EE312 Macroeconomic theory.

Quiz 1 (15 points). Choose to do 3 out of 4 questions. If you attempt all, I will pick the lowest two.

Suppose the economy produces two types of consumption goods, namely wine and cheese. The total production in each is given in the table below

year	wine	cheese
2017	10 bottles	20 wheels
2018	8 bottles	30 wheels

Between 2017 and 2018, suppose that the price of cheese increases from \$1.00 per wheel of cheese in 2017 to \$1.50 per wheel in 2018 and the price of wine increases from \$0.50 per bottle to \$2.00 per bottle.

a) (5 minutes) Using 2017 as the base year, calculate the value of fixed-based real GDP for 2018. What is the growth rate of real GDP between 2017 and 2018?

Use 2017 as base, real $GDP_t = \sum_i Q_t^i P_{base}^i$

real GDP 2017 = $10 \times 0.5 + 20 \times 1.0 = \$25$

real GDP 2018 = $8 \times 0.5 + 30 \times 1.0 = \$34$

growth rate of real GDP = $\frac{34-25}{25} \times 100\%$

$= 36\%$

b) (5 minutes) Using 2018 as the base year, calculate the value of fixed-base real GDP for 2017 and 2018. What is the growth rate of real GDP between 2017 and 2018?

Use 2018 as base

real GDP 2017 = $10 \times \$2 + 20 \times \$1.5 = \$50$

real GDP 2018 = $8 \times \$2 + 30 \times \$1.5 = \$61$

growth rate = $\frac{61-50}{50} \times 100\%$

= 22%

c) (5 minutes) Using 2017 as the reference year, calculate the value of chain-weighted real GDP for 2018.

chain-weighted growth $(1+g_c^{2018})$ = $\sqrt{(1.36)(1.22)}$ ≈ 1.288

real GDP 2017 using 2017 as base = \$25

Chain-weighted real GDP 2018 = \$25(1.288) ≈ \$32.20

d) (5 minutes) Calculate the value of Lasperyes CPI index for 2018.

$$CPI^{t}_{base} = \frac{\sum_i Q^i_{base} P^i_t}{\sum_i Q^i_{base} P^i_{base}} \times 100$$

$$CPI^{t}_{base} = \frac{(10 \times \$2) + (20 \times \$1.5)}{(10 \times \$0.5) + (20 \times \$1)} \times 100 = \frac{50}{25} \times 100$$

= 200

EE312 Macroeconomic theory..

Quiz 1 (15 points). Choose to do 3 out of 4 questions. If you attempt all, I will pick the lowest two.

Suppose the economy produces two types of consumption goods, namely wine and cheese. The total production in each is given in the table below

year	wine	cheese
2017	20 bottles	40 wheels
2018	16 bottles	60 wheels

Between 2017 and 2018, suppose that the price of cheese increases from \$2.00 per wheel of cheese in 2017 to \$3.00 per wheel in 2018 and the price of wine increases from \$1 per bottle to \$4.00 per bottle.

a) (5 minutes) Using 2017 as the base year, calculate the value of fixed-base year real GDP for 2018. What is the growth rate of real GDP between 2017 and 2018?

real $GDP^{t}_{base} = \sum_i Q^i_t P^i_{base}$

real $GDP^{2018}_{2017} = (20 \times \$1) + (40 \times \$2) = \$100$

real $GDP^{2018}_{2017} = (16 \times \$1) + (60 \times \$2) = \$136$

growth rate of real GDP $= \frac{rGDP^{2018} - rGDP^{2017}}{rGDP^{2017}} \times 100\% = 36\%$

b) (5 minutes) Using 2018 as the base year, calculate the value of fixed-base real GDP for 2017 and 2018. What is the growth rate of real GDP between 2017 and 2018?

real $GDP^{2017}_{2018} = (20 \times \$4) + (40 \times \$3) = \$200$

real $GDP^{2018}_{2018} = (16 \times \$4) + (60 \times \$3) = \$244$

growth rate of real GDP $= \frac{244 - 200}{200} \times 100\%$

$= 22\%$

c) (5 minutes) Using 2017 as the reference year, calculate the value of chain-weighted real GDP for 2018.

chain-weighted growth $= \sqrt{(1.36)(1.22)} \approx 1.288$

$(1 + g_{t}^{2018})$

real $GDP^{2017}_{2017} = \$100$

Chain-weighted rGDP 2018 $= \$100(1.288)$

$\approx \$128.8$

d) (5 minutes) Calculate the value of Lasperyes CPI index for 2018.

$$CPI^{t}_{base} = \frac{\sum Q_{base} P_{t}}{\sum Q_{base} P_{base}} \times 100$$

$$CPI^{2018}_{2017} = \frac{(20 \times \$4) + (40 \times \$3)}{(20 \times \$1) + (40 \times \$2)} \times 100$$

$$= \frac{200}{100} \times 100 = 200$$