

NANYANG TECHNOLOGICAL UNIVERSITY
SCHOOL OF SOCIAL SCIENCES
SEMESTER 1 AY23-24
HE1002 MACROECONOMICS I
PROBLEM SET 3

Question 1

Government survey takers determine that typical family expenditures each month in the year designated as the base year are as follows:

25 pizzas, \$10 each
Rent of apartment, \$600 per month
Gasoline and car maintenance, \$100
Cell phone service, \$50

In the year following the base year, the survey takers determine that pizzas have risen to \$11 each, apartment rent is \$700, gasoline and maintenance have risen to \$120, and phone service has dropped in price to \$40.

- (a) Find the CPI in the subsequent year and the rate of inflation between the base year and the subsequent year.
- (b) The family's nominal income rose by 5 percent between the base year and the subsequent year. Are they worse off or better off in terms of what their income is able to buy?

Question 2

Explain why changes in the cost of living for any particular individual or family may differ from changes in the official cost-of-living index, the CPI.

Question 3

According to the U.S. Census Bureau (www.census.gov), nominal income for the typical family of four in the United States (median income) was \$23,618 in 1985, \$34,076 in 1995, \$46,326 in 2005, and \$49,276 in 2010. In purchasing power terms, how did family income compare in each of those four years? You will need to know that the CPI (multiplied by 100, 1982-1984 = 100) was 107.6 in 1985, 152.4 in 1995, 195.3 in 2005, and 218.1 in 2010.

Question 4

The typical consumer's food basket in the base year 2015 is as follows:

30 chickens at \$2.00 each
10 hams at \$6.00 each
10 steaks at 8.00 each

A chicken feed shortage causes the price of chickens to rise to \$5.00 each in the year 2016. Hams rise to \$7.00 each, and the price of steaks is unchanged.

- (a) Compute the "cost-of-eating" index for 2016.
- (b) Calculate the percentage increase in the "cost-of-eating" index between 2015 and 2016.
- (c) Suppose that consumers are completely indifferent between two chickens and one ham. What is the true increase in the cost of eating?

Question 5

"It's true that unexpected inflation redistributes wealth, from creditors to debtors, for example. But what one side of the bargain loses, the other side gains. So from the perspective of the society as a whole, there is no real cost." Do you agree? Discuss.

Question 6

Frank is lending \$1,000 to Sarah for two years. Frank and Sarah agree that Frank should earn a 2 percent real return per year.

- (a) The CPI (times 100) is 100 at the time that Frank makes the loan. It is expected to be 110 in one year and 121 in two years. What nominal rate of interest should Frank charge Sarah?
- (b) Suppose Frank and Sarah are unsure about what the CPI will be in two years. Show how Frank and Sarah could index Sarah's annual repayments to ensure that Frank gets an annual 2 percent real rate of return?

Question 7

The Bureau of Labor Statistics has found that the base-year expenditures of the typical consumer break down as follows:

Food and beverages	17.8%
Housing	42.8%
Apparel and upkeep	6.3%
Transportation	17.2%
Medical care	5.7%
Entertainment	4.4%
Other goods, services	5.8%
Total	100.0%

Suppose that since the base year, the prices of food and beverages have increased by 10 percent, the price of housing has increased by 5 percent, and the price of medical care has increased by 10 percent. Other prices are unchanged. Find the CPI for the current year. (L05)

(Hint: Assume a consumer spent \$100 in the base year.)