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METHODS OF CALCULATING NATIONAL INCOME

Methods of Calculating National Income.

- Value Added Method
- Income Method
- Expenditure Method

★ VALUE ADDED METHOD / PRODUCT METHOD

- It is a method which measures GDP_{MP} as the sum total of value addition by all producing units in the domestic territory of a country.
- It is also known as **Industrial Origin Method** and **Net Output Method.**

Value Added = value of output − Intermediate consumption

Value of output = Sales + Δ Stock

ΔStock = Closing stock − Opening stock

- **Intermediate consumption** is also known as:
  (i) Purchase of raw material.
  (ii) Purchase of single-use producer goods.
  (iii) Purchase of non-factor inputs.

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- Change in stock is also known as Δ Stock, Unsold goods and excess of closing stock over opening stock.

Sales = Domestic sales + Exports

Intermediate consumption = Domestic purchases + Imports.

Ques 1 Calculate gross value added at market price and NDP_{FC}

Items	(₹ in crore)
Depreciation	20
Domestic sales	200
Change in stock	-10
Exports	10
Single-use producer goods	120
Net indirect taxes	20

Ans-

GDP_{MP} = value of output − Intermediate consumption

≠

value of output = sales + Δ stock

↓

= [domestic sales + exports] + Δ stock

= 200 + 10 + (-10) ⇒ 200

GDP_{MP} = 200 − 120

= ₹ 80 crores

NDP_{FC} = GDP_{MP} − Dep. − NIT

= 80 − 20 − 20

= ₹ 40 crores

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Ques-2 Find gross value added by firm A, given the following information:

Items	₹
Purchase of factor input by firm A →	500000
Purchase of non-factor input by firm A →	200000
Sales by firm A →	1000000
Import of raw material by firm A →	50000
Excess of its opening over closing stock →	100000

Ans-

GDP_{MP} = Value of output − IC

= [sales + Δ stock] − IC

= 1000000 + (−100000) − 200000

= 900000 − 200000

= ₹ 700000

→ ★ There is excess of opening stock not a closing stock. Therefore, we reverse the formula and change the sign to −ve.

Ques 3 Calculate Net value added at factor cost:

Items	₹ in lakhs
Durable producer goods (life span - 10 yrs) →	10
Single use producer goods →	5
Sales →	20
Unsold goods →	2
GST →	1

Ans-

GDP_{MP} = value of output − Intermediate consumption

= [sales + Δ stock] − IC

= (20 + 2) − 5

= 22 − 5

= ₹ 17 ~~lakh~~ lakhs

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$NVA_{FC} = GVA_{MP} - Dep. - NIT$
$= 17 - Dep. - NIT$

$Dep. = \frac{\text{capital goods} - \text{scrap value}}{\text{life span}}$
$= \frac{10 - 0}{10}$ { scrap value assume 0, because not given in question }
$= \frac{10}{10}$ $\boxed{= 1}$

$NIT = \text{indirect taxes} - \text{subsidy}$
$= 1\ (GST) - 0$ { assume 0 }
$\boxed{= 1}$

$NVA_{FC} = 17 - 1 - 1$
$\boxed{= ₹15 \text{ lakhs}}$

Ques-4 Calculate sales from following data:

Items	₹ in lakhs
Net value added at factor cost	→ 300
Intermediate consumption	→ 200
Indirect tax	→ 20
Depreciation	→ 30
Δ Stock	→ -50

Ans-

$GVA_{MP} = NVA_{FC} + Dep + NIT$
$= 300 + 30 + 20$ [indirect tax - subsidy]
$= 330 + (20 - 0)$
$\boxed{= 350}$

$GVA_{MP} = \text{value of output} - IC$
$350 = \text{value of output} - 200$
$350 + 200 = \text{value of output}$
$\boxed{550 = \text{value of output}}$

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Value of output = sales + Δ Stock
550 = sales + (−50)
550 + 50 = sales

Sales = ₹600 lakhs

Precautions regarding Value Adding Method

1. Value of the sale and purchase of second hand goods is not included in calculation of value added GDP.

2. Commission earned (by mediator) on sale and purchase of second hand good is included in calculation of value added GDP.

3. Own account production of goods of the producing units is taken into account while estimation.
   Eg → (i) Cars used by car producer for transporting their employees.
   (ii) Sofa set ~~are~~ is used by the owner in their home.

4. Value of intermediate goods is not included in the calculation of value added GDP.

5. Imputed value of production for self-consumption is taken into account.
   Eg → Wheat, rice are produced and consumed by farmers families themselves.

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6. Services or self-consumption are not included while estimating value added.
Eg → services of housewives

7. Imputed value of owner occupied house is to be taken into account.
Eg → rent on the owner occupied house

8. Value addition related to illegal activities is not included.

PROBLEM OF DOUBLE COUNTING

- Under this, the value of goods or variables are counted more than once.

- This happens when we fail to draw the distinction between final goods and intermediate goods.

Two ways to avoid double counting

(i) Final output method : Under this method, we only consider final goods and services while estimating nationals income.

(ii) Value added method : It's the difference between value of output and value of intermediate consumption of each and every producing unit. Sum total of all value added will be result in GDP_{MP}.

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★ INCOME METHOD

- According to this method, national income can be calculated by taking the sum total of the factor incomes (compensation, rent, interest, profit) earned by normal residents of a country during one year in national territory.

- It is also known as **Factor Payment Method** and **Distributed Share Method**.

⇒ Components of Income Methods

1⟩ Compensation of employees
   (I) Wages and salaries in cash.
   (II) Payments in kind
   (III) Employers contribution to social security.
   (IV) Pension on retirement.

2⟩ Operating surplus
   (I) Rent
   (II) Royalty
   (III) Interest
   (IV) Profit → (a) Dividents
   → (b) Corporate profit tax
   → (C) Undistributed profit

Domestic income (NDP$_{FC}$) = Compensation of employees + Operating surplus + Mixed Income

Compensation of employees = wages/salaries + payment in kind + employers contribution to social security + pension on retirement

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Operating surplus = rent + royalty + interest + profit

Profit = dividend + corporate profit tax + undistributed profit

$NNP_{FC} = NDP_{FC} + NFIA$

3) Mixed Income : Income of self employed which is a mixture of wages, rent, interest and profit. That's why it is called mixed income.

Ques1 Calculate national income

Items	(₹ in crores)
Profit	→ 1000
Mixed income of self-employed	→ 15000
Dividents	→ 200
Interest	→ 400
Compensation of employees	→ 7000
NFIA [Net factor income to abroad]	→ 100
Consumption of fixed capital	→ 400
Net exports	→ -200
NIT	→ 800
Net current transfers to rest of the world	→ 40
Rent	→ 500

Ans-

NDP_{FC} = Compensation of employees + operating surplus + Mixed income

$NDP_{FC} = 7000 + [Rent + royalty + interest + profit] + 15000$

$= 7000 + (500 + 0 + 400 + 1000) + 15000$

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$= 7000 + 1900 + 15000$

NDP_{FC} $= 23,900$

$NNP_{FC} = NDP_{FC} + NFIA$

$= 23900 + (-100)$

$NNP_{FC} = ₹\ 23800$ crores

* NFIA is deducted because in question there is 'to' not 'from'.

Ques-2 Calculate operating surplus, domestic income and national income.

Items	(₹ in crores)
Compensation of employees	→ 2000
Rent and interest	→ 800
Indirect taxes	→ 120
Corporate tax	→ 460
Consumption of fixed capital	→ 100
Subsidies	→ 20
Dividend	→ 940
Undistributed profit	→ 300
Net factor income to abroad	→ 150
Mixed income	→ 200

Ans-

Operating surplus = rent + royalty + interest + profit

$= 800 + 0 +$ [dividend + undistributed profit + corporate tax]

$= 800 + (940 + 300 + 460)$

$= 800 + 1700$

$= ₹2500$ crores

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NDP_{FC} = Compensation of employees + operating surplus + Mixed income

= 2000 + 2500 + 200

= ₹ 4700 crores

NNP_{FC} = NDP_{FC} + NFIA

= 4700 + (-150) {'To' in question}

= ₹4550 crores

• Precautions regarding Income Method

1) Transfer earnings like old-age pensions, unemployment allowances, scholarships, etc are not included in calculation of national income.

2) Pension on retirement is included in national income

3) Income from illegal activities is not included.

4) Commission paid on the ~~production~~ purchase of second-hand goods included in national income.

5) Brokerage (brokers) on the sale and purchase of shares and debentures is included in NI.

6) Income in terms of windfall gains (lotteries) is not included in national income.

7) Income from capital gains is not included in national income.
Eg → Price of land increase

8) Imputed value of ~~goods~~ owner occupied house is to be taken into account.

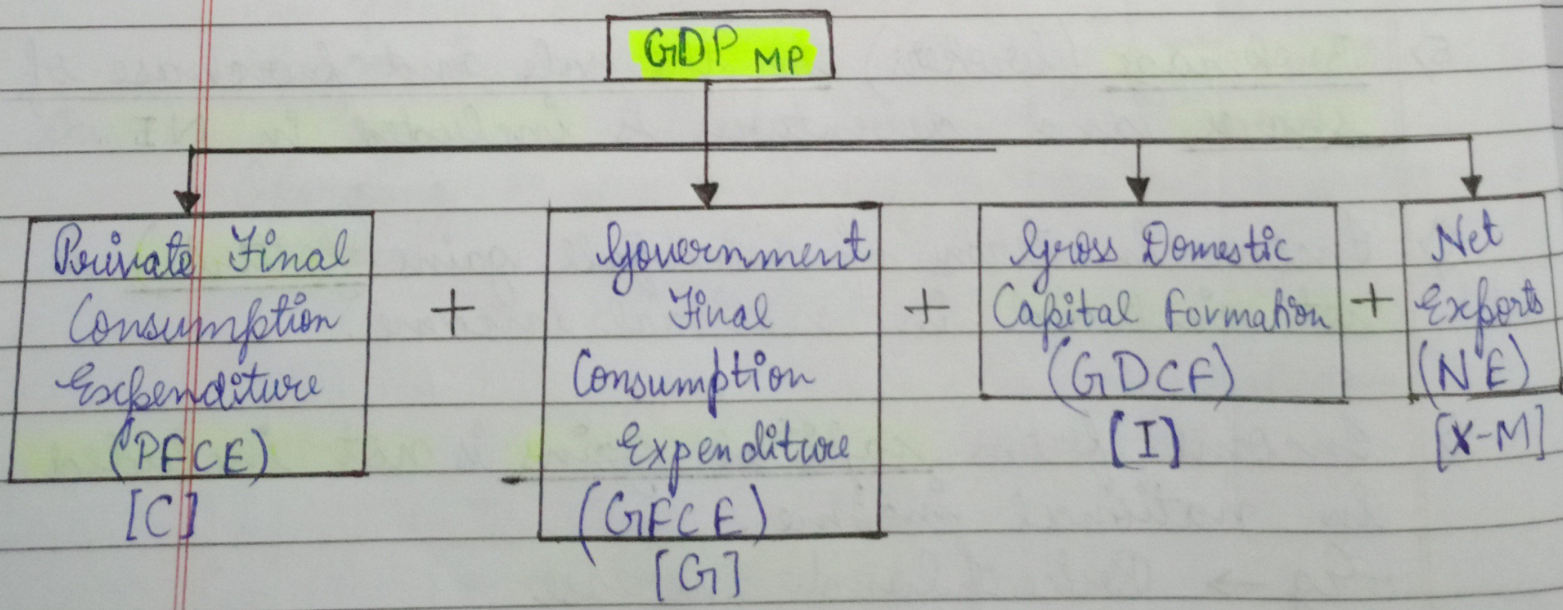
9) Imputed value of production for self-consumption is taken into account.

10) Corporate tax, dividents and undistributed profits are the components of profits. If profits is directly given in the question these components are ignored.

11) Income tax should not be added while calculating national income because it is a part of compensation of employees.

12) If compensation of employees is directly given in the questions, then wages and salaries in cash and kind, employer's contribution to social security and pension of retirement are ignored.

★ EXPENDITURE METHOD



- According to this method, national income is measured in terms of expenditure on the purchase of final goods and services produced in the economy during one year.

- It is also known as Consumption and Investment Method or Income Disposal Method.

$$GDP_{MP} = C + G_1 + I + (X - M)$$

⇒ Classification of Final expenditure

→ Final expenditure is broadly classified into four categories:

1) Private final consumption expenditure [C]
- It refers to expenditure on final goods and services by the individuals, households and non-profit private institutions.

2) Government Final consumption Expenditure [G_1]
- It refers to expenditure on final goods and services by the government.

3) Investment expenditure / Gross Domestic Capital Formation [I]
- It refers to expenditure on the purchase of final goods by the producers.

$$I = \text{Fixed Investment} + \text{Inventory Investment}$$

4) Net Exports [X − M]

- It refers to the difference between exports and imports during an accounting year.

Net Exports = Exports − Imports

★ If Net domestic capital formation is given in the questions, add depreciation to convert it into Gross Domestic Capital Formation and vice-versa.

GDP_{MP} − Depreciation	=	NDP_{MP}
NDP_{MP} − NIT	=	NDP_{FC}
NDP_{FC} + NFIA	=	NNP_{FC}

Ques - 1 Calculate Net Domestic Product at Factor Cost [NDP_{FC}]

Items	₹ in crores
PFCE	8000
GFCE	1000
Export	70
Import	120
CFC (Consumption of fixed capital)	60
Gross domestic fixed capital formation	500
Δ Stock	100
Factor income to abroad	40
Factor income from abroad	90
Indirect taxes	700
Subsidies	50
Net current transfers to abroad	(−)30

Ans- $GDP_{MP} = PFCE + GFCE + GDCF + NE$

$= 8000 + 1000 + \{GDFCF + \Delta Stock\} + \{X - M\}$

$= 9000 + (500 + 100) + (70 - 120)$

$= 9600 - 50$

$= ₹9550$ crores

$NDP_{FC} = GDP_{MP} - Dep - NIT$

$= 9550 - 60 - \{IT - subsidies\}$

$= 9550 - 60 - (700 - 50)$

$= 9490 - 650$

$= ₹8840$ crores

Ques-2 Calculate government final consumption expenditure (GFCE) and Mixed income of self-employed.

Items	₹ in crores.
GDCF	10000
National income	71000
GFCE	?
Mixed income of self-employed	?
Net factor income from abroad	1000
NIT	2000
Profits	1200
Wages and salaries	15000
Net exports	5000
PFCE	40000
CFC	3000
Operating surplus	30000

Ans- (1) Calculation of GFCE

$GDP_{MP} = NNP_{FC} + dep. - NFIFA + NIT$

$GDP_{MP} = 71000 + 3000 - 1000 + 2000$

$= 76000 - 1000$

$GDP_{MP} = ₹75000$ crores

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$GDP_{MP} = C + G + I + (X-M)$ Net export

$75000 = 40000 + G + 10000 + 5000$

$75000 = 55000 + G$

$75000 - 55000 = G$

₹ 20000 crores = G.

(II) Calculation of ~~operating~~ Mixed income

$NDP_{FC} = NNP_{FC} - NFIFA$

$= 71000 - 1000$

$= ₹70000$ crores

$NDP_{FC} = COE + OS + Mixed\ income$

$70000 = [salary\ \&\ wages] + 30000 + mixed\ income$

$70000 = 15000 + 30000 + MI$

$70000 - 45000 = MI$

₹ 25000 crores = Mixed income

Ques-3 Calculate National income [NNP_{FC}]

Items	₹ in lakhs
Corporation tax	100
PFCE	900
Personal income tax	120
GFCE	200
Undistributed profit	50
Δ Stock	-20
Net domestic fixed capital formation	120
Net imports	10
NIT	150
Net factor income from abroad	-10
Private income	1000

Ans- $GDP_{MP} = C + G + I + (X - M)$

$= 900 + 200 + [120 + (-20) + 0] + (-10)$

$= 1100 + 100 - 10$

$GDP_{MP} = ₹1190$ lakhs

$NNP_{FC} = GDP_{MP} - Dep + NFIA - NIT$

$= 1190 - 0 + (-10) - 150$

$= 1190 - 160$

$NNP_{FC} = ₹1030$ lakhs

• Precautions regarding Expenditure Method:

1) Only final expenditure is taken into account to avoid error of double counting. Expenditure on intermediate goods is avoided.

2) Expenditure on second-hand goods is not ~~not~~ to be included.

3) Expenditure on shares and bonds is not to be included in total expenditure.

4) Expenditure on transfer payments is not to be included in the estimation of national income.

5) Imputed value of goods produced for self-consumption is taken into account.

6) Imputed rent of owner occupied house is to be taken into account.