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ANSWER KEY

Discussion Session (Chapter 2)

PART A: LONG QUESTIONS

1) Country X is an autonomous country that produces only one good (Y)

Year	Amount	Price	Nominal GDP	Real GDP (2000)	Real GDP (2015)
2000	300	2,000			
2015	900	20,000			
2016	1,000	21,000			
2017	1,100	23,000			
2018	1,000	25,000			
2019	1,200	28,000			

- Fill in the table above.
- Find the growth rate of nominal GDP for 2017, 2018 and 2019.
- Find the growth rate of real GDP (using 2015 as base year) for 2017, 2018 and 2019.
- Find the growth rate of real GDP (using 2000 as base year) for 2017, 2018 and 2019.
- Why are your answers different/same in b, c and d?
- Compute inflation rate using GDP deflator (2015=100) for 2017, 2018 and 2019.

Answer:

a.

Year	Amount	Price	Nominal GDP	Real GDP (2000)	Real GDP (2015)
2000	300	2,000	600,000	600,000	6,000,000
2015	900	20,000	18,000,000	1,800,000	18,000,000
2016	1,000	21,000	21,000,000	2,000,000	20,000,000
2017	1,100	23,000	25,300,000	2,200,000	22,000,000
2018	1,000	25,000	25,000,000	2,000,000	20,000,000
2019	1,200	28,000	33,600,000	2,400,000	24,000,000

b, c, and d. Growth rate of $X_t = \left(\frac{X_{(t)} - X_{(t-1)}}{X_{(t-1)}} \right) * 100$

Year	Amount	Price	Nominal GDP Growth (%)	Real GDP Growth (2000) (%)	Real GDP Growth (2015) (%)
2016	1,000	21,000	16.7	11.1	11.1
2017	1,100	23,000	20.5	10.0	10.0
2018	1,000	25,000	-1.2	-9.1	-9.1
2019	1,200	28,000	34.4	20.0	20.0

e.

Nominal GDP is the sum of quantities of final goods produced times their current price. Therefore, nominal GDP increases over time for 2 reasons.

(1) The production of goods increases over time (Quantity goes up)

(2) The price of most goods also increase over time (Prices goes up).

Real GDP is constructed as the sum of the quantities of final goods times *constant* prices. (A base year is chosen). So, the real growth rate tells us how the quantity of final goods changes over time. Only the change in quantity affects real GDP growth.

The answers to c and d are identical. The base year chosen is a choice of unit of measurement. For example, whether one measures one's weight in pounds or kilograms does not affect the relative weight of two people, the rate will be the same as long as their weight calculated with the same unit of measurement. Therefore, the choice of base year, does not affect the growth of real GDP.

f.

Year	GDP Deflator	Inflation Rate
2015	100	
2016	105	5
2017	115	9.5
2018	125	8.7
2019	140	12

$$GDP\ Deflator = \frac{Nominal\ GDP}{Real\ GDP} * 100$$

$$Inflation\ Rate = \frac{GDP\ Deflator(t) - GDP\ Deflator(t-1)}{GDP\ Deflator(t-1)} * 100$$

2) Consider an economy with three companies A, B, C. Company A grows oranges. Half of the oranges are used by Company B to produce orange juice. Company B exports part of its products and sells the rest to Company C. Company C is a retail store that distributes the juice manufactured by B in the domestic market and the rest of the oranges harvested by A. Below are balance sheets for all three companies for year 2005 and 2006.

a. Show three different ways to compute this economy's GDP in both 2005 and 2006.

$$\text{GDP} = \text{Value of final goods produced} = (200-100) + 500 = 600$$

$$\text{GDP} = \text{Value added} = 100 + (200-50) + (500-100-50) = 600$$

$$\begin{aligned} \text{GDP} &= \text{Sum of incomes} = \text{Incomes from labor} + \text{Incomes from profits} = (50+50) + (50+100) \\ &+ 350 = 600 \end{aligned}$$

Similarly, it can be shown that the GDP in 2006 equals to 700.

b. Suppose the number of the oranges and the amount of the orange juice produced are exactly the same for both years. Compute the rate of inflation from 2005 to 2006 based on the GDP deflator.

$$\text{GDP deflator for 2005} = (\text{Nominal GDP in 2005})/(\text{Real GDP in 2005}) = 600/(\text{Real GDP in 2005})$$

$$\text{GDP deflator for 2006} = (\text{Nominal GDP in 2006})/(\text{Real GDP in 2006}) = 700/(\text{Real GDP in 2006})$$

Since the real outputs are exactly the same for year 2005 and 2006, Real GDP 2005 = Real GDP 2006, regardless of the choice of base year price set.

$$\text{Therefore, inflation from 2005 to 2006} = (700-600)/600 = 16.7\%$$

c. In addition to (b), suppose all individuals in this economy consume only oranges and juices bought from Company C, and Company C sells to consumers only. Compute the rate of inflation from 2005 to 2006 based on the Consumer Price Index.

Since the aggregate bundle of consumption goods remains the same from 2005 to 2006, the change in aggregate expenditures on consumption should reflect the change in CPI. The revenues of Company C equals to the total expenditures on consumption, therefore, inflation from 2005 to 2006 = $(600-500)/500 = 20\%$

<u>COMPANY A</u>		
	<u>2005</u>	<u>2006</u>
Revenues from sales	\$100	\$200
<u>Expenses</u>		
Wages	\$50	\$50
Profits	\$50	\$150
<u>COMPANY B</u>		
	<u>2005</u>	<u>2006</u>
Revenues from sales	\$200	\$200
<u>Expenses</u>		
Wages	\$50	\$50
Orange purchases	\$50	\$100
Profits	\$100	\$50
<u>COMPANY C</u>		
	<u>2005</u>	<u>2006</u>
Revenues from sales	\$500	\$600
<u>Expenses</u>		
Juice purchases	\$100	\$100
Orange purchases	\$50	\$100
Profits	\$350	\$400

3) The table below gives some labor statistics for a certain year. Use these data to answer the following questions.

Population	80,000,000
Adult population	15,000,000
Adult population able to work	14,500,000
Adult population able and want to work	11,000,000
Number employed	9,000,000
Number unemployed	1,500,000

- i) Find the labor force.
- ii) Find the number of discouraged workers.
- iii) Calculate the labor-force participation rate.
- iv) Calculate the unemployment rate.

Answer:

- i) Find the labor force.

The labor force covers everyone who is employed and unemployed. Note, however, that the unemployed refers to people without jobs, and looking for jobs, or waiting for the start of a new job. Accordingly, the labor force is $9,000,000 + 1,500,000 = 10,500,000$.

- ii) Find the number of discouraged workers.

The part of the adult population who is able to work and who wants to work, but who are not in the labor force are discouraged workers. For example; 11,000,000 adults are able and wanted to work, but some are not part of the labor force (10,500,000), therefore they are discouraged workers. So, there are 500,000 discouraged workers.

- iii) Calculate the labor-force participation rate.

The labor-force participation rate is the percentage of the adult population that participates in the labor force, either employed or unemployed. This rate is therefore, $10,500,000/15,000,000 = 70\%$.

- iv) Calculate the unemployment rate.

The unemployment rate gives the percentage of the labor force that is unemployed. Accordingly, it is $1,500,000/10,500,000 = 14.3\%$

- 4) What are the different types of unemployment, and how do they differ? Provide examples of each type of unemployment and explain what causes it.

There are several types of unemployment, including cyclical, structural, frictional, and seasonal. Cyclical unemployment is caused by changes in the business cycle, such as a recession. Structural unemployment occurs when there is a mismatch between the skills of workers and the requirements of available jobs. Frictional unemployment is the result of workers who are in-between jobs or who are searching for better employment opportunities. Finally, seasonal unemployment is due to fluctuations in demand that occur in certain industries during certain times of the year, such as agriculture or tourism.

- 5) Using the article in the link below as a reference, could you evaluate the key takeaways from the US September CPI report and discuss its potential effects on inflation trends, consumer spending, and future monetary policy?

Article Link:

<https://www.usatoday.com/story/money/2024/10/10/cpi-report-september-data/75598226007/>

PART B: MULTIPLE CHOICE

- 1) The economic problem studied in macroeconomics is ...
 - A) The level of national income
 - B) The rate of inflation
 - C) The rate of unemployment
 - D) The size of government's budget deficit
 - E) All of the above**
- 2) Suppose that in 2022, an automobile company produced 2 million cars priced at \$20,000 each, and, in 2023, they produced 1 million cars priced at \$40,000 each. Ceteris paribus, the resulting effect on nominal GDP is ...
 - A) No change**
 - B) A decrease since fewer cars were produced.
 - C) An increase since the price of cars has doubled.
 - D) Insufficient information to know.
- 3) All goods and services used as inputs into a further stage of production are called
 - A) Final goods
 - B) Intermediate goods**
 - C) National Income goods
 - D) Consumption goods
- 4) In Shoetown, a rancher takes \$100 worth of inputs and produces animal skins, which he sells to the tanner for \$400. The value added of rancher is ...
 - A) \$100
 - B) \$200
 - C) \$300**
 - D) \$400
 - E) \$500
- 5) The value of intermediate products ...
 - A) Should always be counted as part of GDP in expenditure approach.
 - B) Should be subtracted from the value of final goods in determining value added.**
 - C) Should be added to the value of other inputs in determining a firm's contribution to the GDP.
 - D) Must equal to the value added by the firm
 - E) Is counted as a factor income in calculation of GDP from income side.
- 6) If a country's labor force is 100 million people, and 40 million are employed, the unemployment rate is ...
 - A) 75 %
 - B) 80%
 - C) 40%
 - D) 60%**
 - E) None of above

- 7) Which one of the following statements about unemployment is false?
- A) The unemployment rate may rise even if employment is increasing.
 - B) Economic crises are positively correlated with unemployment.
 - C) **The unemployment figures include discouraged workers who have stopped actively looking for work.**
 - D) Unemployment rate is calculated by dividing the number of unemployed people to the labor force.
 - E) The natural rate of unemployment, or NAIRU, is the measured unemployment rate when the economy is at full employment.
- 8) Unemployment caused by changing market conditions and represented by workers with marketable skills who change jobs is called ...
- A) **Structural Unemployment**
 - B) Frictional Unemployment
 - C) Natural Rate of unemployment
 - D) Historical Unemployment
 - E) Cyclical Unemployment
- 9) Suppose that country of Macroland has a population of 1000 people. Employment is 700 and 250 people are unemployed. What is the labor force participation rate?
- A) 0.85
 - B) 0.70
 - C) 0.60
 - D) 0.25
 - E) **0.95**
- 10) Which of the following is not a way to calculate inflation?
- A) Consumer Price Index (CPI)
 - B) Producer Price Index (PPI)
 - C) GDP Deflator
 - D) **Unemployment rate**
- 11) All the following statements about inflation are true EXCEPT
- A) Inflation reduces the real value of nominal debt.
 - B) Inflation reduces the real value of fixed money incomes.
 - C) **The purchasing power of the money is positively related to the price level.**
 - D) Extremely high inflation is called hyperinflation.
 - E) Deflation occurs when the inflation is negative.
- 12) If the CPI of the first year is 120 and 150 in the second year, the inflation rate is...
- A) 20%
 - B) **25%**
 - C) 30%
 - D) 8%
 - E) 10%

PART C: TRUE/FALSE: (Explain your answers)

- 1) In calculating unemployment rate, discouraged workers are treated the same as retired people.

True. Both the discouraged workers and retired people are excluded from the unemployment statistics.

- 2) The consumer price index of Turkey attempts to measure changes in the price of all goods and services produced by the Turkish economy.

False. Consumer price index measures changes in the price of all goods that the representative household consumes no matter it is domestically produced.

- 3) Cyclical unemployment is caused by changes in the business cycle, such as a recession.

True. (Definition)