

particular period

over some period of time

1. Is the following a **stock** or **flow** variable?

2.1 Inventories - stock

2.2 Change in Inventories - flow

2.3 Money Supply - stock
Supply

2.4 Change in Money - flow

2.5 National Income - flow

2.6 Expenditure - flow

2.7 Wealth - stock

2.8 Population - stock

2.9 Capital - stock

2.10 Interest - flow

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** = the total market value of all the goods & services produced within a country
- **GNP** = measure of economic well-being of the country's national
- US would probably have higher GNP because many US citizens went abroad and started their company in other countries

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	Value added
Growing Apple	12	→	12
Pickling	15	→	3
Canning	18	→	3
Shipping	20	→	2
Retail Sale	22	→	2

$\sum \text{value added} = \text{GDP}$
 $\therefore \text{GDP} = 22$

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

- **transfer payment** = payment made / income received in which no g/s are being paid for
- it is not included in GDP because it is only a redistribution of income, so the money is not used for anything yet (only counted when people spend the money)

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

- interested because the real GDP is the value that is already adjusted for price change (for inflation/deflation)
- eg. we use the base year price of 2018 and the quantity sold of 2020 to calculate the GDP of 2020
- the problem associated w/ the real GDP is that since we calculated it on the price of the base year, we will not take the inflation/deflation into account. Also, some base year can be too long ago. This can cause slight miscalculation in the GDP.

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

↳ measure of the overall price level

- we will use the price of 2018 to calculate the real GDP
- we will not use the price of 2018 to calculate the nominal GDP
- we will calculate the GDP deflator starting from & based on the base year

7. Explain three limitations of the GDP concept.

- 1) **inequality** = GDP measures the output per person, so it does not tell us anything about the distribution of wealth
- 2) **income** = GDP does not count the unreported (illegal) income earned into account
- 3) **externality** = GDP does not take into account the cost/benefit of the third party in production

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\$. **C**
- The citizens bought 4 new houses, each worth 150\$. **I**
- The citizens grew rice for their own consumption. The rice was worth 500\$. **not calculated as GDP**
- The firms bought 6 used machines, each worth 50\$. **not GDP**
- The firms bought 8 car parts, each worth 25\$. **I**
- The government bought 4 new computers, each worth 50\$. **G**
- The government paid 1000\$ to the poor as welfare payment. **not GDP**
- The citizens bought 10 imported ships, each worth 100\$. **M**
- The firms sold 4 planes abroad, each worth 200\$. **X**

$$GDP = \underbrace{8(50)}_C + \underbrace{4(150) + 8(25)}_I + \underbrace{4(50)}_G + \underbrace{4(200)}_X - \underbrace{10(100)}_M = \boxed{1200\$}$$

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	18	18	100
2013	15	19	77.24
2014	18	13	138.46
2015	25	12	208.33

$$\frac{\text{nominal}}{\text{real}} \times 100$$

inflation rate

$$= \frac{208.33 - 138.46}{138.46} = \boxed{0.50}$$

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

$$\text{GNP} = \text{GDP} + \text{foreign sector} \\ = 8000 + (250 - 300) = \boxed{7950}$$

$$\text{NNP} = \text{GNP} - \text{depreciation} \\ = 7950 - 900 = \boxed{7050}$$

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

$$1) \text{GDI} = \text{NDI} + \text{depreciation} \\ = 784 + 168 = \boxed{952}$$

$$2) \text{GDP} = C + I + G + X - M \\ = 2203.2 + 784 + 716.8 + 212.8 - 235.2 \\ = \boxed{3849.6}$$

$$3) \text{GNP} = \text{GDP} + \text{NFFL} \\ = 3849.6 + (35.2 - 68.8) \\ = \boxed{3816}$$

$$4) \text{NNP} = \text{GNP} - \text{depreciation} \\ = 3816 - 168 = \boxed{3648}$$

$$5) \text{NI} = w + r + C.p + nc.p + int + (tax - subsidy) \\ = 1407.7 + 257.6 + 173.9 + 34.1 + 182.2 + 593.6 - 44.8 \\ = \boxed{2604.3}$$

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

$$\text{exp. GDP} = C + I + G + X - M$$

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

$$= 15650$$

the same

income GDP

$$GNP = GDP + NFFI = 15650 - 0 = 15650$$

$$NNP = GNP - \text{dep} = 15650 - 1750 = 13900$$

$$NI = NNP = 13900$$