11000 x 100 = ₹ 130

Therefore the price is 130 %. It means price rise of 30 % i.e. (130 - 100 = 30)

If the increase in price is already known, the real GDP can be calculated from nominal GDP.

Real GDP = Nominal GDP / GDP deflator.

National Income Growth

National income growth$_{\text{at current price}}$ = (National Income of this year$_{\text{at current price}}$ - National Income of previous year$_{\text{at current price}}$) / National Income of previous year$_{\text{at current price}}$ x 100.

In our example,

National income growth$_{\text{at current price}}$ for 2008 - 09 = (14300 - 13200)/13200 x 100

= 8.33 %

National income growth$_{\text{at constant price}}$ = (National Income of this year$_{\text{at constant price}}$ - National Income of previous year$_{\text{at constant price}}$) / National Income of previous year$_{\text{at constant price}}$ x 100.

In the example, National income growth at constant price for 2008-09 = (11000 - 12000)/12000 x 100 = - 8.33 %

The National Income at current price shows positive growth whereas at the same time the National Income at constant price shows negative growth.

METHODS OF MEASURING NATIONAL INCOME

Various measures of National Income described above, can be measured by

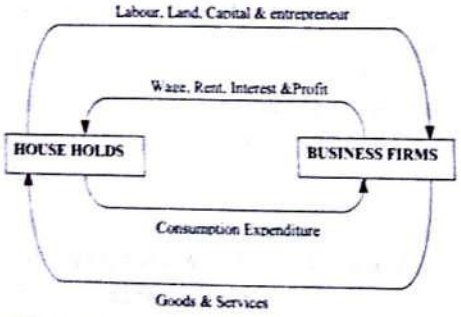
different methods. Before learning the methods, there is a need to see the flow of income between the different players who take part and contribute to the National Income.

There are four players namely, individuals or households, business firms or investors, government and foreign nationals. For the sake of simplicity, we consider only the first and second.

The diagram in the next page shows circular flow of income between households and business firms. The upper part shows the supply side of economy and the lower part shows the demand side of the economy.

In the upper part, the households supply factors of production viz., labour, land, capital and entrepreneur to business firms to produce goods and services. In return, the business firms gives wage, rent, interest and profit to labour, land, capital and entrepreneur respectively.

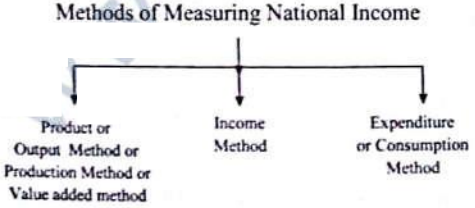
Fig 2.3 A graphical representation of flow of income



The wage, rent, interest and profit are expenditure to business firms but income to households. So, one's income is other's expenditure. Hence, it is evident that the expenditure of one player and the income of another player are equal. So, National Income can be calculated by compiling of income of all or expenditure of all. The calculation of National Income by compiling income of house hold is called **Income Method**.

The bottom of the figure shows the flow of goods and services that are produced by business firms and demanded by the people. For the flow of goods and services produced and supplied by business firm, households pay money. Here, the value of goods and services produced (price x quantity) is equal to the expenditure incurred by households on purchase of those goods and services. Both are equal. So, the National Income can be calculated by calculating the total value of all goods and services or by compiling total expenditure incurred by the people. The former is called **Product Method (or) Output Method (or) Production Method**. The latter is called the **Consumption Method (or) Expenditure Method.** This is shown in the following figure 2.4.

Fig 2.4



1. Product Method (or) Output Method (or) Production Method

In this method, the National Income is compiled by calculating the gross value of final goods and& services produced in a country in one year. "GDP is a concept of value added. It is the sum of gross value added of all resident producer units (institutional sectors, or industries) plus that part (possibly the total) of taxes, less subsidies, on products which is not included in the valuation of output. Gross value added is the difference between output and intermediate consumption."[4]

Gross Value added = Output of final goods and services – Intermediate consumption

GDP = Gross value added + Indirect taxes – Subsidy

2. Income Method

Under Income Method, the National Income is calculated by compiling income of factors of production viz., labour, land, capital and entrepreneur.

National Income = Total wage + Total rent + Total interest + Total profit.

The approach above mentioned is a Macro economical theoretical approach. In the Indian context, it is slightly different as per 1993 SNA (System of National Accounts) framework. It is total of the following.

GDP = Compensation of employees + Consumption of fixed capital + (Other taxes on Production – Subsidies on production)+ Gross operating surplus

Compensation of employees means the salaries paid in cash and kind and other benefits provided to employees engaged in production of goods and services. To put it simply it is 'wage'.

Consumption of fixed capital means wear and tear of machinery. These are replaced with new parts or machinery. It adds to income of machinery and spare parts producers. So, it is added here.

Other taxes on production minus the subsidies are the net tax on production. There is a difference between tax on products and tax on production. Tax on product includes taxes like sales tax and excise duty.

It is the tax imposed as it was produced and sold. Tax on production means, tax imposed irrespective of production like license fees and land tax.

Gross operating surplus is the balance of value added after deducting the above three components. It goes to pay rent of land and interest of capital.

3. Consumption Method (or) Expenditure Method

In Consumption Method (or) Expenditure Method, the consumption expenditure of consumers (C), consumption expenditure of investors or entrepreneur which is called investment (I), and consumption of

4 National Accounts Statistics Sources and Methods 2007 (http://mospi.nic.in/rept%20_%pubn/ft-est.asp?rept_id=nad09_2007&type=NSSO)

government (G) is added.

GDP = C + I + G

This formula can be extended as follow, as per 1993 SNA framework.

GDP = Household final consumption expenditure + Consumption expenditures incurred by general government and NPHIs + Saving + Gross capital formation

Where,

C = Household final consumption expenditure

I = Saving + Gross capital formation

G = Consumption expenditures incurred by general government and NPHIs

Household final consumption expenditure consists of expenditure of resident households on consumption of goods or services.

Consumption expenditures incurred by general government consists of expenditure on welfare scheme and others and NPHIs (Non-profit institutions serving household) are similar to expenditure incurred by non – profit organisations like NGOs.

Saving is the amount that is not spent on consumption, but saved.

Gross capital formation is the investment made on fixed assets.

Suitability of Method

No method is universally applicable. The product method is suitable to calculate income from primary (agriculture, forestry etc.) and secondary (industry, mining etc.) sectors. In these sectors, tangible products are produced. So, it is easy to count and multiply them with the price. In tertiary (service) sector, no tangible products are produced. For example, it is not possible to calculate the output from teaching profession. So, product method is difficult. Here, the income of all those engaged in teaching profession can be summed up. Hence, it is better to use product method in primary and secondary sectors and income method in tertiary sectors.

Incremental Capital Output Ratio (ICOR)

Capital output ratio (COR) is the ratio between capital and output. In formulaic form,

Capital output ratio = Capital / Output

It shows the amount of capital required to produce a product.

Incremental capital output ratio means the additional amount of capital required to produce one additional product.

ICOR = Incremental Capital / Incremental Output

It helps to calculate the amount of capital investment required to achieve a target growth rate.

Growth rate = Capital investment/ ICOR

Or

Capital investment = Growth rate x ICOR

For example, if the ICOR is 4 and targeted growth rate is 8%, the required investment is 32%.

32 = 8 x 4

This formula has been used by Harrod – Domar in their growth models.

ESTIMATES OF NATIONAL INCOME IN INDIA

The calculation of National Income dates back to pre-independence period. This is updated, modified and fine tuned to the changing time.

Before Independence

In 1868, Dadabhai Naoroji wrote a book named "Poverty and Un British Rule in India". In that book, he estimated per capita income of Indians as ₹ 20. Thereafter, following persons have also calculated the per capita income.

Findlay Shirras (1911) - ₹ 49.00

Wadia & Joshi (1913 – 14) - ₹ 44.30

For the period of 1925-29, Dr. V. K. R. V. Rao calculated per capita income of Indians as ₹ 76. He was the first person to estimate National Income scientifically with a proper method.

After Independence

National Income Committee was formed in 1949 under the chairmanship of Prof. P.C. Mahalanobis. It submitted its first report in 1951 and final report in 1954. It reported that the per capita income was ₹ 246.90 for the period of 1950 – 54.

Later, the Central Statistical Organisation (CSO) was formed. The first official estimate by CSO was in 1956 with base year 1948 – 49.Base year has been shifted six times so far i.e. 1960 – 61, 1970 – 71, 1980 – 81, 1993- 94 and 1999 – 2000 and the year 2004 - 05 is the new base year from 2005 – 2006.

RELATED TERMS

Index of Industrial Production (IIP)

It measures the growth of industrial production in India. This index classifies industries into Mining, Manufacturing and Electricity sectors and measures growth in production in each industry. In addition, use based classification of basic goods, intermediate goods and capital goods is also available. This helps in predicting GDP growth as Industry is one of the major contributor to growth. IIP is released by CSO on a Monthly basis.

Purchasing Manager's Index (PMI)

Purchasing Manager's Index predicts the level of industrial production in advance. It predicts the industrial production by tracking the following parameters: new order flows, stocks of items purchased, backlogs of work, employment levels and suppliers' delivery times. This is done by surveying purchasing executives over 500 manufacturing companies in India. In India, it is released by HSBC in partnership with Markit, a global financial information service company. The index above 50 reflects expansion and below 50 reflects contraction in the industrial production.