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Exercise 2

National Output and National Income

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 is the total of all final price G&S in a country during a period
   GNP is the wealth of the country nationals during a period
   US because US have a lot of successfull buisness all over the world.

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?

   Transfer payment is free money from government to people. The transfer payment is not include in GDP because it does not create new G&S

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

   because real GDP can show is it inflation/ deflation

			real GDP
2019	10	20	200
2020	30	7	70

   yes, when the economic structure change but the base year price not change.

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

Real GDP = Nominal GDP because P and Q is the same GDP Deflator = 100

because $\frac{\text{Real GDP}}{\text{Nominal GDP}} = \frac{\text{same}}{\text{same}} = 1$ | $1 \times 100 = 100$

7. Explain three limitations of the GDP concept.

1. Inequality – no output per person
2. Informal Economy – no count on unreported and illegal income
3. Externality – not take third party cost as a production cost.

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$.

  +400$ Consumption (C)

- The citizens bought 4 new houses, each worth 150$.

  +600$ Investment (I)

- The citizens grew rice for their own consumption. The rice was worth 500$.

  ±0$ Own consumption

- The firms bought 6 used machines, each worth 50$.

  ±0$ Second hand product

- The firms bought 8 car parts, each worth 25$.

  +200$ Consumption (C)

- The government bought 4 new computers, each worth 50$.

  +200$ Government Spending (G)

- The government paid 1000$ to the poor as welfare payment.

  ±0$ Transfer payment

- The citizens bought 10 imported ships, each worth 100$.

  -1,000$ Import (M)

- The firms sold 4 planes abroad, each worth 200$.

  +800$ Export (X)

C = 400$ + 200$ = 600$ I = 600$ G = 200$ X = 800$ M = -1000$

$GDP_{2018} = 600 + 600 + 200 + 800 - 1000 = 1200\$$

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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	3+6+9 = 18	$\frac{18}{18} \times 100 = 100.0$
2013	3+8+4 = 15	1+4+12 = 17	$\frac{15}{17} \times 100 \approx 88.2$
2014	4+12+2 = 18	2+8+3 = 13	$\frac{18}{13} \times 100 \approx 138.5$
2015	16+1+8 = 25	4+2+6 = 12	$\frac{25}{12} \times 100 = 208.\dot{3}$

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

GNP = GDP + NFFI

GNP = 8000 + 250 - 300

GNP = 7950 Bilions of Dollars

NNP = GNP - Depreciation

NNP = 7950 - 900

NNP = 7050 Bilions of Dollars

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

11.1 Gross domestic investment 0

11.2 GDP, using the expenditure approach 3681.6

11.3 GNP 3648

11.4 NNP 3480

11.3 National Income, using the income approach 2934.4

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

Table 6.5

	Depreciation	168.0
+1	Compensation of employees	1,407.7
+4	Corporate profits	257.6
	Dividends	78.4
	Exports (X)	212.8
	Government purchases (G)	716.8
	Imports (M)	235.2
+6	Indirect taxes	593.6
+5	Net interest income	182.2
	Net private domestic investment (I)	784.0
	Personal consumption expenditures (C)	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
3	Rental income	34.1
	Social insurance payments	380.8
-6	Subsidies	44.8
+7?	Transfer payments	504.0

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

$GDP = 2,203.2 + 784.0 + 716.8 + (212.8 - 235.2)$

$GDP = 3681.6$

$GNP = GDP + NFFI$

$GNP = 3681.6 + 35.2 - 68.8$

$GNP = 3648$

$NNP = GNP - Depreciation$

$NNP = 3648.6 - 168.0$

$= 3480$

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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 + Depreciation = GNP, (2) NFFI = 0, and (3) NI = NNP)

Consumption (C)	9500
Investment (I)	3000
Depreciation	1750
Profits	2400
Exports (X)	850
Compensation of employees	11500
Government purchases (G)	3200
Direct taxes	1200
Saving	1600
Imports (M)	900

Income Approach

NI = 11500 + 2400

NI = 13900

No statistical error

NI = NNP

GNP = NNP + Depreciation

GNP = 13900 + 1750

GNP = 15650

GDP = GNP - NFFI

GDP = 15650 - 0

GDP = 15650

Expenditure Approach

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

GDP = 9500 + 3000 + 3200 + 850 - 900

GDP = 15650