

## Microeconomics, prices, final exam practice problems

(The attached PDF file has better formatting.)

### \*Question 1.1: Price Changes

An economy produces only two goods, bread and wine, with competitive markets for each. In 20X7, the price of bread is \$2.00 per loaf and the price of wine is \$8.00 per flask. 10,000 loaves of bread are sold.

In 20X8, the price of bread is \$2.50 and 12,000 loaves of bread are sold. Suppose that the real income of consumers has not changed, their tastes have not changed, and the population has not changed. Which of the following is the most likely explanation of this?

- A. The government has imposed a sales tax on bread.
- B. The government has imposed an excise tax on bread.
- C. The price of wine has risen to \$9.00 a flask.
- D. The price of wine has risen to \$10.00 a flask.
- E. The price of wine has risen to \$11.00 a flask.

Answer 1.1: E

If the equilibrium quantity of bread increases, the relative price of bread has declined.

The real income of consumers has not changed. If the real price of bread rises, they should buy less bread. If consumers buy more bread, the real price of bread has declined.

A sales tax or an excise tax increase the after-tax price of bread. If nothing else changes and the government imposes a sales or excise tax on bread, the quantity of bread bought declines.

The economy has only two goods, bread and wine, so the real price of bread is its relative price with respect to wine. In 20X7, a loaf of bread costs  $\frac{1}{4} = 0.250$  of a flask of wine. In 20X8, the relative price of bread depends on the price of wine. If the cost per flask of wine is

- \$9.00, the relative price of a loaf of bread is  $\$2.50 / \$9.00 = 0.278$ .
- \$10.00, the relative price of a loaf of bread is  $\$2.50 / \$10.00 = 0.250$ .
- \$11.00, the relative price of a loaf of bread is  $\$2.50 / \$11.00 = 0.227$ .

If the price of a flask of wine rises to \$11.00, the relative price of a loaf of bread falls, and consumers buy more bread.

We can solve this problem intuitively. If the quantity of bread bought increases, the real price of bread has declined. The economy has only two goods, so the dollar price of wine has increased more than the dollar price of bread.

- The dollar price of bread increased  $(\$2.50 - \$2.00) / \$2.00 = 25.00\%$ .
- A 25% increase in the price of wine give  $\$8.00 \times (1 + 25\%) = \$10.00$ .

Only Choice E has a dollar price of wine more than \$10.00.

### \*Question 1.2: Relative Prices

An economy has only two goods, bread and wine, with equal total value in 20X5. If the *relative* price of bread rises by 3% in 20X6 and inflation in 20X6 is 4%, the *relative* price of wine

- A. Falls by 3%.
- B. Rises by 1%.
- C. Falls by 7%.
- D. Falls if bread and wine are substitutes and rises if bread and wine are complements.
- E. Rises if bread and wine are substitutes and falls if bread and wine are complements.

Answer 1.2: A

The *relative* price of wine is the price of a flask of wine in terms of loaves of bread, not in terms of dollars.

If the *relative* price of bread rises by 3%, the *relative* price of wine falls by 3%. The monetary inflation is not relevant.

Suppose the prices of bread and wine are \$1.00 each before inflation. The price of one loaf of bread plus one flask of wine is \$2.00 before inflation.

After inflation, the price of one loaf of bread plus one flask of wine is  $\$2.00 \times 1.04 = \$2.08$ . One loaf of bread now costs 103% of one flask of wine. We solve

$103\% \times \text{flask of wine} + 100\% \times \text{flask of wine} = \$2.08 \Rightarrow \text{flask of wine} = \$2.08 / 2.03 = \$1.025$ , and a loaf of bread =  $\$2.08 - \$1.025 = \$1.055$

The relative price of a flask of wine is  $\$1.025 / \$1.055 = 97.16\% \approx 97\%$ .

Alternatively, the relative prices of bread and wine are reciprocals. If the relative price of bread is 1.030, the relative price of wine is  $1 / 1.030 = 0.971 \approx$  a 3% decline from 1.000.

\*Question 1.3: Inflation and Relative Prices

Suppose only bread and wine are produced in an economy, and consumers spend half their income on each. If the inflation rate is 10% and the *relative* price of bread rises 5%, the *relative* price of wine does which of the following?

- A. Rises 15%.
- B. Rises 10%.
- C. Rises 5%.
- D. Does not change.
- E. Falls 5%.

Answer 1.3: E

The *relative* price of wine is the price of a flask of wine in terms of loaves of bread, not in terms of dollars.

If the *relative* price of bread rises by 5%, the *relative* price of wine falls by 5%. The monetary inflation is not relevant.

Suppose the prices of bread and wine are \$1.00 each before inflation. The price of one loaf of bread plus one flask of wine is \$2.00 before inflation.

After inflation, the price of one loaf of bread plus one flask of wine is  $\$2.00 \times 1.10 = \$2.20$ . One loaf of bread now costs 105% of one flask of wine. We solve

$105\% \times \text{flask of wine} + 100\% \times \text{flask of wine} = \$2.20 \Rightarrow \text{flask of wine} = \$2.20 / 2.05 = \$1.073$ , and a loaf of bread =  $\$2.20 - \$1.073 = \$1.127$

The relative price of a flask of wine is  $\$1.073 / \$1.127 = 95.21\% \approx 95\%$ .

Alternatively, the relative prices of bread and wine are reciprocals. If the relative price of bread is 1.050, the relative price of wine is  $1 / 1.050 = 0.952 \approx$  a 5% decline from 1.000.

\*Question 1.4: Inflation Indices

If an economist uses consumers' 1980 purchases to track increases in the cost of living between 1980 and 2000, then increases in the cost of living will be

- A. Accurately measured.
- B. Overstated.
- C. Understated.
- D. Overstated if inflation is positive; otherwise understated.
- E. Overstated if inflation is negative; otherwise understated.

Answer 1.4: B

The Laspeyres index overstates inflation, assuming consumers buy more of a good when its relative price falls and less of a good when its relative price rises. Whether inflation is positive or negative depends on growth in the money supply and other macroeconomic factors, not the relative prices of goods.) The final exam does not ask you to compute Laspeyres and Paasche indices, but you must know the qualitative aspects.