

Exercise 2

National Output and National Income

- Is the following a stock or flow variable?
 - Inventories **stock**
 - Change in Inventories **flow**
 - Money Supply **stock**
 - Change in Money **flow**
 - Supply
 - National Income
 - Expenditure **flow**
 - Wealth
 - Population
 - Capital
 - Interest **flow**
- 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?
- 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
Pickling	15
Canning	18
Shipping	20
Retail Sale	22

- What is Transfer Payment? Why is it not included in GDP?
 - Why are we interested in Real GDP? Explain with examples. Is there a problem associated with Real GDP?
 - Suppose 2018 is the base year. What can we say about Real GDP, Nominal GDP, and GDP Deflator of 2018?
 - Explain three limitations of the GDP concept.
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- 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\$.

- The citizens bought 4 new houses, each worth 150\$.
 - The citizens grew rice for their own consumption. The rice was worth 500\$.
 - The firms bought 6 used machines, each worth 50\$.
 - The firms bought 8 car parts, each worth 25\$.
 - The government bought 4 new computers, each worth 50\$.
 - The government paid 1000\$ to the poor as welfare payment.
 - The citizens bought 10 imported ships, each worth 100\$.
 - The firms sold 4 planes abroad, each worth 200\$.
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			
2013			
2014			
2015			

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

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

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

1. Is the following a stock or flow variable?

2.1 Inventories **stock**

2.2 Change in Inventories **flow**

2.3 Money Supply **stock**

2.4 Change in Money **flow**

Supply

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 : Total market value of all final goods and services produced in a country

GNP : Total factor income earned by residents of a country

US have higher GNP because in US has base of production in china.

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	12
Pickling	15	3
Canning	18	3
Shipping	20	2
Retail Sale	22	2

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

The payments by the government to household for which no new goods and services are produced.

The reason is it already counted when it was produce goods, however GDP will be counted when people spend this money because it link with transactions.

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

Real GDP is a corrected GDP for annual price change doesn't count inflation and deflation. We use real GDP to compare GDP in the different year. For example

	P	Q	
2020	20	5	nominal GDP = 700
2019	10	10	nominal GDP = 700

∴ Assume 2019 as a base year nominal GDP will be equal real GDP.

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

If 2018 is a base year nominal GDP and real GDP must be equal. GDP deflator is nominal GDP part with real GDP so in 2018 GDP Deflator will equal 100#

7. Explain three limitations of the GDP concept.

Inequality: GDP has nothing to say about the distribution.

Informal economic: GDP doesn't count the unreported income generated in the hidden part of the economy.

Externality: GDP doesn't take into account the costs or benefits on third party e.g. environmental costs and pollution

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\$. $C = 400$
- The citizens bought 4 new houses, each worth 150\$. $C = 600$
- The citizens grew rice for their own consumption. The rice was worth 500\$. *not count*
- The firms bought 6 used machines, each worth 50\$. *not count*
- The firms bought 8 car parts, each worth 25\$. $I = 200$
- The government bought 4 new computers, each worth 50\$. $G = 200$
- The government paid 1000\$ to the poor as welfare payment. *transfer payment not count*
- The citizens bought 10 imported ships, each worth 100\$. $M = 1000$
- The firms sold 4 planes abroad, each worth 200\$. $X = 800$

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

$$= 400 + 600 + 200 + 200 + (800 - 1000)$$

$$= 1,200$$

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 Quantity of A		Price Quantity of B		Price Quantity of C	
	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	$3 + 6 + 9 = 18$	$3 + 6 + 9 = 18$	$\frac{18}{18} \times 100 = 100$
2013	$3 + 8 + 4 = 15$	$1 + 4 + 12 = 17$	$\frac{15}{17} \times 100 = 88.24$
2014	$4 + 12 + 2 = 18$	$2 + 8 + 3 = 13$	$\frac{18}{13} \times 100 = 138.46$
2015	$16 + 1 + 8 = 25$	$4 + 2 + 6 = 12$	$\frac{25}{12} \times 100 = 208.33$

annual inflation rate 2014 to 2015 =

$$\frac{208.33 - 138.46}{138.46} = 0.504$$

$$= 50.4\%$$

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
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$$\begin{aligned} \text{GNP} &= \text{GDP} + \text{Net foreign factor Income (NFFI)} \\ &= 8000 + 250 - 300 \\ &= 7950 \end{aligned}$$

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

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

11.1 Gross domestic investment $784 + 168 = 952$

11.2 GDP, using the expenditure approach 3849.6

11.3 GNP 3953.6

11.4 NNP

11.3 National Income, using the income approach

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

	Depreciation	168.0
	Compensation of employees	1,407.7
	Corporate profits	257.6
	Dividends	78.4
X	Exports	212.8
G	Government purchases	716.8
M	Imports	235.2
	Indirect taxes	593.6
	Net interest income	182.2
GDI	Net private domestic investment	784.0
c	Personal consumption expenditures	2,203.2
c	Personal interest income	112.0
	Receipts of factor income from the rest of the world	35.2
C	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

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

$$= 2203.2 + 952 + 716 + (212.8 - 235.2)$$

$$= 3849.6$$

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

$$= 3849.6 + (35.2 - 68.8)$$

$$= 3816$$

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

$$= 3816 - 168$$

$$= 3648$$

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) $NNP + \text{Depreciation} = \text{GNP}$, (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

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

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

$$= 15650$$