Assignment of Introduction to Macroeconomics

Assignment - 01
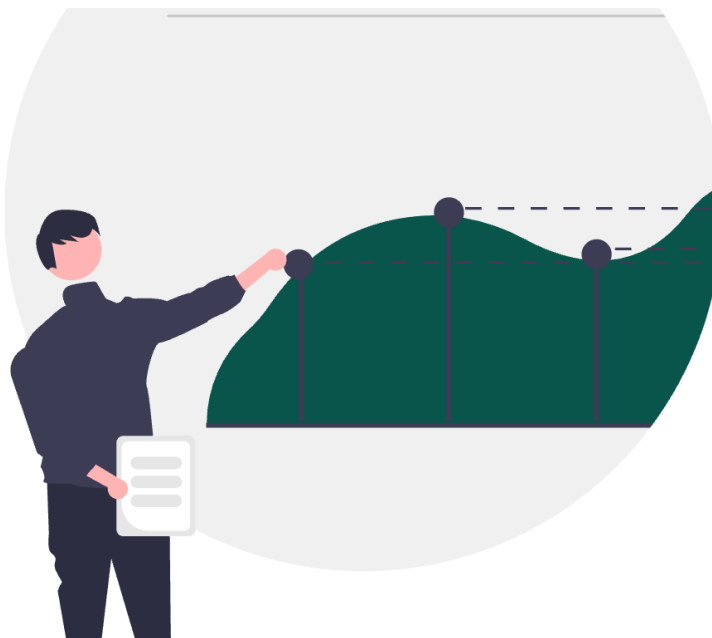
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Answer to the Question no 1

Circular Flow of Expenditure and Income.
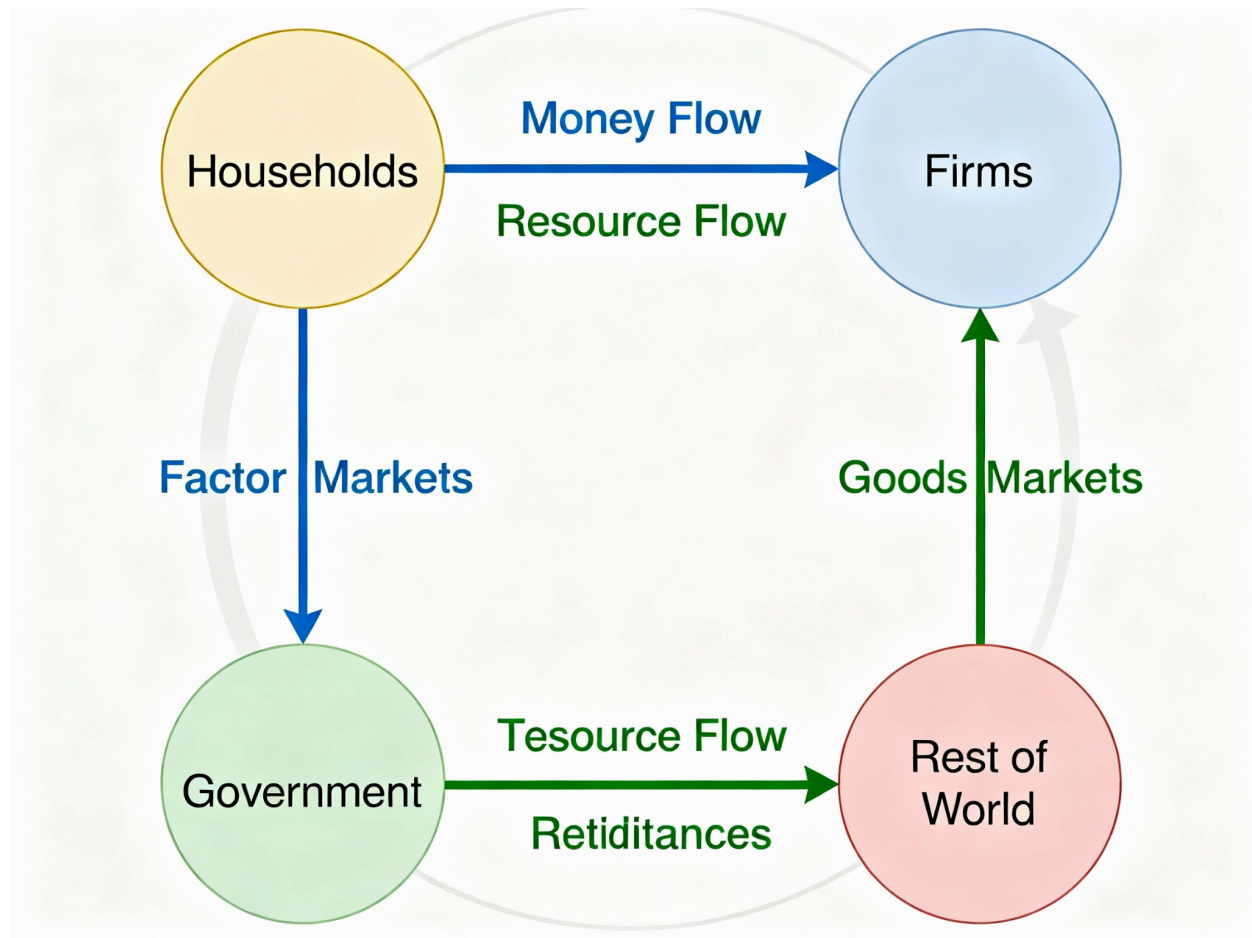
The circular flow diagram above illustrates the complete economic system including households, firms, government, and the rest of the world (foreign sector), connected through factor markets and goods markets.

Factor Markets:

- **Demand side:** Firms demand factors of production (labor, capital, land, entrepreneurship)
- **Supply side:** Households supply factors of production

Firms pay wages, rent, interest, and profits to households in exchange for their productive resources.

Goods Markets:

- **Demand side:** Households, Government, and Rest of World (foreign buyers) demand goods and services
- **Supply side:** Firms supply goods and services

Households, government, and foreign buyers pay money to firms in exchange for goods and services. The circular flow shows how income flows from firms to households through factor markets, and expenditure flows from households (and government and foreign sector) back to firms through goods markets.

Answer to the Question no 2

Given: $Y = C + I + G + X - M$

Given conditions:

- Country 1 and Country 2 have the same C, I, G, and X
- Country 1 has lower GDP than Country 2: $Y_1 < Y_2$

Analysis:

Since $Y_1 < Y_2$ and $C_1 = C_2$, $I_1 = I_2$, $G_1 = G_2$, $X_1 = X_2$

We can write:

$C + I + G + X - M_1 < C + I + G + X - M_2$

Simplifying:

$-M_1 < -M_2$
$M_1 > M_2$

Conclusion: Country 1 has a higher value of imports than Country 2. The lower GDP in Country 1 is explained by its higher imports, which represent a leakage from the domestic economy.

Answer to the Question no 3

The formula for the growth rate of GDP is:

GDP Growth Rate = ((GDP$_{\text{current year}}$ −GDP$_{\text{previous year}}$)/GDP$_{\text{previous year}}$)*100%

Or equivalently:

GDP$_{\text{previous year}}$ = (ΔGDP/GDP$_{\text{previous year}}$) ×100%

This formula calculates the real GDP growth rate when using real GDP values, which measures actual economic growth adjusted for inflation.

Answer to the Question no 4

Calculations for 2010 (Base Year):

Nominal GDP$_{2010}$ = Sum of (Price$_{2010}$ × Quantity$_{2010}$)
=(2×5)+(30×4) = 10+120 = 130
Real GDP$_{2010}$ = Sum of (Price$_{2010}$ × Quantity$_{2010}$)
= 130 (same as nominal GDP in base year)

GDP Deflator$_{2010}$ = (Nominal GDP / Real GDP) × 100 = (130 / 130) × 100 = 100
CPI$_{2010}$ = (Cost of base year basket at current prices / Cost of base year basket at base year prices) × 100 = 100

Calculations for 2014:

Nominal GDP$_{2014}$ = Sum of (Price$_{2014}$ × Quantity$_{2014}$)
= (4x4)+(40x5) = 16 + 200 = 216
Real GDP$_{2014}$ = (Price$_{2010(\text{base year})}$ × Quantity$_{2014}$)
= (2x4)+(30x5) = 08 + 150 = 158

GDP Deflator$_{2010}$ = (Nominal GDP / Real GDP) × 100 = (216 / 158) × 100 = 136.71
CPI$_{2010}$ = (Cost of 2010 basket at 2014 prices / Cost of 2010 basket at 2010 prices) × 100 = 100

= (((4×5)+(40×4))/130)*100=138.462

Summary:

Measure	2010	2014
Nominal GDP	130	216
Real GDP	130	158
GDP Deflator	100.00	136.71
CPI	100.00	138.46

Comparisons Between Years:

- **Nominal GDP:** Increased from $130 (2010) to $216 (2014) – a 66.15% increase. This reflects both price increases and quantity changes.
- **Real GDP:** Increased from $130 (2010) to $158 (2014) – a 21.54% increase. This represents actual economic growth adjusted for inflation.
- **GDP Deflator:** Increased from 100 (2010) to 136.71 (2014) – indicating that overall prices increased by 36.71% over this period.
- **CPI:** Increased from 100 (2010) to 138.46 (2014) – indicating that the cost of the fixed basket of goods increased by 38.46%.

CPI vs GDP Deflator Comparisons:

In 2010: CPI (100.00) = GDP Deflator (100.00). They are equal because 2010 is the base year, and both indices are set to 100 in the base year by definition.
In 2014: CPI (138.46) > GDP Deflator (136.71). The CPI is higher by 1.75 points. This difference occurs because:
- CPI measures the price change of a fixed basket from the base year (2010 quantities)
- GDP Deflator measures the price change of current production (2014 quantities)

Since the composition of goods changed between 2010 and 2014 (wheat quantity decreased from 5 to 4, steel quantity increased from 4 to 5), and these goods had different rates of price increase, the two indices diverged.

Answer to the Question no 5

Given:

- CPI in 2021 = 100
- CPI in 2022 = 150

Analysis:

The inflation rate between 2021 and 2022 is:
$$\text{Inflation Rate} = (150 - 100) \times 100\% = 50\%$$

Conclusion: The prices of goods and services in 2022 were 50% higher on average compared to their corresponding prices in 2021. This represents significant inflation, where the same basket of goods that cost 100 in 2021 would cost 150 in 2022. Put another way, the purchasing power of money decreased substantially – what could be purchased for 1 taka in 2021 would require 1.50taka in 2022.