

1. Is the following a stock or flow variable?

2.1 Inventories *Stock variable*

2.2 Change in Inventories *Flow variable*

2.3 Money Supply *Stock variable*

2.4 Change in Money Supply *Flow variable*

2.5 National Income *Flow variable*

2.6 Expenditure *Flow variable*

2.7 Wealth *Stock variable*

2.8 Population *Stock variable*

2.9 Capital *Stock variable*

2.10 Interest *Flow variable*

2. What is the difference between GDP and GNP? When looking at the US and China, which country do you expect to have higher GNP? Why?

GDP measures goods and services that are produced in the located country. But GNP is the output made by the country's citizens regardless of where the output is produced. China because there are many factories from abroad going to China and opening it.

3. The canned apple has 5 stages of production as follows. Find the value added of each stage and the GDP value of the canned apple.

Stages of Production	Value of Sales	Value Added
Growing Apple	12	<i>12</i>
Pickling	15	<i>3</i>
Canning	18	<i>3</i>
Shipping	20	<i>2</i>
Retail Sale	22	<i>2</i>

4. What is Transfer Payment? Why is it not included in GDP?

Transfer payment is a transfer of money when removed from one to another. Money that the government gives citizens for free. It is not included in GDP because there are no goods and services being produced.

5. Why are we interested in Real GDP? Explain with examples. Is there a problem associated with Real GDP?

Because we can see the actual output that have been adjusted the inflation.

Ex.

$$2016 : P = 15, Q = 5$$

$$\text{Nominal GDP} \rightarrow 75$$

$$2018 : P = 5, Q = 10$$

$$\text{Nominal GDP} \rightarrow 50$$

Real GDP of 2016 with 2018 base year

$$P_{2018} \times Q_{2016} = 5 \times 5 = 25$$

$$\text{Real GDP}_{2018} \rightarrow 50$$

$\therefore$ Actual output 2018 had more output which means that it has a better standard of living. Nominal GDP lets us think in a wrong way if we do not take into account of inflation.

6. Suppose 2018 is the base year. What can we say about Real GDP, Nominal GDP, and GDP Deflator of 2018?

In the base year, Real GDP will equal to Nominal GDP. The GDP Deflator will be equal to 100.

7. Explain three limitations of the GDP concept.

- (1) GDP will not be told about inequality.
- (2) GDP does not reflect the composition of output.
- (3) GDP does not counted the unreported income.
e.g. Illegal business

8. In 2018, Kingdom Asgard made the following transactions. Using the expenditure approach, identify which component of GDP is affected by each transaction, and calculate the 2018 GDP.

- The citizens bought 8 new cars, each worth 50\$. *Consumption*
- The citizens bought 4 new houses, each worth 150\$. *Investment*
- The citizens grew rice for their own consumption. The rice was worth 500\$. *Consumption*
- The firms bought 6 used machines, each worth 50\$. *Investment*
- The firms bought 8 car parts, each worth 25\$. *Investment*
- The government bought 4 new computers, each worth 50\$. *Government spending*
- The government paid 1000\$ to the poor as welfare payment. *Government spending*
- The citizens bought 10 imported ships, each worth 100\$. *Imports*
- The firms sold 4 planes abroad, each worth 200\$. *Exports*

$$\begin{aligned} \text{GDP} &= C + I + G + (X - M) \\ &= [(8 \times 50) + 500] + [(4 \times 150) + (6 \times 50) + (8 \times 25)] \\ &\quad + [(4 \times 50) + 1000] + [(4 \times 200) - (10 \times 100)] \\ &= 3000 \end{aligned}$$

9. Suppose that there are three goods in the economy – goods A, B, and C. Calculate Nominal GDP, Real GDP, and GDP Deflator when 2012 is the base year. Also, calculate the annual inflation rate from 2014 to 2015.

Year	Price of A	Quantity of A	Price of B	Quantity of B	Price of C	Quantity of C
2012	1	3	2	3	3	3
2013	3	1	4	2	1	4
2014	2	2	3	4	2	1
2015	4	4	1	1	4	2
Year	Nominal GDP		Real GDP		GDP Deflator	
2012	$3 + 6 + 9 = 18$		18		100	
2013	$3 + 8 + 4 = 15$		$1 + 4 + 12 = 17$		88.2	
2014	$4 + 12 + 2 = 18$		$2 + 8 + 3 = 13$		138.5	
2015	$16 + 1 + 8 = 25$		$4 + 2 + 6 = 12$		208.3	

The annual inflation rate from 2014 to 2015

$$= \frac{208.3 - 138.5}{138.5} = 0.504 \Rightarrow 50.4 \%$$

10. Using the table below, calculate GNP and NNP.

	Billions of Dollars
GDP	8000
Receipts of factor income from the rest of the world	250
Payments of factor income to the rest of the world	300
Depreciation	900
Indirect taxes minus subsidies	500
Corporate profits minus dividends	500
Social insurance payments	700
Personal interest income received from the government and consumers	300
Transfer payments to persons	1100
Personal taxes	1000

$$\begin{aligned}\text{GNP} &= \text{GDP} + \text{NFI} \\ &= 8000 + (250 - 300) \\ &= 7950\end{aligned}$$

$$\begin{aligned}\text{NNP} &= \text{Gnp} - \text{Depreciation} \\ &= 7950 - 900 \\ &= 7050\end{aligned}$$

11. Using the table below, Calculate the following items.

11.1 Gross domestic investment

11.2 GDP, using the expenditure approach

11.3 GNP

11.4 NNP

11.3 National Income, using the income approach

(Do not worry if NNP and NI differ greatly.)

Table 6.5

Depreciation	168.0
Compensation of employees	1,407.7
Corporate profits	257.6
Dividends	78.4
Exports	212.8
Government purchases	716.8
Imports	235.2
Indirect taxes	593.6
Net interest income	182.2
Net private domestic investment	784.0
Personal consumption expenditures	2,203.2
Personal interest income	112.0
Receipts of factor income from the rest of the world	35.2
Personal taxes	627.2
Proprietor's income	173.9
Payments of factor income to the rest of the world	68.8
Rental income	34.1
Social insurance payments	380.8
Subsidies	44.8
Transfer payments	504.0

$$(1) \text{ Net investment} = \text{Gross investment} - \text{Depreciation}$$

$$\text{Gross investment} = 784 + 168 = 952$$

$$(2) \text{ GDP} = C + I + G + (X - M)$$

$$= 2203.2 + 952 + 716.8 + (212.8 + 235.2) = 3846.6$$

$$(3) \text{ GNP} = \text{GDP} + \text{NFFI}$$

$$= 3846.6 + (35.2 - 68.8) = 3813.3$$

$$(4) \text{ NNP} = \text{GNP} - \text{Depreciation}$$

$$= 3813.3 - 168 = 3645.3$$

$$(5) \text{ NI} = 1407.7 + 257.6 + 182.2 + 173.9 + 34.1$$

$$= 2055.5$$

12. In a simple economy, suppose that all income is either compensation of employees or profits. Suppose also that there are no indirect taxes. Calculate GDP from the table below. Show that the expenditure approach and the income approach add up to the same figure.

(Hints: (1) $NNP + \text{Depreciation} = GNP$, (2) $NFFI = 0$, and (3) $NI = NNP$)

Consumption	9500
Investment	3000
Depreciation	1750
Profits	2400
Exports	850
Compensation of employees	11500
Government purchases	3200
Direct taxes	1200
Saving	1600
Imports	900

$$NNP = NI$$

$$= 2400 + 11500 = 13900$$

$$GNP = NNP + \text{Depreciation}$$

$$= 13900 + 1750 = 15650$$

$$GDP = GNP - NFFI$$

$$= 15650$$

$$GDP = C + I + G + (X - M)$$

$$= 9500 + 3000 + 3200 + (850 - 900)$$

$$= 15650$$