

Exercise 2

1. Is the following a stock or flow variable?

stock variable

- Inventories
- capital
- wealth
- money supply
- population
- 

flow variable

- change in inventories
- national income
- change in money supply
- expenditure
- interest

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 = Gross domestic price, which base on the location

GNP = Gross national price based on nationality

America has higher GNP as they opened many companies abroad.

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

stages of production	value of sales	value added
Growing Apple	12	\$12
picking	15	3
canning	18	3
shipping	20	2
Retail Sale	\$22	<u>2</u>
		\$22

Value-added = 22  
GPP value = \$22

4. What is transfer Payment? why is it not included in GDP?

= a payment made or income received in which no goods or services are being paid for. Therefore, Transfer payment is not included in GDP.

5. Why are we interested in real GDP?

Explain with examples. Is there a problem associated with Real GDP?

Because it shows exactly how much output you made regardless of changes in price.

For example,

Countries A & B produce 1 good

A :  $P = 20$     $Q = 5$     $= 100$  } GDP

B :  $P = 5$     $Q = 18$     $= 90$  }

∴ B actually sold higher amount of products, but GDP of A is higher as price per unit is more expensive.

It has some important limitations.

Fixed weights completely remove how the typical market responds to price changes

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

Real GDP = adjusted for price change (inflation/deflation)

Nominal GDP = measured in current prices

GDP deflator is a measure of the overall price level

7. Explain three limitations of the GDP concept.

- Decrease in crime is not an increase in output and is not reflected in GDP
- An increase in leisure is also an increase in social welfare, sometimes associated with a decrease in GDP.
- Most non market and domestic activities such as housework and child care, are not included in GDP

**Inequality:** GDP also has nothing to say about the distribution of output among individuals in a society.

- **Informal Economy:** GDP does not count the unreported income generated in the hidden part of economy.

- **Externality:** GDP does not take into account the costs or benefits on the third party, as a result of production  
eg. pollution and environmental costs.

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.

GDP.

- The citizens bought 8 new cars, each worth 50\$. **C**
- The citizens bought 4 new houses, each worth 150\$. **C**
- The citizens grew rice for their own consumption. The rice was worth 500\$.
- The firms bought 6 used machines, each worth 50\$. **I**
- 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. **○**
- The citizens bought 10 imported ships, each worth 100\$. **IM**
- The firms sold 4 planes abroad, each worth 200\$. **EX**

$$\begin{aligned}
 \text{GDP} &= (8(50) + 150(4)) + 500 + 6(50) + 25(8) + \\
 &\quad 50(4) + (4(200) - 10(100)) \\
 &\approx 400 + 600 + 500 + 300 + 200 + \\
 &\quad 200 + 800 - 1000 \\
 &\approx 4000
 \end{aligned}$$

9. Suppose that there are three goods in the economy - goods A, B, 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

### Nominal GDP

$$2012 \quad 3 + 6 + 9 = 18$$

$$2013 \quad 3 + 8 + 4 = 15$$

$$2014 \quad 4 + 12 + 2 = 18$$

$$2015 \quad 16 + 1 + 8 = 24$$

Year	Nominal GDP	Real GDP	GDP Deflator
2012	18	18	100 (Base Year)
2013	15	12	83.24
2014	18	13	139.46
2015	24	14	171.43

### Real GDP (use 2012 as base)

$$2012 = 3 + 6 + 9 = 18$$

$$2013 = 1 + 4 + 12 = 17$$

$$2014 = 2 + 8 + 3 = 13$$

$$2015 = 4 + 2 + 6 = 14$$

annual inflation rate from 2014 to 2015

$$\frac{171.43 - 139.46}{139.46} = 0.238 \approx 23.8\%$$

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

$$\text{GNP} = \text{GDP} + \text{Net Foreign Factor Income}$$

$$= 8000 + 250 - 300 = 7950$$

$$\text{GNP} = 7950$$

$$\text{NNP} = 7950 - 900 = 7050$$

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

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

11.1 *GDI*

$$\begin{aligned} &= 1407.7 + 257.6 + 593.6 + 182.2 + 627.2 \\ &\quad 173.9 + 34.1 + 78.4 - 44.8 + 112 \\ &= 3343.5 \end{aligned}$$

*GDP*

$$= 716.8 + 784 + 2203.2 + 212.8 - 235.2$$

$$= 3681.6$$

$$\text{GNP} = 3681.6 + 35.2 - 68.8$$
$$= 3648$$

$$\text{NNP} = 3648 - 168 = 3480$$

$$\text{NI} = 3231.5 + 35.2 - 68.8$$
$$- 168 = 3141.9$$

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

$$GNP = 17450 - 0$$

$$= 17450$$

$$NNP = 17450 - 1750$$

$$= 15700$$

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

$$= 15650$$

$$\text{Income approach} = 2400 + 11500 + 2400$$

$$+ 1200 = 15650$$

