Essentials of Economics II
Chapter 2: Macroeconomics

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Ferdowsi University of Mashhad

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What is Macroeconomics about?

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It analyzes the general economy and factors affecting it including **unemployment**, **inflation**, **economic growth** and monetary and financial policy.

Full Employment

The situation in which, in the labor market when **almost all people** who have skills and expertise and are willing to work are employed in various jobs and services.

Full employment usually does not mean the employment of 100% of the human force, because always in the economy, some percent (5-6%) of the human force ready to work is unemployed due to **natural reasons**.

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Full Employment

Natural reasons:

- For instance, workers who are "between jobs" for short periods of time as they search for better employment are not counted against full employment, as such unemployment is **frictional** rather than **cyclical**.
- An economy with full employment might also have unemployment or underemployment where **part-time** workers cannot find jobs appropriate to their skill level, as such unemployment is considered **structural** rather than **cyclical**.
- Full employment marks the point past which expansionary fiscal and/or monetary policy cannot reduce unemployment any further without causing inflation.

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Price Stability

- **Price stability** occurs when all goods have a fixed price or their price changes are very small.
- Price increases should be small enough not to create the problems that come with high inflation for people and businesses. But they should be large enough to avoid bad scenarios that may unfold if inflation falls too low.

Economic Growth

- **Economic growth** refers to the change in the volume of economic activities in a country.
- In fact, economic growth **measures** the change in the total economic activities of a country or a region.
- To calculate the economic growth, the **gross domestic production** of the country or region is used.

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- GDP = gross domestic product
- Economic growth can be positive or negative.
- **Stable economic growth:** Economic growth is said to be able to resist negative economic shocks and return to the equilibrium level.
- **Sustainable economic growth:** Economic growth is said to be dependent on more goods. Also, economic growth is said to give importance to the environment and cause the least damage to it.

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GDP, GNP, NI

- **Examining** the state of demand and its management and in **general macroeconomic** analysis requires an examination of the state of the **gross national product** and its components.
- National accounts, in the framework of which production and gross national income and its components are examined, are presented as the first subject of macroeconomic knowledge.
- **Definition of Gross Domestic Product:** (GDP=Gross Domestic Product) It is equal to the total monetary value of final goods and services produced in the country during a certain period (a financial year).
- **Definition of Gross National Product:** (GNP=Gross National Product) It is equal to the total monetary value of final goods and services produced by the citizens of a country throughout the world during a certain period.
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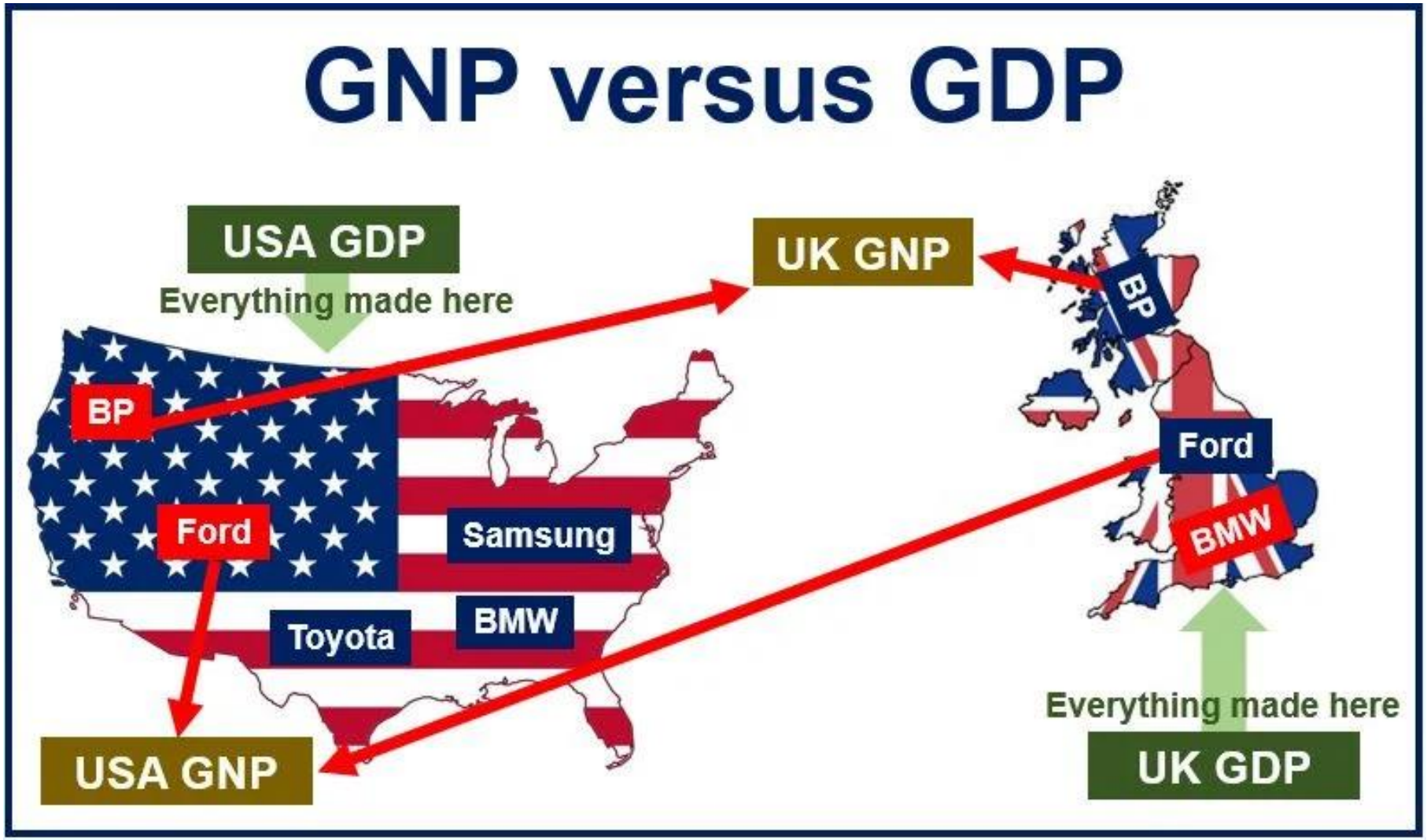
Macro Story, GDP, GNP, NI



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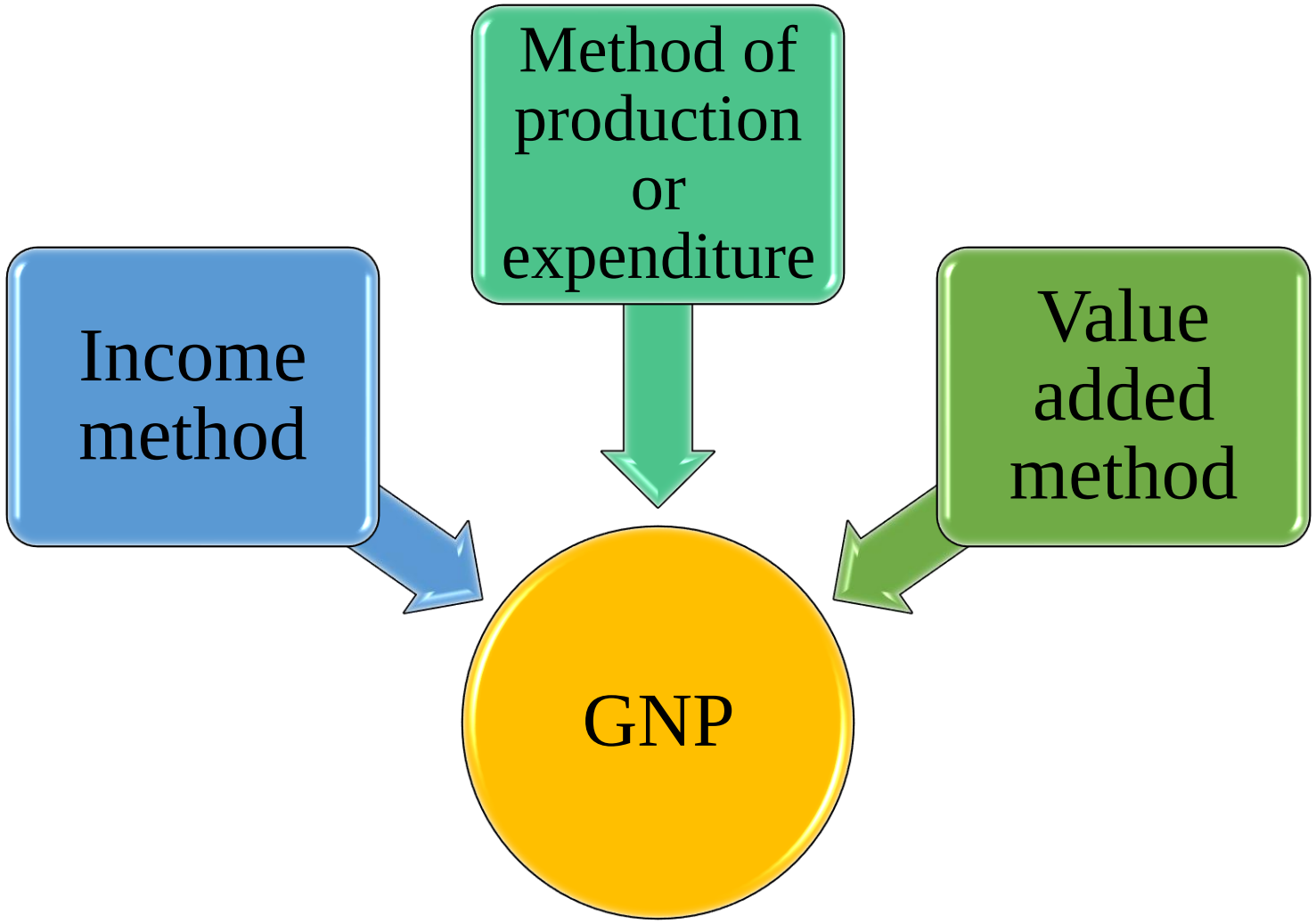
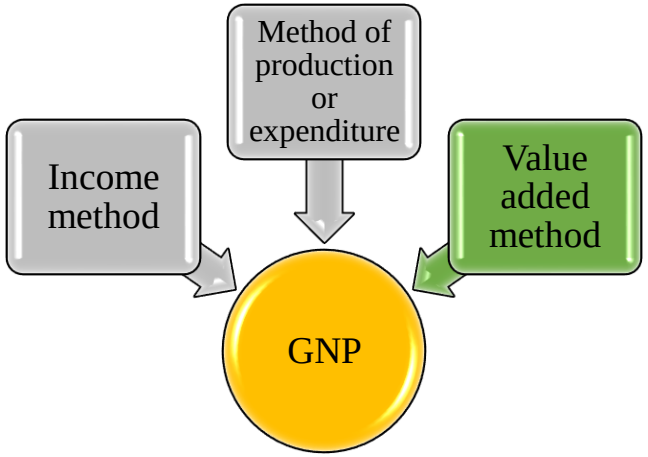


Macro Story, GNP, Calculation by value added method



Definition of added value:

It is the net value of final goods and services produced in a given financial period (a financial year).

Product (good) definition:

Economic value is the result of an economic activity that is consumed **during** or **after** production.

We have two types of goods

1- **Durable goods:** There are goods that cannot be consumed within a year, such as refrigerators, televisions, etc.

2- **Non-durable goods:** There are goods that can be consumed within one year after their production.

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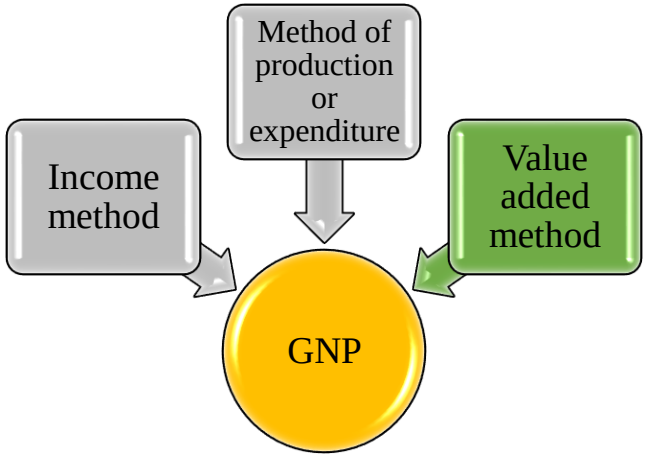

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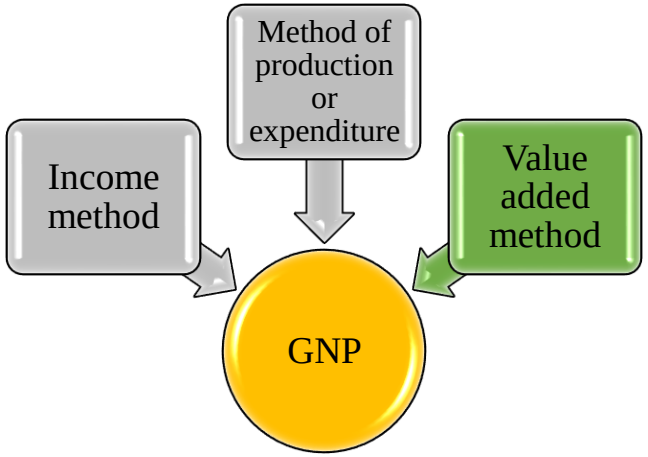

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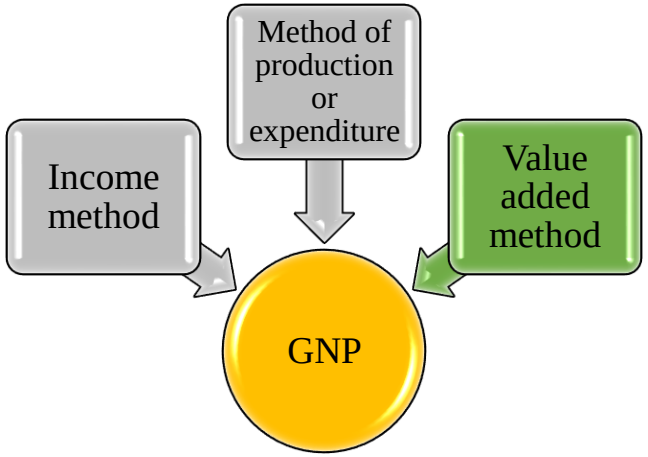

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Macro Story, GNP, Calculation by value added method

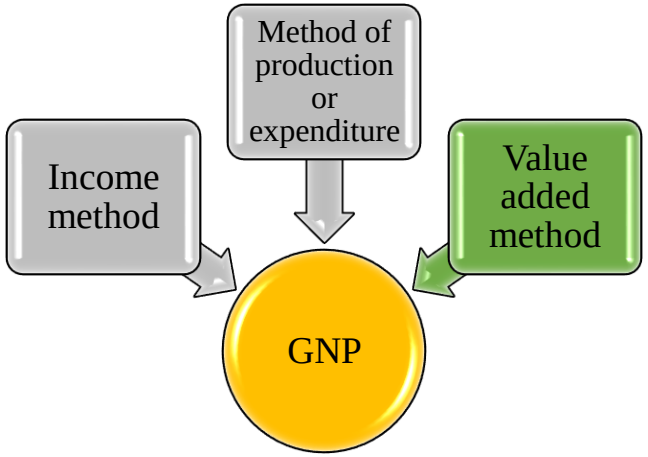
Economic goods can be divided into 3 categories:

1- **Consumer goods:** are goods that are directly used to meet human needs and desires, such as food, clothing, etc.

2- Intermediate goods: they are goods that are used in the production of other goods and services. Like a steel sheet in car production. The consumption or mediation of goods depends on the type of use

3- Capital goods: It is a durable good that provides productive and productive services to producers until the end of its life. such as production equipment, road and...

Service definition:
Economic values are the result of an economic activity that is consumed during production, such as teaching students.



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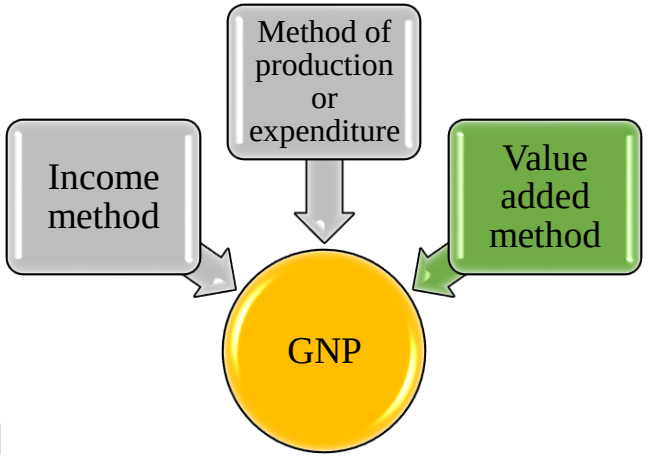

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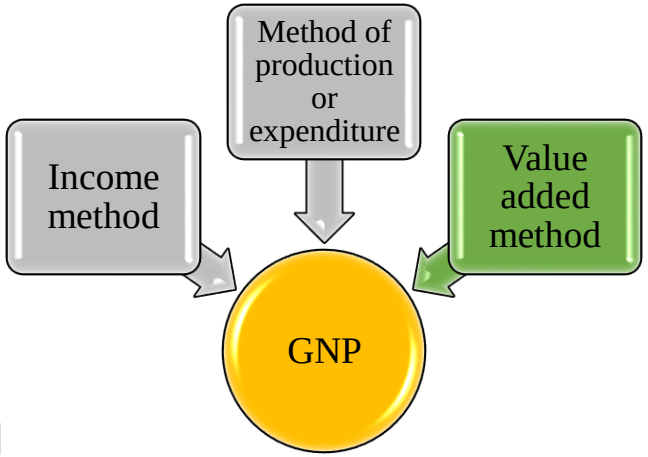

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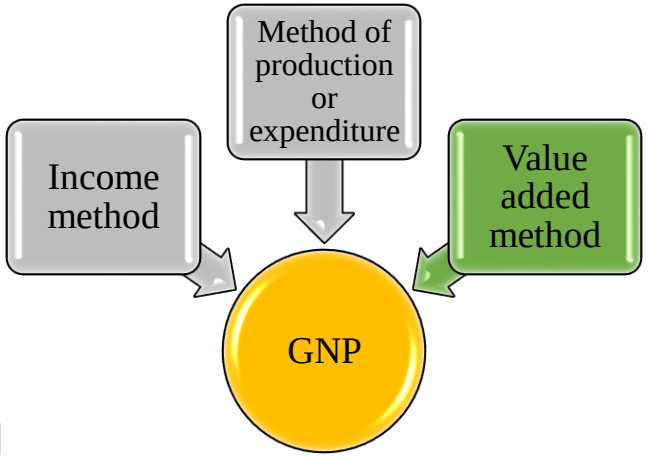

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Macro Story, GNP, Calculation by value added method

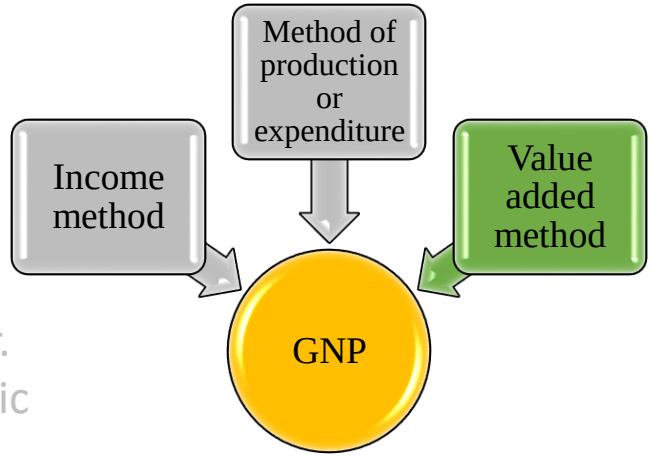
Steps to calculate gross national product by value added method:

1. We divide all economic activities into **n** parts.

2. Then we go to **each sector** and calculate all the economic values created by each sector. The criterion and basis for calculating the added value of each sector is the economic values produced this year by the production factors in that sector.

3. To calculate the added value of each sector, we consider the v**alue of the goods and services produced in that sector in one year and all the value of intermediate and semi-finished goods related to the previous year or years** as well as all intermediate costs from We deduct it.

The number that is obtained shows the value of goods and services produced only by the production factors of this sector in a given year, which is distributed among them in the form of salaries, wages, rent, interest and profit.



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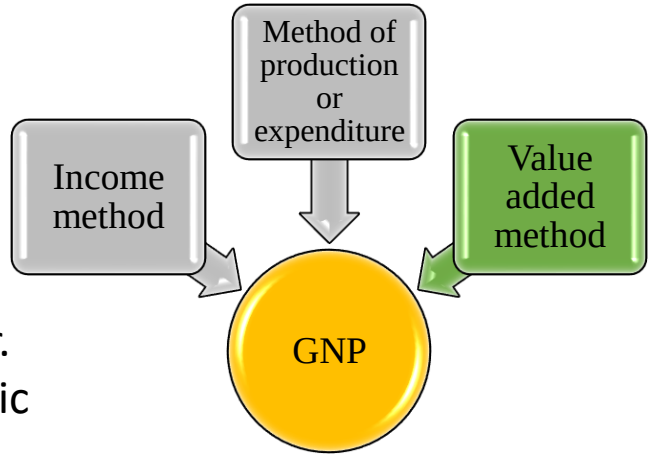
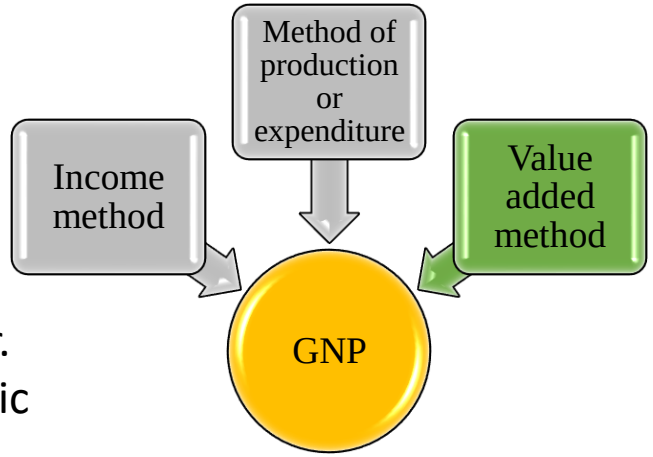


Macro Story, GNP, Calculation by value added method



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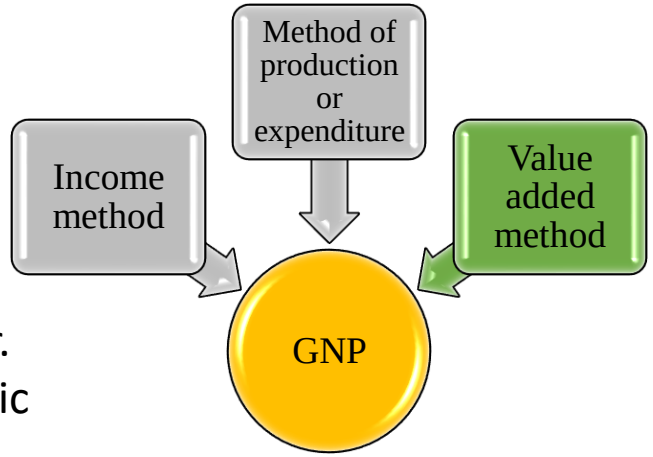

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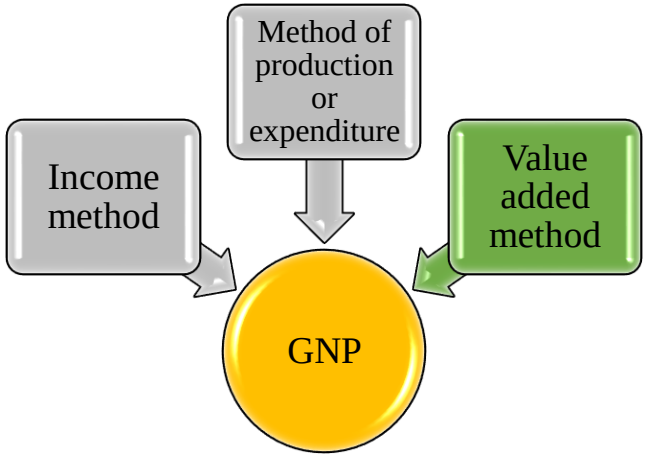


Now, in order to calculate the GDP (namely at factor prices) (GDP_f), we add the added value of different sectors of the economy together and deduct the accounting fee from it.

$$\boxed{\boldsymbol{GDP_f}} = \boldsymbol{V_1} + \boldsymbol{V_2} + \boldsymbol{V_3} + \cdots + \boldsymbol{V_n} - \text{accounting fee}$$

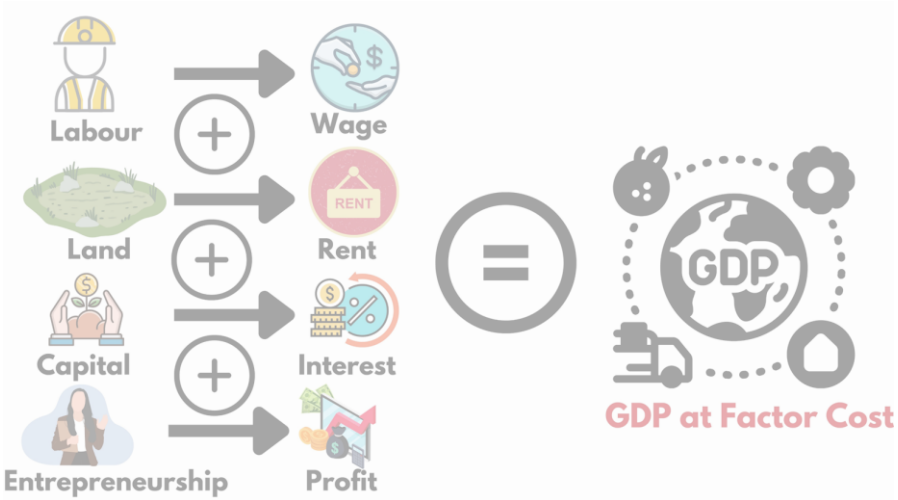
Macro Story, GNP, factor price VS market price

Factor prices:

The price of the product itself is created by the production factors of that product (the price of the product excluding taxes).

Market prices:

It refers to the price that is exchanged in the market (price of goods including tax)



$$GDP_f + NIT = GDP_m$$

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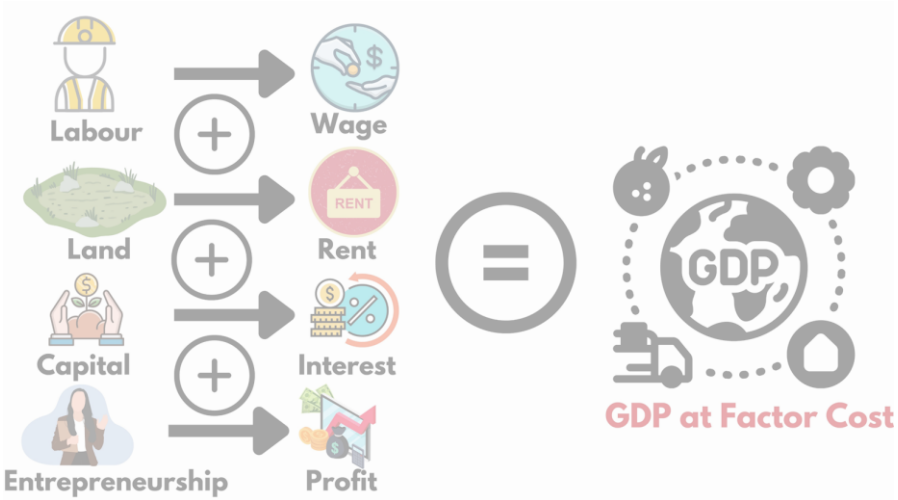

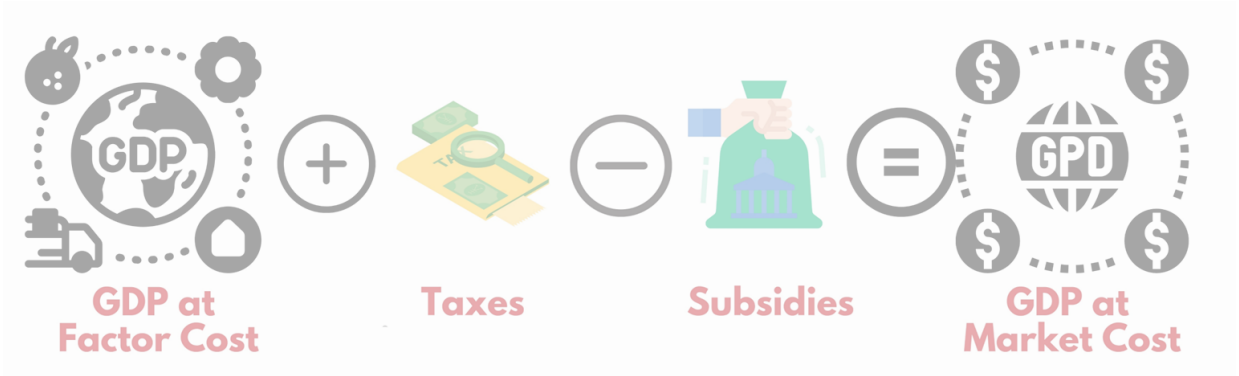

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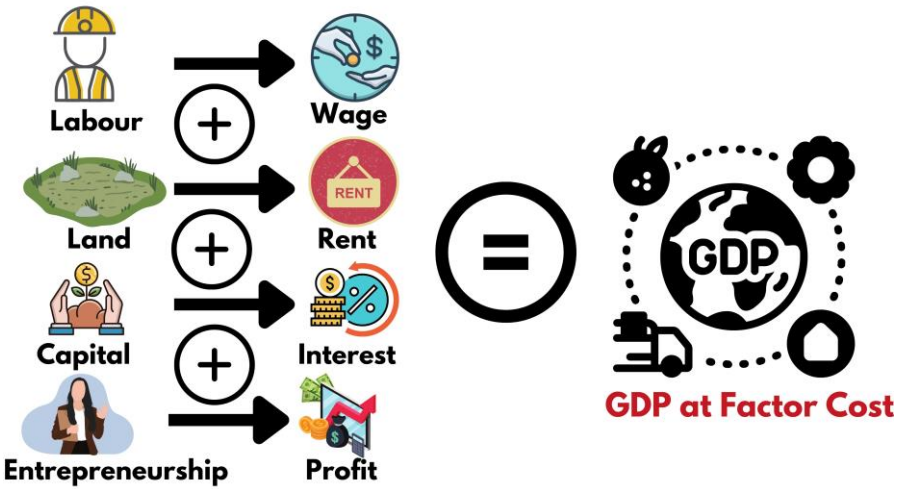

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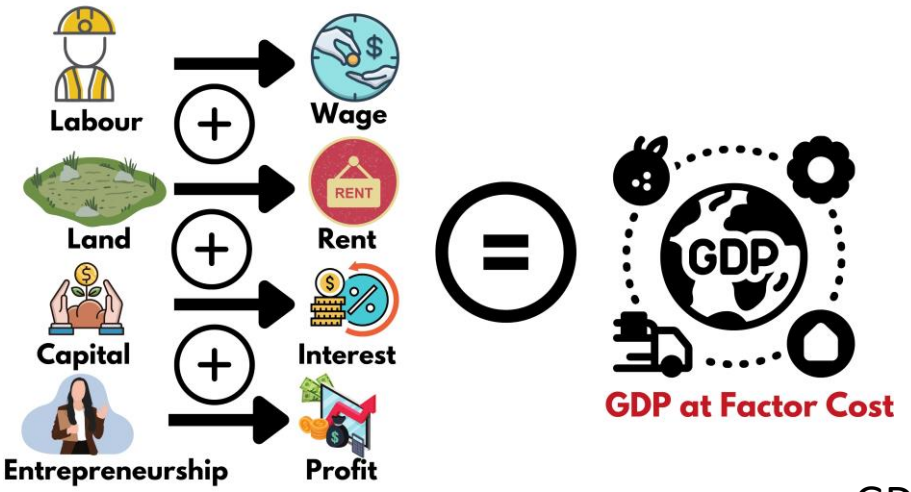

GDP in factor prices ← $GDP_f + NIT = GDP_m$ → GDP in market prices

net of excise (indirect) taxes

Macro Story, GNP, Calculation of GNP in market price

Excise Tax

Excise tax is an indirect tax imposed on the production, sale, or consumption of specific goods or services.

Macro Story, GNP, Calculation of GNP in market price

Net taxes = taxes - transfer payments

NT= T – TP

Transfer payments: Gratuitous payments and other types of payments to individuals and legal entities without specific services or production in return are called transfer payments. Such as unemployment benefits, subsidies.

Macro Story, GNP, Calculation of GNP in market price

In order to calculate the $\boldsymbol{GNP_m}$ from $\boldsymbol{GDP_m}$ we act as follows:

$$\boldsymbol{GNP_m} = \boldsymbol{GDP_m} + \textit{Net income of factors of production from abroad}$$

$$\boldsymbol{GNP_m} = \boldsymbol{GDP_f} + \textit{Net income of factors of production from abroad} + \text{net of excise taxes}$$

$$\boldsymbol{GDP_f} = \boldsymbol{GNP_f} + \textit{The net amount of receipt of production factors from abroad}$$

* Factor income from abroad is the income earned by a country's normal residents from the rest of the world for the factor services provided by them. The income is earned in the form of rent, wages, interest, salaries, dividends and retained earnings. However, Factor income to abroad is the income paid by a country's normal residents to the normal residents of other countries (i.e., non-residents of the former country) for the factor services given by them within the economic territory.

Macro Story, GNP, Calculation of GNP in market price

Example: In an economic enterprise, the annual salary paid is 2,000,000 Tomans, the profit is 1,500,000 and the capital rent is around 1,000,000 Tomans (the capital and workers belong to the company), the intermediate costs of the company are also equal to 500,000 Tomans. How much was the added value of the company?

Macro Story, GNP, Calculation of GNP in market price

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The added value of each company is equal to the sum of the amounts paid to the production factors of that company, so we have:

$$\boldsymbol{V = 2000000 + 1500000 + 1000000 = 4500000}$$

Intermediary cost is not relevant for calculating added value

Macro Story, GNP, Calculation of GNP in market price

Example: The following information is available on a hypothetical economy:

The added value of the agricultural sector = 100
The added value of the oil sector = 80
The added value of the industry sector = 120
The added value of the service sector = 200
The added value of the accountable fee= 10
Net income of factors of production from abroad = 10
Net of indirect taxes = 20

Calculate the gross national and domestic product at market prices and factor prices.

Macro Story, GNP, Calculation of GNP in market price

Example: The following information is available on a hypothetical economy:

The added value of the agricultural sector = 100
The added value of the oil sector = 80
The added value of the industry sector = 120
The added value of the service sector = 200
The added value of the accountable fee= 10
Net income of factors of production from abroad = 10
Net of indirect taxes = 20
Calculate the gross national and domestic product at market prices and factor prices.

To calculate GDP using the value added method, we add the added value of different sectors together and deduct the calculated fee from it.

$$GDP_f = 100 + 80 + 120 + 200 \ - (10) = 490$$

To calculate $\boldsymbol{GDP_m}$, it is enough to add the amount of indirect tax to $\boldsymbol{GDP_f}$

$$GDP_m = 490 + 20 = 510$$

To get from $\boldsymbol{GDP_f}$ to $\boldsymbol{GNP_f}$, add the net amount of receipt of production factors from abroad

$$GNP_f = GDP_f + A \qquad 490 + 10 = 500$$

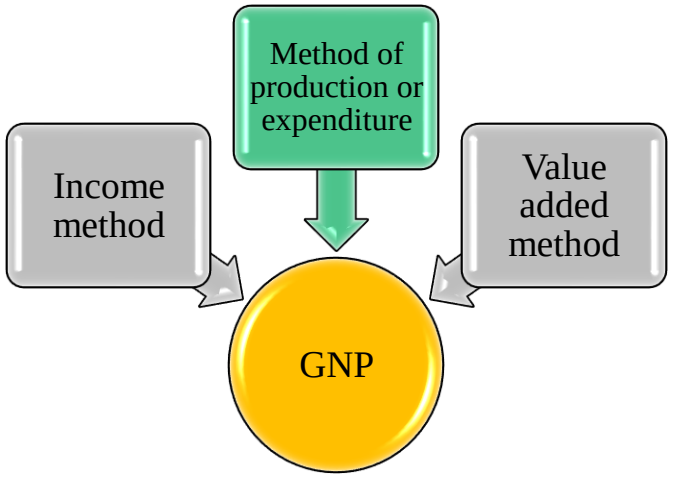
To get GNP_m , it is enough to add net indirect taxes to $\boldsymbol{GNP_f}$

$$GNP_m = GNP_f + NIT \qquad 500 + 20 = 520$$

Macro Story, GNP, Calculation of GNP in market price

In this method, GNP is divided into specific components based on a logical criterion compatible with the goal of macroeconomics

$$GNP_m = Y = C + I + G + X - M$$



- The above relationship shows that the amount of GNP is equal to total expenditure.
- In the above relation, the sum of $C+I+G+X-M$ is equal to GNP_m.
- Therefore, in this method, the monetary value of goods and services has a different name according to the economic factor that demands it.
- If the household demands goods and services, the expenses incurred are called consumption expenses (C).
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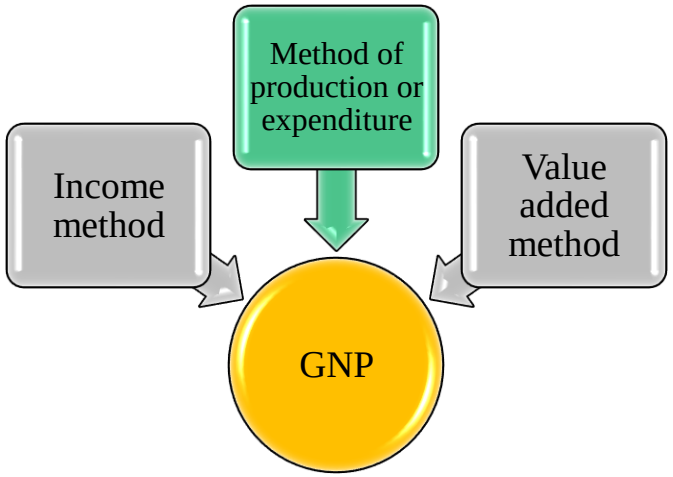

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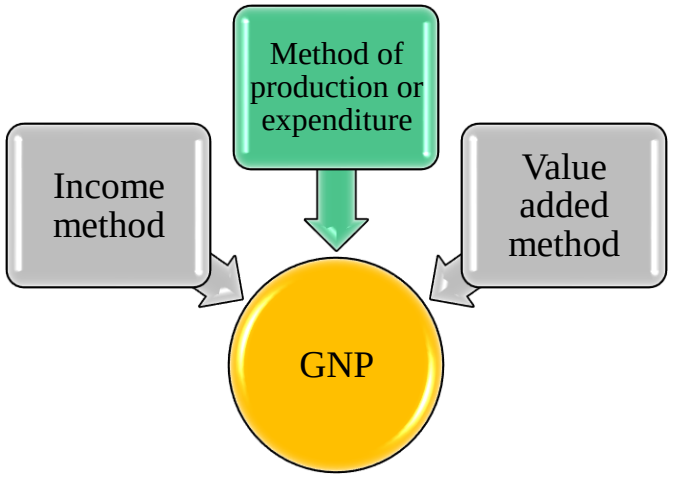

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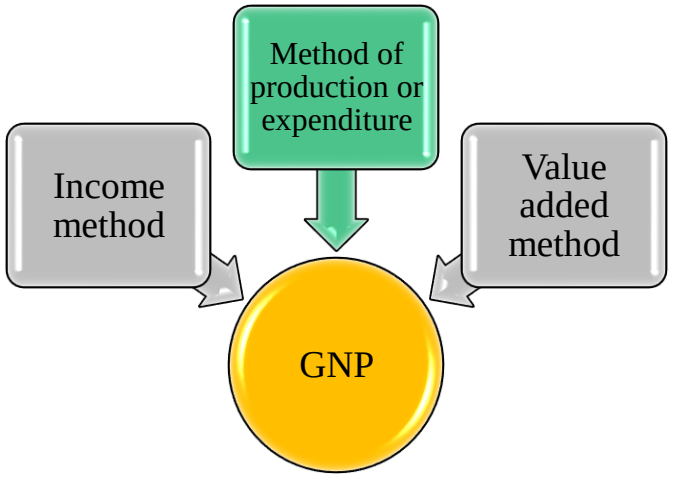

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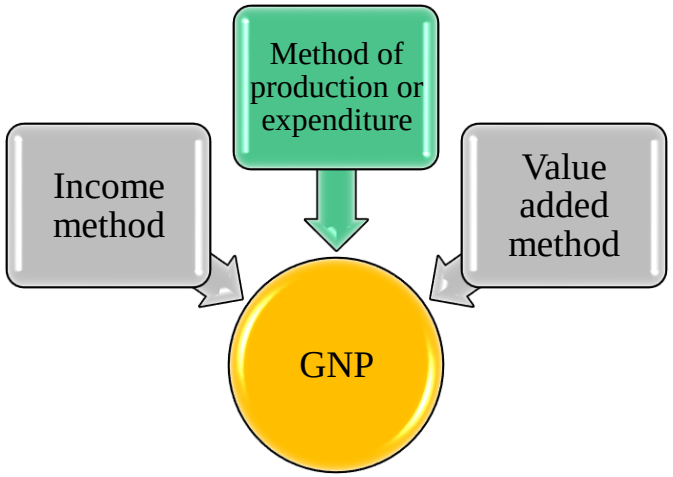

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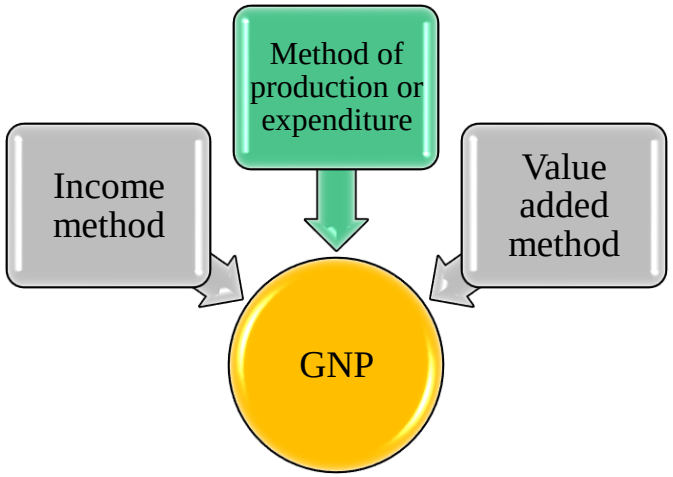

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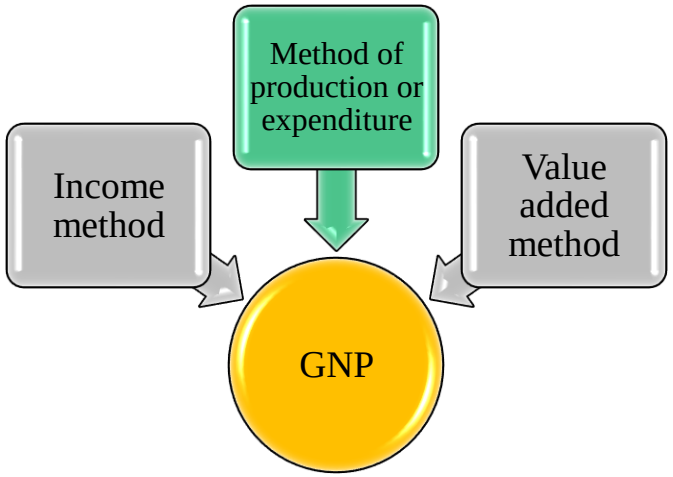

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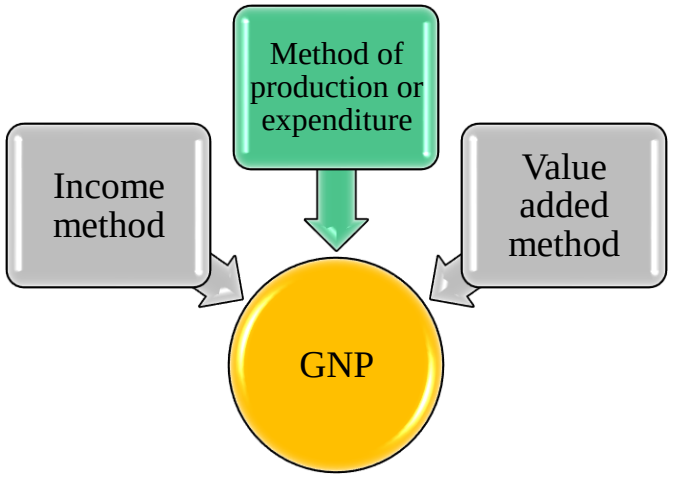

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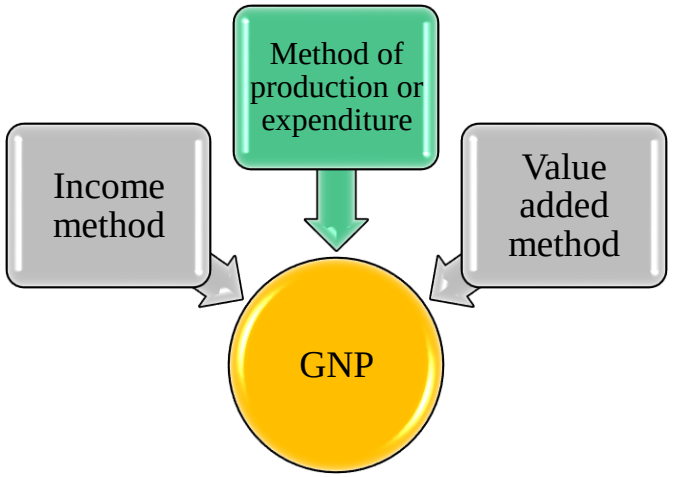

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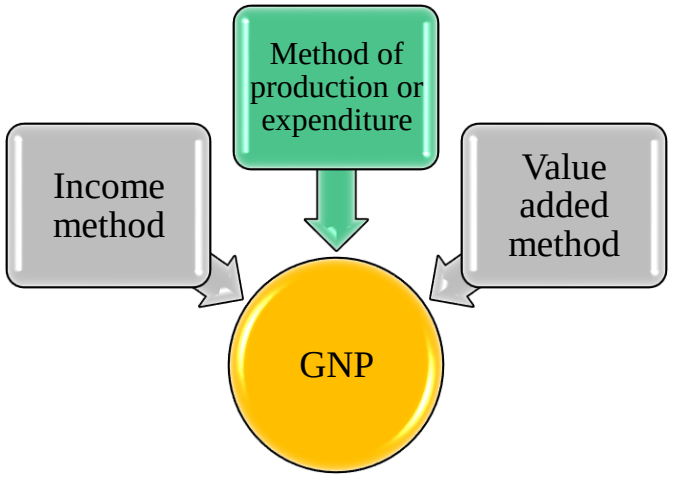

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- government expenses:

1- Consumption (current) expenses, such as employee salaries.
2- Construction (capital) expenses, such as road construction.
3- Transitional expenses, such as subsidies.

- Government budget: It is a statement of account that shows the income and expenditure of the government side by side.

- 0 < government revenues - government expenditures = budget surplus
- Budget balance = 0
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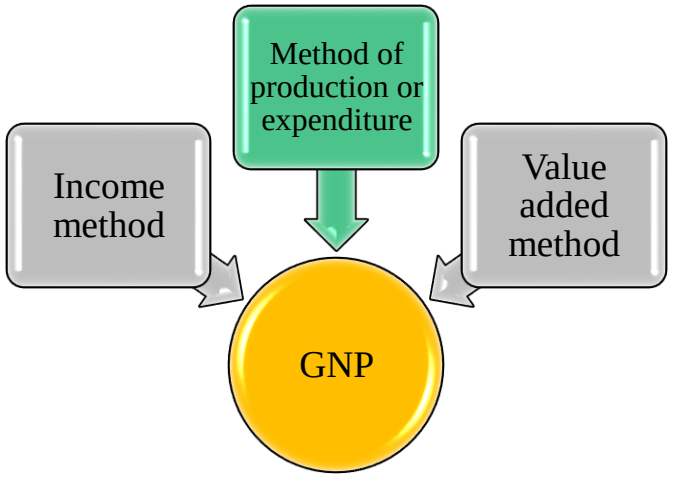

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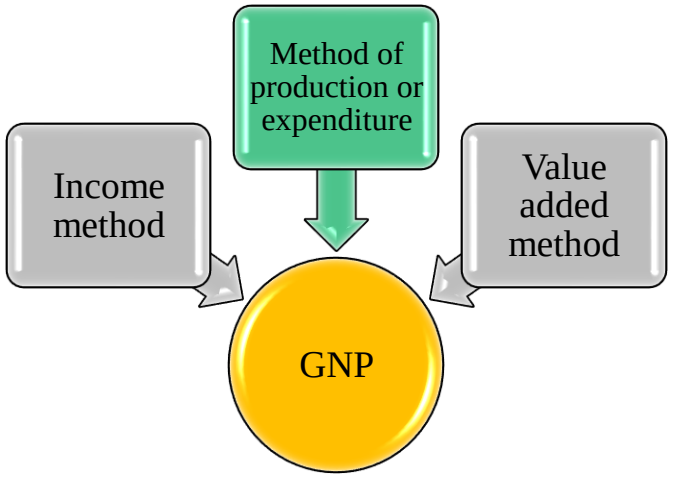

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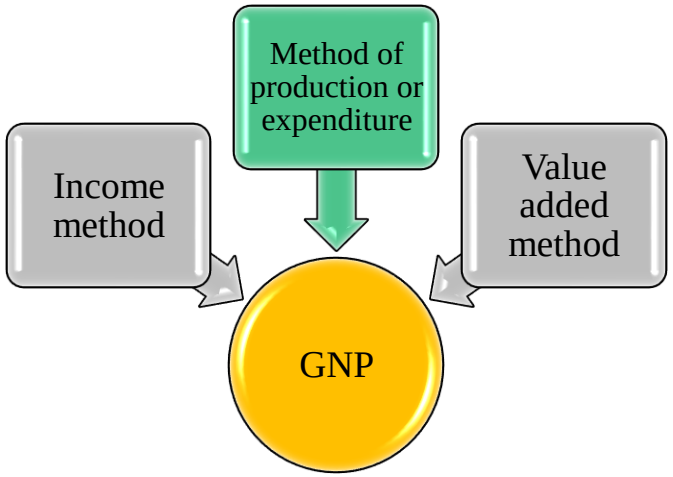

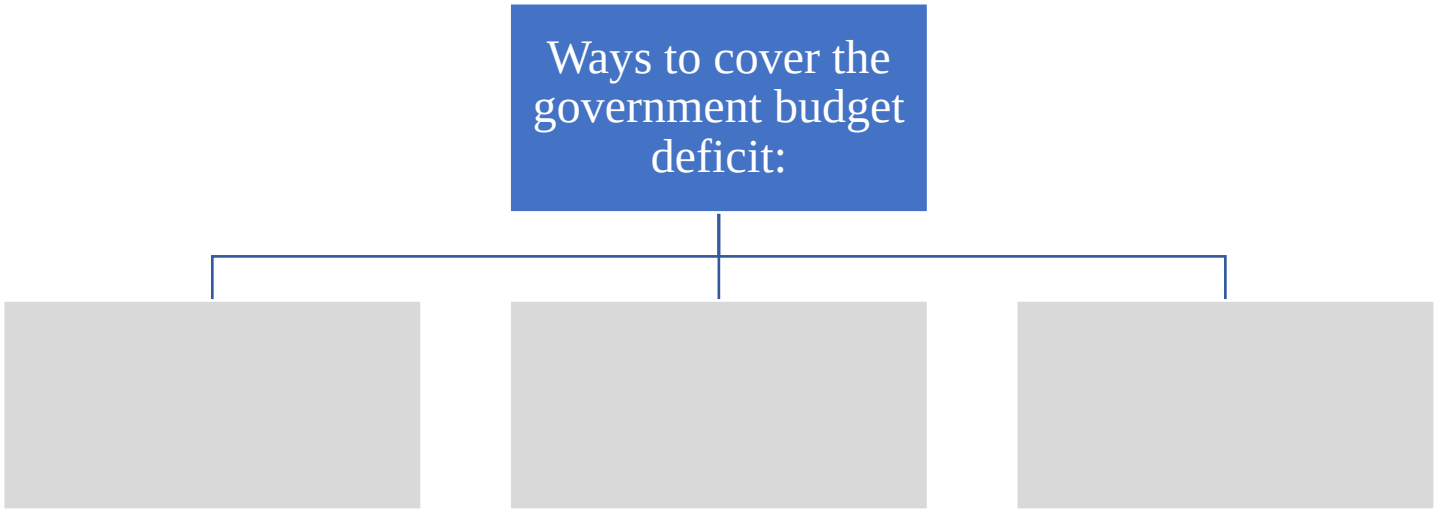

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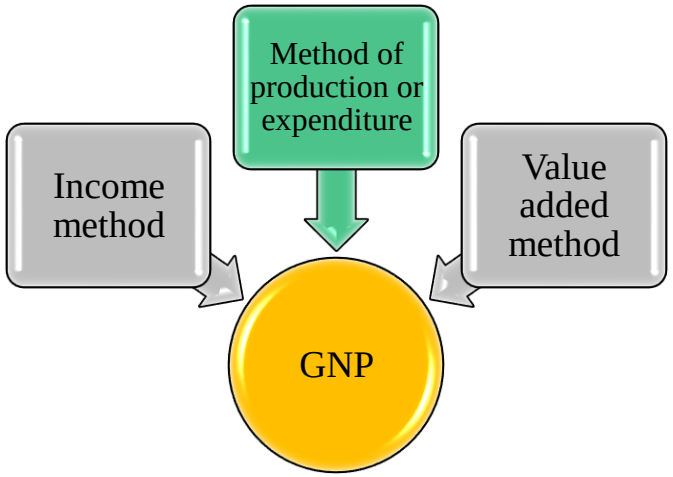

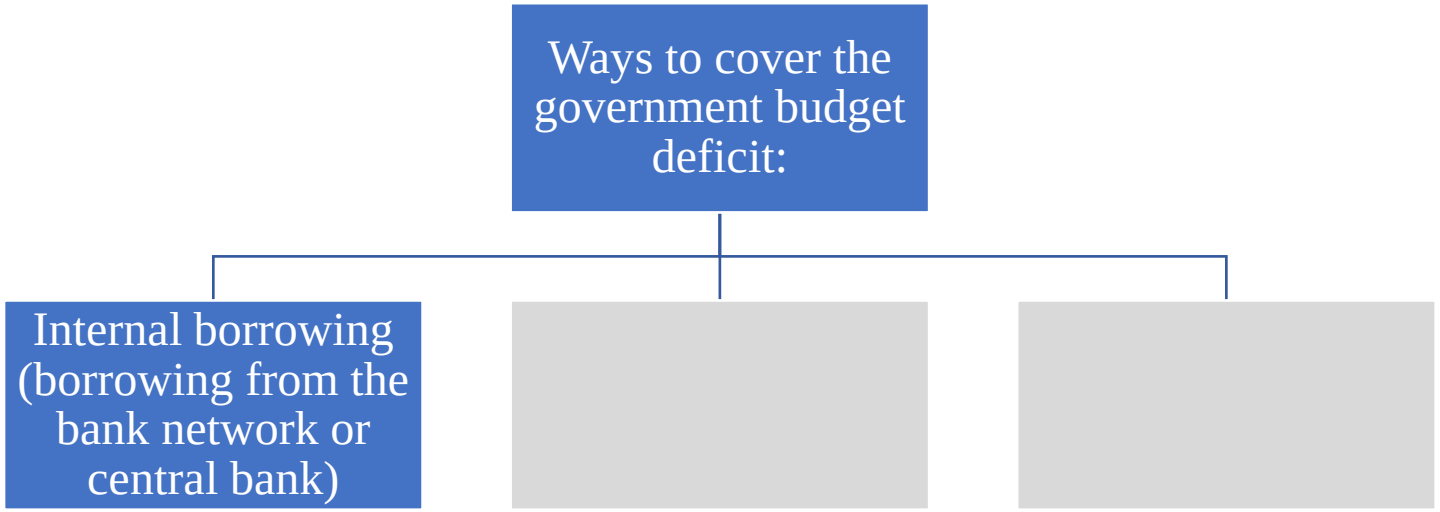

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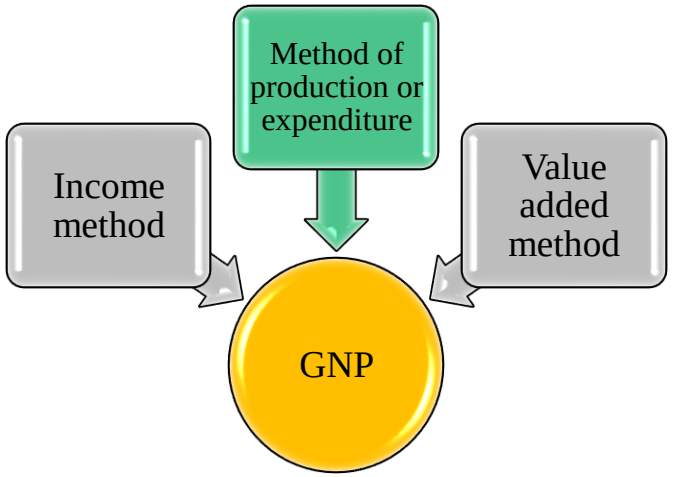

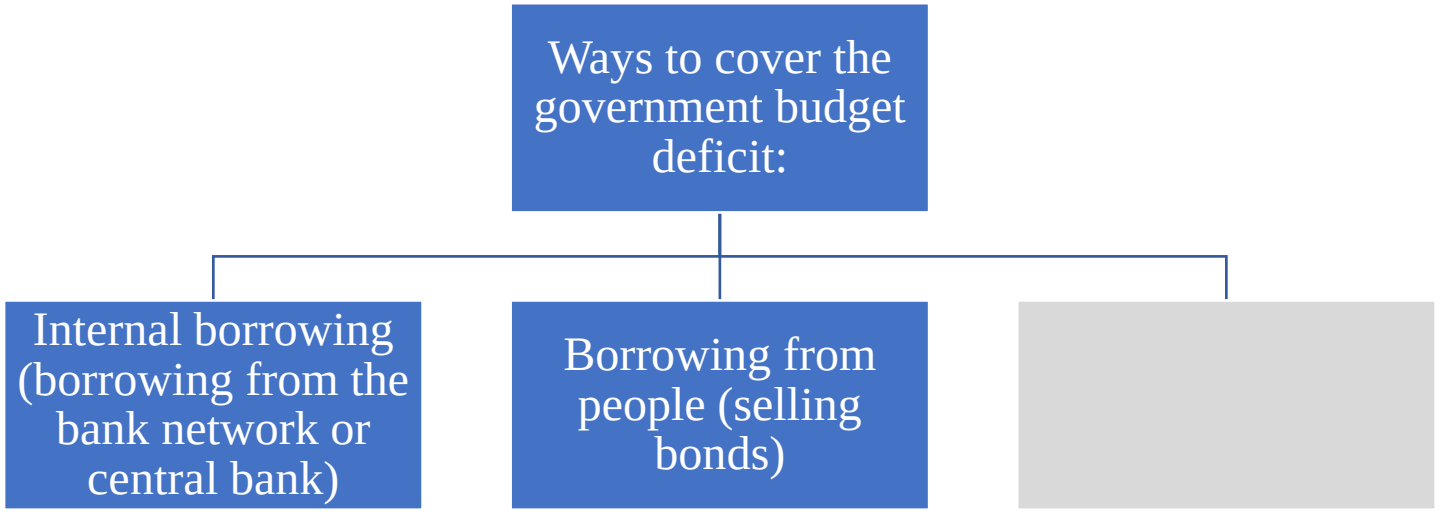

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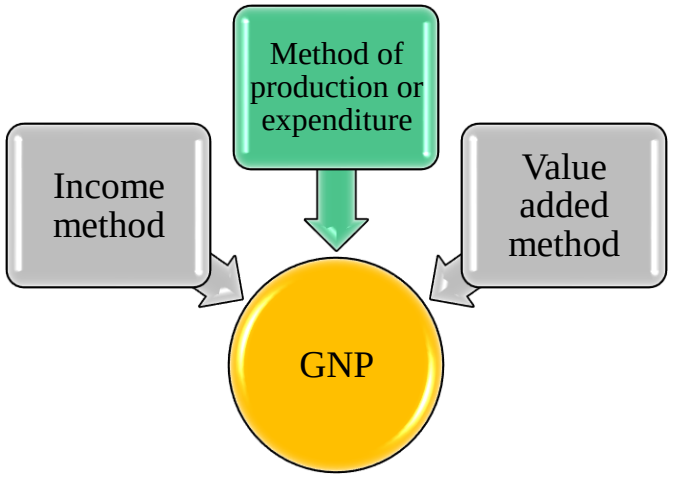

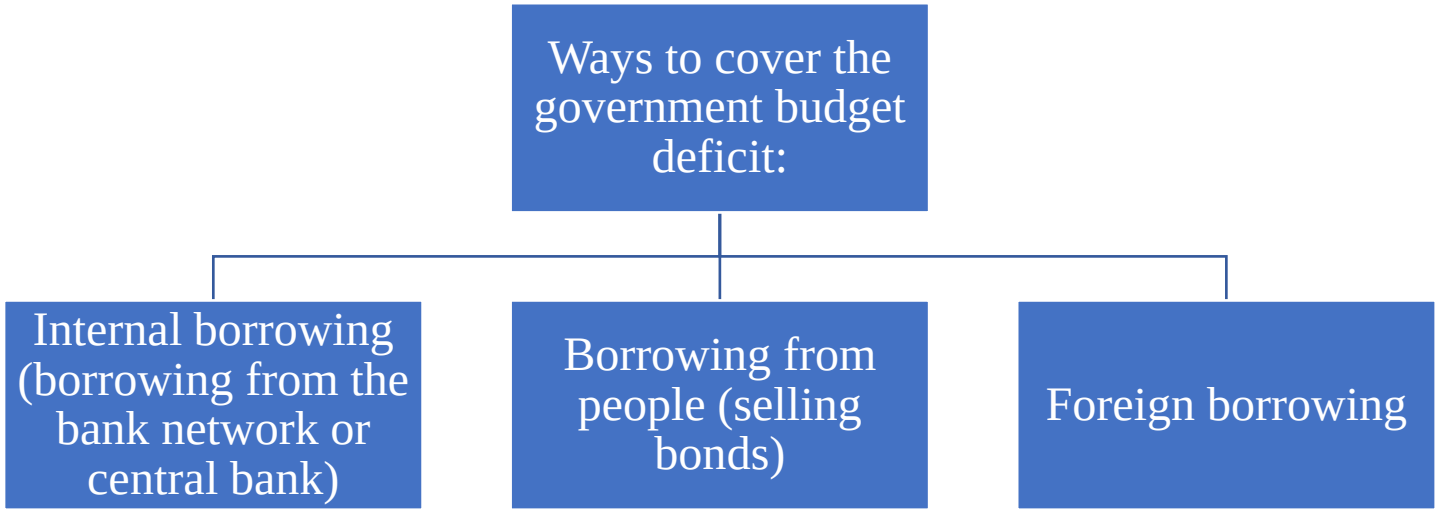

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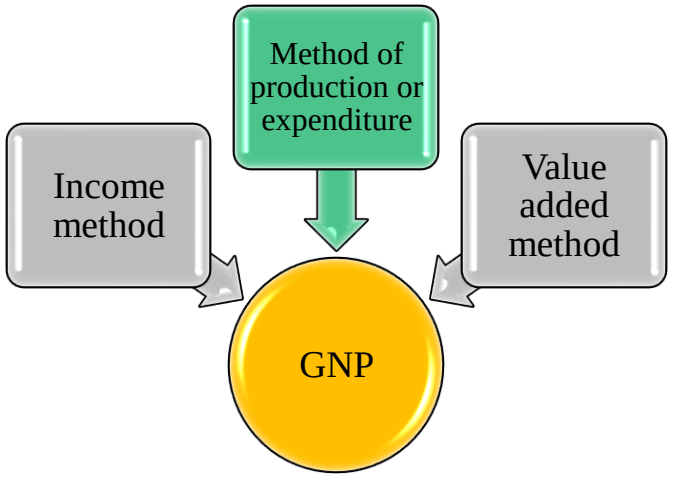

- Investment here is gross (it is NOT net)
- In case we have net investment, the gross investment could calculate as follows:

$I_G = I_N$ + D

In which D is depreciation.

- The same story is true in confronting with GDP and NNP (net national product):

NNP= GNP – D

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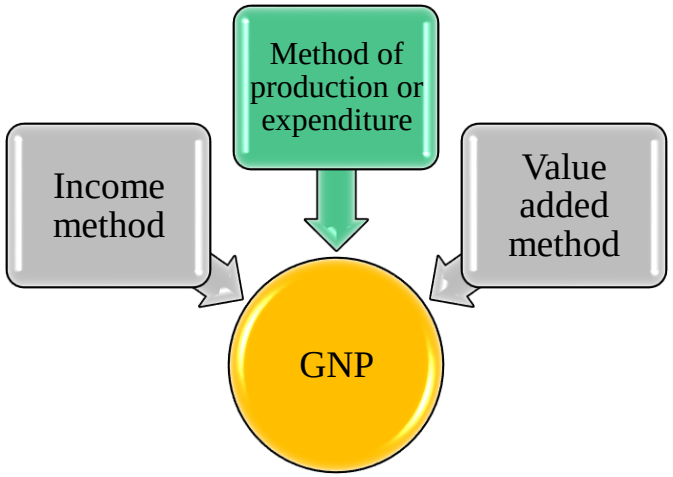

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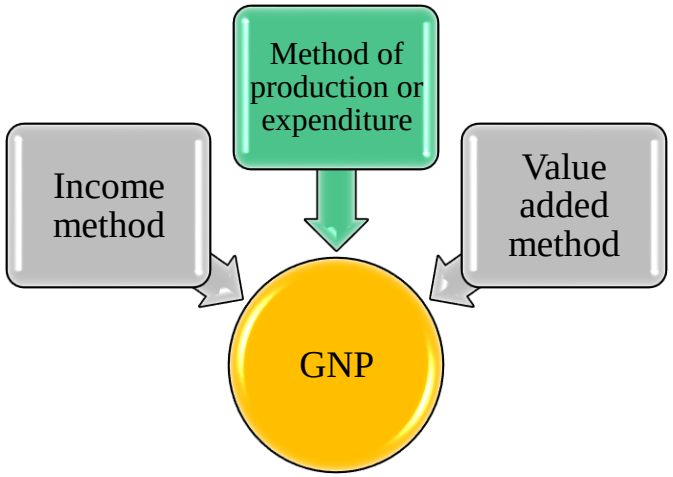

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Macro Story, GNP

The following information is available on a hypothetical simple economy:
Consumption: 1600
Import: 620
Export: 700
Net income of production factors from abroad: 200
Government spending: 400
Depreciation: 150
Net of indirect taxes: 100
Net Investment: 900

What is the **gross national product** at the price of the **factors** and at the **market** price?

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What is the **gross national product** at the price of the **factors** and at the **market** price?

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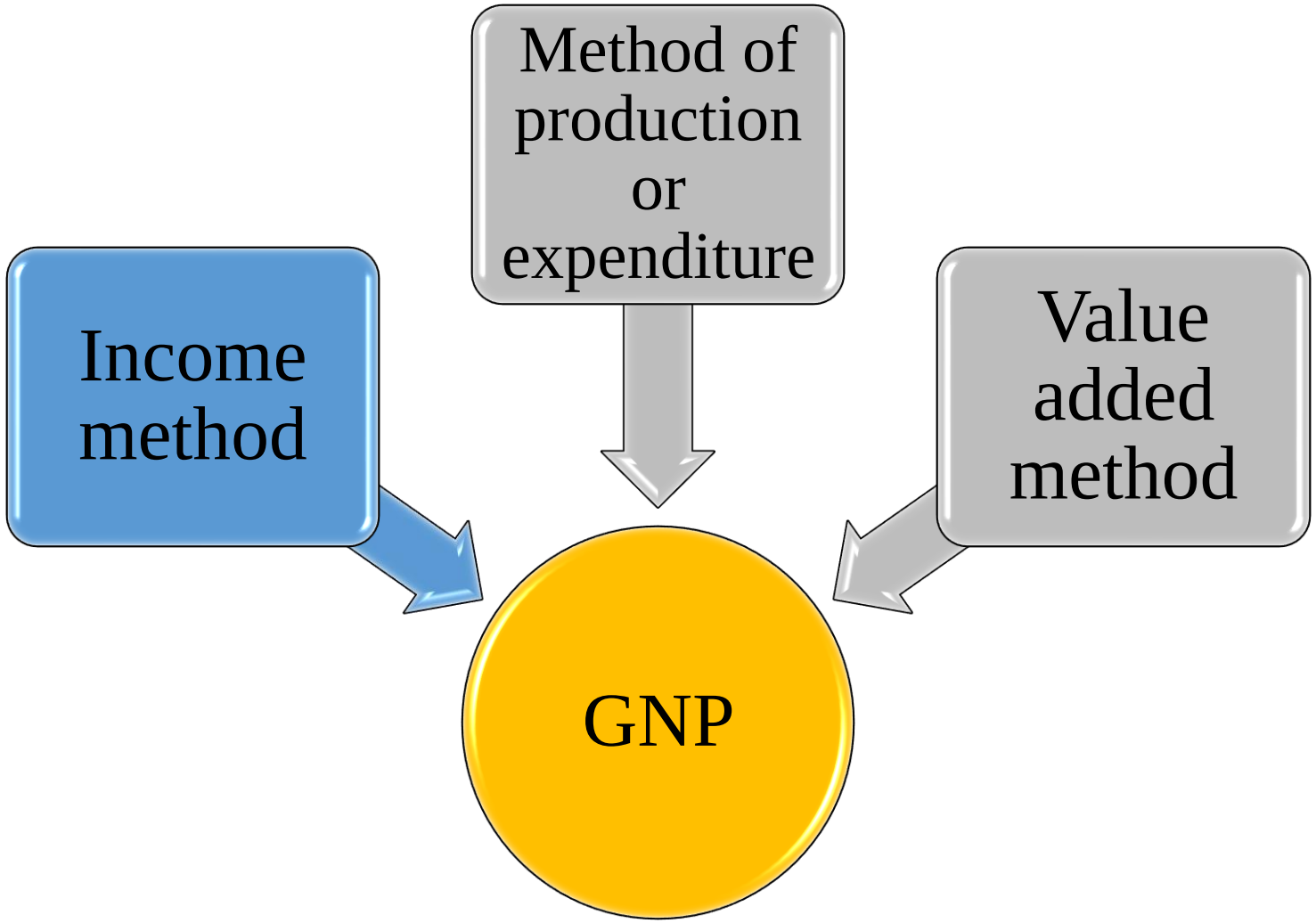
$$GNP_m = 1600 + (900 + 150) + 400 + (700 - 620) + 200 = 3330$$

$$GNP_f = GNP_m \text{- NIT = 3330-100=3230}$$

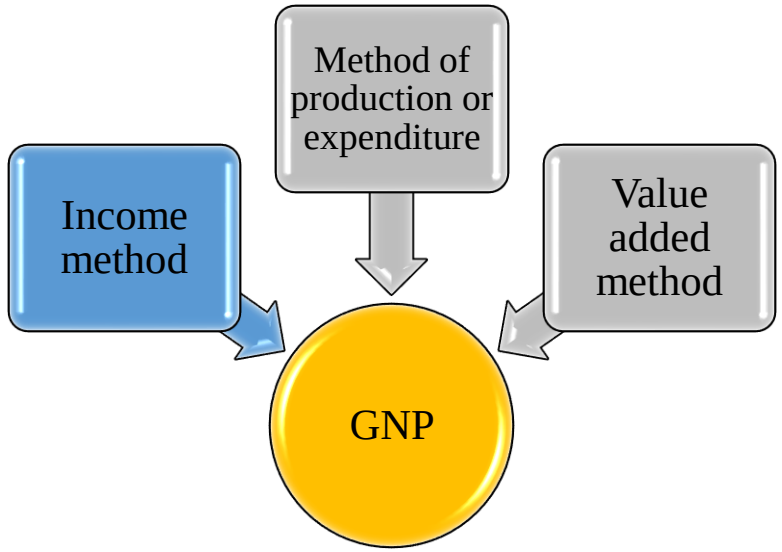
Macro Story, GNP



Macro Story, GNP

The GNP relationship according to the income expenditure components is:

$$GNP = Y = C + S + T$$



C: Part of the gross national income that is spent on consumer goods and services.
S: Part of the income that is saved.
T: Portion of income paid to the government as taxes in a given year.