National Income

BBA Second Semester

Literal Meanings: *The aggregate of goods and services produced in a year in the country is called National Product. NI is the total income that is earned in the geographical boundary of a nation and from abroad.*

Marshall defines NI from the side of the total product. According to Marshall "The labour and capital of a country acting on its natural resources produced annually a certain net aggregate commodity, material and immaterial including services of all kinds. This is the true net annual income, the revenue of the country, or the national dividend". According to this definition, the sum of goods and services produced during a year in a country is NI.

Features:

1. NI is the return of factors of production.
2. All goods and services are included in NI.
3. NI is annually calculated.
4. NI is the sum of the net production of goods and services.
5. Material and immaterial goods and services are included in NI

Drawbacks of Marshall's Definition

1. Possibility of double counting.
2. No inclusion of non- marketable goods and services.
3. Difficult to measure the National output because there are innumerable goods and services produced in a country.

According to Pigou *"The national dividend is that part of the objective income of the community, including, of course, income derived from abroad which can be measured in money."*

Features

1. Only monetary income is included in National Income.

2. Income derived from abroad is also included in NI.

3. It is precise, convenient, and workable definition as compared to that given by Marshall.

Drawbacks

1. Not applicable to underdeveloped countries.

2. Not applicable to that sector where barter exchange is always existence.

3. The concept of objective income is not clear i.e. gross or net.

According to Fisher "The true national income is that part of annual net produce which is directly consumed during that year."

Features

1. NI is the part of annual net produce.
2. NI is determined not by its annual production but by its annual consumption.

Drawbacks

- 1) Difficult to measure consumption in terms of money
- 2) Difficult to estimate the lifetime of the product.
- 3) The difficulty of ownership change.

Different concept of National Income

Gross Domestic Product:- The market value of all final goods and services produced within the geographical boundary of a nation during a year is called Gross Domestic Product (GDP). GDP is the product of the total final product (Q) and its market price (P).

GDP=Price (P) ×Quantity (Q)
Or, GDP=P×Q
Or, GDP=$p_1Q_1+P_2Q_2+P_3Q_3+\ldots\ldots\ldots\ldots+P_nQ_n$.
Or, GDP= $\sum_{i=1}^{n} P \times Q$
Where, i= 1, 2, 3, 4……………….n

In terms of expenditure, GDP can be expressed as:
GDP=C+I+G+(X-M)

All intermediate goods and services are excluded from the measurement of GDP. GDP includes three types of final goods and services. They are:
1. Consumer's goods and services which are used to satisfy the immediate wants of people.
2. Capital goods are used for fixed capital formation, residential construction, and industry.
3. Goods and services produced by the government.
4. Net Export (X-M)

Features of GDP

- GDP is the monetary value of all final goods and services produces within the domestic boundary.
- GDP only includes final goods and services produces in the country.
- The values of intermediate goods are excluded to avoid double counting.
- The value of final goods and services is calculated at the current market price.
- GDP only includes those goods and services which have market value.
- A transfer payment is not included in GDP because it cannot contribute to production. Like Pension, unemployment allowance, old age allowance etc.
- Illegal product is not included in GDP.
- GDP does not include capital gains.

There are two types of the concept of GDP. They are:

❖ **GDP at MP:-** GDP is the market value of all final goods and services produced in the nation during a year. When GDP is measured in terms of the current market price is called GDP at market price.

$$GDP \text{ at } MP = P_1Q_1 + P_2Q_2 + P_3Q_3 + \ldots\ldots\ldots\ldots + P_nQ_n$$

❖ **GDP at Factor Cost (GDP at FC):-** If GDP is measured as the sum of price paid to all factors of production in form of wages, interest, rent, and profit for their contribution in production, it is known as the GDP at FC. To calculate GDP at FC, we have to deduct the net indirect taxes from GDP at MP.

GDP at FC=GDP at MP- Net Indirect Tax.

We know,

Net Indirect Tax= Indirect Tax- Subsidy

Net Domestic Product (NDP): -

NDP can be calculated by subtracting depreciation from GDP. In other words, GDP minus depreciation is called NDP. Depreciation means wear and tear of fixed capital assets or decrease in value of fixed capital assets. It is also known as the capital consumption allowance.

NDP=GDP-Depreciation.

NDP can be obtained by subtracting net foreign income from Net National Product (NNP).i.e.

NDP=NNP- Net Foreign Income

NDP at MP and NDP at FC

NDP measured at actual market price is called NDP at market price whereas NDP measured as the sum of price paid to all factors of production in the form of wages, interest, rent, and profit for their contribution in the process of production is called NDP at factor price.

NDP at MP= GDP at MP-Depreciation

Similarly,

NDP at FC= NDP at MP-Net Indirect Tax

Gross National Product (GNP)

Gross National Product (GNP)is the monetary value of all final goods and services produced during a year by domestically owned resources or factors of production. GNP measures the aggregative economic activities if the citizens of a country during a year. It is the income earned by the citizens of a nation. GNP includes the income that residents of a nation earn in abroad and excludes the income within a country that is owned by foreigners. We can express as:

$$GNP=GDP+NFIA$$
$$Or,\ GNP=GDP+\ (Receipt-Payment)$$

The NFIA is the net difference between factor income paid to the foreigners from our country and the factor income earned by our residence from the foreign countries.

Features of GNP

- It is calculated in monetary terms.
- It only includes the final goods and services.
- The intermediate goods are excluded to avoid the problem of double counting.
- It does not include transfer payment.
- It only includes marketable goods and services.
- It includes income earned by the resident of a country within a country and abroad.
- The illegal product and income are not included in GNP.

GNP at Market Price and GNP at Factor price

a) <u>GNP at MP</u>:- It is the monetary value of all final goods and services produced within the geographical boundary of a nation plus net foreign income from abroad. i.e.

GNP at MP =GDP at MP+NFI

a) <u>GNP at FC</u>: -If GDP is measured as the sum of price paid to all factors of production in form of rent, wages, interest, and profit for their contribution in the process of production, it is known as GDP at FC. In the other sense, GNP at FC is calculated by deducting net indirect tax from GNP at market price.

GNP at FC=GNP at MP-Net Indirect Tax

Difference between GDP and GNP

GDP	GNP
1. GDP is the monetary value of all final Products produced within the geographical territory of a country.	1. GNP is the market value of final goods and services produced by the citizens within the country and abroad.
2. It is a narrow concept than GNP.	2. It is a broad concept than GDP.
3. GDP does not include NFIA	3. GNP includes NFIA.
4. It is a territorial concept because it is related to the domestic territory of a country.	4. It is a national concept because it is concerned with the normal residents of a country.
5. GDP is focused on domestic output rather than who produced it i.e. nationality of the citizens.	5. GNP is focused on who owns the production regardless of where the production takes place.
6. If the value of NFIA is positive then GDP will be less than GNP and vice versa.	6. If the value of NFIA is positive, the value of GNP will be more than GDP and vice versa. i.e. GNP=GDP+NFIA

Net National Product (NNP)

The net production of goods and services of a country during a year is called Net National Product (NNP). NNP is calculated by deducting depreciation or capital consumption allowances (CCA) from GNP. The amount left after deducting depreciation from GNP is called NNP.

   NNP=GNP- depreciation

NNP at Market Price and NNP at Factor Price

a) **NNP at MP:** - NNP measured at the current market price is called NNP at market price.

   NNP at MP= GNP at MP-Depreciation.
   Or, NNP at MP=GDP at mp + NFIA- Depreciation

NNP at FC:- The NNP is measured as the sum of price paid to all factors of production in the form of wages, interest, rent, and profit for their contribution in the process of production is called NNP at FC. To calculate NNP at FC, we deduct net indirect taxes from NNP at MP.

   NNP at FC=NNP at MP-Net Indirect Taxes
We know,
   Net Indirect Tax= Indirect Taxes –Subsidies.

National Income (NI)

National Income is the total sum of earning of all factors of production in the form of wages, rent, interest, profit, plus net foreign income from abroad. NI means the sum of all income earned by domestically owned factors of production. NI is the total income earned by factors of production owned by a country's citizens.

NI=NNP at market price + Subsidies- Indirect Taxes.

By product method, NI is calculated as:

GDP at MP=$\sum P_i Q_i$

GNP at MP=GDP+NFIA

NNP at MP=GNP at MP – Depreciation.

NNP at FC= NNP at MP- Indirect Taxes + subsidy

NI=NNP at FC.

Personal Income (PI)

The total income received by all individuals and households of a country from all possible resources before payment of direct taxes during a year is called Personal Income. Personal Income is the total money income received by individuals and households of a country from all possible resources before direct tax. Personal Income is obtained by subtracting that part of National Income which is earned but not received by the persons and adding the income of transfer payment.

Personal Income = National Income - Undistributed corporate profit – corporate income tax - Social security contribution + Interest Income from government and private sector + Transfer payment.

$$PI = NI - UCP - CIT - SSC + II + TP$$

Disposable Income (DI)

It is also known as disposable personal income. The income left after the payment of direct taxes from personal income is called Disposable Income. I.e. Disposable Income = PI- Direct Tax

It is the actual income that can be spent on consumption by individuals. So it is called the purchasing power of households. The total disposable income is not spent only on consumption because a part of it is saved i.e. $DI = C+S$

Per Capita Income (PCI)

Per Capita Income is the average income of the people of a country in a particular year. PCI can be calculated by dividing NI by the total population of a country.

$$Per\ Capita\ Income = \frac{National\ Income}{Total\ population}$$

Per Capita Income is usually expressed in terms of commonly used international currency. It is usually measured in the American dollar. PCI is also calculated from GDP and GNP. If per capita income is calculated from GDP, it is known as GDP per capita. Similarly, if per capita income is calculated from GNP, it is known as GNP per capita.

$$GDP\ per\ capita = \frac{GDP}{Total\ population}$$

$$GNP\ per\ capita = \frac{GNP}{Total\ population}$$

PCI is widely accepted as the best indicator of economic development. The argument is that the main objective of economic development is to raise the living standard of people. This is possible only by an increase in the PCI of people. WDB has divided the stage of development based on PCI as shown below.

Per capita income (in us dollar)	Classification
1. Below 1036	Ultra-poor
2. 1036 to 4045	Lower Middle Income
3. 4046 to 12535	Upper Middle Income
4. Above 12535	High

Real Income

Real Income is the NI expressed in terms of the general price level of the particular year taken as the base. Real income removes the illusion of monetary income.

Suppose in 2057, the total production of tea was 200 kg and the market price was Rs. 120 per kg. In this case, the monetary income was 200×120= Rs.24000. But in 2067, the production of tea was decreased in 180 kg but the price was increased in Rs.180 per kg. In this case, the monetary income equals to Rs. 180×180=32400. In this analysis, the monetary income shows that output is increasing but the condition is the opposite. Such type of controversy can be removed by using the concept of Real Income.

Nominal GDP, real GDP and GDP Deflector

Nominal GDP

It is defined as the GDP calculated at the current market price. Any change in nominal GDP reflects the combined effect of change in quantity and change in price. Nominal GDP is sensitive to the change in the average price level in the market. Nominal GDP includes all of the changes in market prices that have occurred during the current year due to inflation and deflation.

$$\text{GDP at MP} = \sum P_i Q_i$$
$$\text{Where, } i = 1, 2, 3, 4 \ldots\ldots\ldots\ldots n$$

Real GDP: -

It is also called constant price GDP. When the current price GDP is adjusted for inflation is called real GDP. Real GDP is a measure of the value of output in terms of base year price. Real GDP is termed as 'inflation corrected GDP' or GDP in base-year prices. Real GDP is defined as the GDP calculated at the market prices of any base year.

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

GDP Deflator:

The GDP Deflator is a price index measuring changes in the overall prices of produced final goods and services within the geographical territory of a country. *GDP deflator measures relative changes in current level prices in comparison to the price level in the base year.* In other words, it is the ratio of nominal GDP in a given year to real GDP of that year. It is calculated by dividing nominal GDP by real GDP and multiplying it by 100. We can write as:

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

The GDP deflator can help to provide a more accurate picture of the GDP in the country. It is also used to measure the change in the price of final goods and services or the rate of inflation in the country.

Rate of inflation $= \dfrac{Change\ in\ GDP\ deflator}{GDP\ deflator\ of\ the\ previous\ year} \times 100$

Numerical Examples:

Calculate the value of GDP deflator and the rate of inflation from the given information.

Year	Nominal GDP	Real GDP
2069	470	208
2070	542	209
2071	618	220
2072	719	233
2073	843	250

Solution:

GDP deflator for 2069 $= \dfrac{Nominal\ GDP\ of\ 2069}{Real\ GDP\ 0f\ \ 2069} \times 100$

$= \dfrac{470}{208} \times 100 = 225.96$ and so on.

Rate of Inflation for 2070 $= \dfrac{Change\ in\ GDP\ deflator}{GDP\ deflator\ of\ previous\ year} \times 100$

$= \dfrac{259.33 - 22\ .96}{225.96} \times 100$

$= 14.77\%$ and so on.

Similarly, we can calculate GDP deflator and rate of inflation as given below:

Year	GDP deflator	Rate of inflation
2069	$\dfrac{470}{208} \times 100 = 225.96$	–
2070	$\dfrac{542}{209} \times 100 = 259.33$	14.77
2071	$\dfrac{618}{220} \times 100 = 280.91$	8.32
2072	$\dfrac{719}{233} \times 100 = 308.58$	9.85
2073	$\dfrac{843}{250} \times 100 = 337.20$	9.27

Potential GDP

The Potential GDP is the output that the economy would produce if all factors of production were fully employed. It is the full employment level of GDP. According to Samuelson *"Potential GDP represents the maximum sustainable level of output that the economy can produce. "* Potential GDP or output is not the maximum output the economy can produce but the output would be produced if all markets i.e. labour, capital, and product were in equilibrium. Potential GDP indicates that level in which no unemployment of resources.

The country's potential output is viewed as being determined by the economy's productive capacity, which depends upon the quality and quantity of available inputs and technological efficiency. This means that potential GDP is determined by the supply of factors.

- Economic Survey of Nepal:-

https://mof.gov.np/uploads/document/file/Economic_Survey_2076-77.pdf

Methods of National Income Accounting

Factors of production produce goods and services. Production of goods and services gives rise to income, income gives rise to the demand for goods and services' demand gives rise to expenditure and expenditure gives rise to further production. Thus, there is a circular flow of production, income, and expenditure. Based on these three flows, National Income can be calculated by three methods. They are:

1) Product Method

Product Method measures NI from the side of the product. It includes all final goods and services produced in the economy during a year. In this method, the economy is divided into primary, secondary, and tertiary sectors. The total monetary value of the total product of every sector is calculated and summed up to find GDP at MP. Thereafter GNP at MP is calculated by adding NFIA to GDP at MP. There are two methods under it. They are:

a) Final Product Method

The Final Product Method includes the market value of final goods and services produced in the country during a year. In this method, only final goods and services and their current or final prices are included. We know,

$$GDP = \sum P_i Q_i$$

S.N.	Production Sector	Amount
1.	Agriculture, forest and livestock	XXX
2.	Industry and Trade	XXX
3.	Transport and communication	XXX
4.	Health and education	XXX
5.	Public administration and defense	XXX
6.	Banking and financial institutions	XXX
7.	Irrigation, electricity and water Supply	XXX
8.	Constriction industry	XXX
9.	Mineral Industry	XXX
10.	Others	XXX
	GROSS DOMESTIC PRODUCT	XXXXXX
	Net factor income from abord	+XXX
	GROSS NATIONAL PRODUCT	XXXXXX
	Depreciation	-XXX
	Net National Product	XXXXXXX
	Net Indirect Tax (Indirect Tax – Subsidies)	+XXX
	Net National Product at FC= National Product	XXXXXXXX

The main steps of this method are:

Find the GDP by adding the market value of final goods and services produced within the country.
Find GNP by adding net foreign income from abroad (NFIA) to GDP.
Find NNP by subtracting depreciation from GNP.
Find NI by adding subsidies and subtracting indirect tax from NNP.

- Mathematically, GDP $= P_1 Q_1 + P_2 Q_2 + P_3 Q_3 + \ldots\ldots\ldots\ldots + P_n Q_n$

       GNP at mp = GDP+NFIA

       NNP at mp = GNPmp- Depreciation

       NI = NNP at mp + Subsidies-Indirect Tax = NNP at factor cost

B. Value Added Method

The value-added method estimates NI and output by considering the values of both intermediate and final products simultaneously. Value-added means the addition to the value of raw materials and inputs during the process of production. In other words, value-added is the value that a producing firm adds to the intermediate inputs to get the final product.

Value Added= Value of output-Cost of intermediate goods.
Or, Value added= Sale- Cost Price.
In this method, GDP is calculated by adding total value added by different producing units of a country. A sample of the measure of value added is given below:

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S.No	Producer	Goods	Market price	Cost	Value Added
1	Farmer	Wheat	500	0	500
2	Miller	Flour	800	500	300
3	Baker	Bread	1200	800	400
4	Hotel owner	Roast	1500	1200	300
	Total value Added		4000	2600	1500

The main steps of this method are:

❖ Find the total value added by subtracting the price of intermediate goods from the final product.

❖ Find GDP by adding the gross value added of all sectors of the economy.

❖ Find GNP by adding Net foreign income from abroad to GDP.

❖ Find NNP by subtracting depreciation from GNP.

❖ Find NI by adding subsidies and subtracting indirect tax from NNP.

Contd…

S.No	Production Sector	Value Added
1	Primary Sector	xxx
2	Secondary Sector	xxx
3	Tertiary Sector	xxx
	Gross Domestic Product (GDP)	xxx
	Net foreign Income	(+)xxx
	Gross National Product (GNP)	xxx
	Depreciation	(-)xxx
	Net National Product (NNP)	xxx
	Subsidies	(+)xxx
	Indirect Tax	(-)xxx
	National Income (NI)	XXXXX

Income Method

In this method, National Income is measured from the total sum of rewards received by all factors of production in an economy in a year. In short, NI is measured from the side of factor income. Income method is the method that measures NI from the side of payment made of wages, interest, rent, and profit to the primary factor of production. Therefore, it is called the factor payment method. The main steps are: Divide the factor income like rent, interest, wages, and profit.

❖ Find Gross Domestic Income (GDI) by adding all factors income during a year.
❖ Find Gross National Income (GNI) by adding net foreign income to GDI.
❖ Find Net National Income (NNI) by subtracting depreciation from GNI.
❖ Find National Income (NI) by adding subsidies and subtracting indirect tax from NNI.

The calculation of National Income by Income Method: A hypothetical table

Income Headings	Amount (Rs. in Million)
1. Wages and Salaries, bonus, social security contribution, tips incentives (COS)	10,000
2. Rental Income	5,000
3. Interest Income	7,000
4. Profit (Undistributed Profit + Dividend + Corporate Income Tax)	4000
5. Mixed Income of the self-Employed	2,000
6. Net Indirect Taxes (Indirect Taxes – Subsidies)	500
7. Depreciation	2,000
Gross Domestic Income (GDI/GDP)	30,500
Plus NFIA	+ 1,500
Gross National Income (GNI/GNP)	32,000
Less Depreciation (CCA)	- 2000
Net National Income (NNI/NNP)	30,000
Less Net Indirect Taxes	- 500
Net National Income in Factor cost = National Income	29,000

The following incomes are not included in the income method:

The following incomes are not included in the income method:

a) Amount received from the sale of second-hand goods.
b) Amount received from the sale of bonds or stock.
c) Amount received from transfer payment.
d) Income from illegal activities.

- In short,

GDImp /GDPmp = Wages + Interest + Rent + Profit + Depreciation + Net Indirect Taxes

GNImp / GDPmp = GDI + NFIA

NNImp /GNImp = GNI – Depreciation

NNIfc / NNPfc = NNI - Net indirect taxes

NI = NNI at factor cost.

Expenditure Method

In this method, NI is measured from the side of expenditure. According to this method, NI is calculated by adding all the expenditure in final goods and services made by the four sectors of the economy i.e. household, business, government, and foreign sector. It only includes final expenditure. The final expenditure means the expenditure made on the final product. The main steps of this method are:

1) Divide the final expenditure on consumption (C), investment (I), government expenditure (G) and net export (X-M)
2) Find Gross Domestic Expenditure (GDE) by adding consumption, investment, government expenditure, and net export.

3) Find Gross National Expenditure (GNE) by adding net foreign income from abroad to GDE.
4) Find Net National Expenditure (NNE) by subtracting Depreciation from GNE.
5) Find National Expenditure (NE) by adding subsidies and indirect tax from NNE.

Measurement of National Income by Expenditure Method

Expenditure Headings	Amount (Rs. In Millions)
Private Consumption Expenditure (c) Durables (3000) Non-durables (3000) Services (4000)	10,000
Gross Domestic Private Investment :- Expenditure (I)	5,000
Government Expenditure (G)	15,000
Net Exports (X-M)	-2,000
Gross Domestic Expenditure (GDE/GDP) Plus NFIA	28,000 5,000
Gross National Expenditure (GNE/GNP) Less Depreciation (CCA)	33,000 -2,000
Net National Expenditure (NNE/NNP) Net Indirect Tax	31,000 -1,000
National Income	30,000

In Short

GDE=C+I+G+(X-M)

GNE=GNP=GNE=GDE+NFIA

NNE=GNE-Depreciation

NE=NI=NNE-Net indirect tax

❖It must exclude expenditures on previously produced goods.

❖It must also exclude all expenditures for the purchase of used assets.

❖It must exclude purchase of financial assets, such as stock and bonds; they are merely a pieces of paper.

❖It must exclude the transfer payments.

❖Expenditures on intermediate goods, such as fertilizers and seed by farmers should be excluded.