# 4.3 Inflation and unemployment

Name: _____ Class: _____ Date: _____ **Total: 14 marks**

**KEY WORDS** consumer price index • Fisher equation • Phillips curve

## Objective

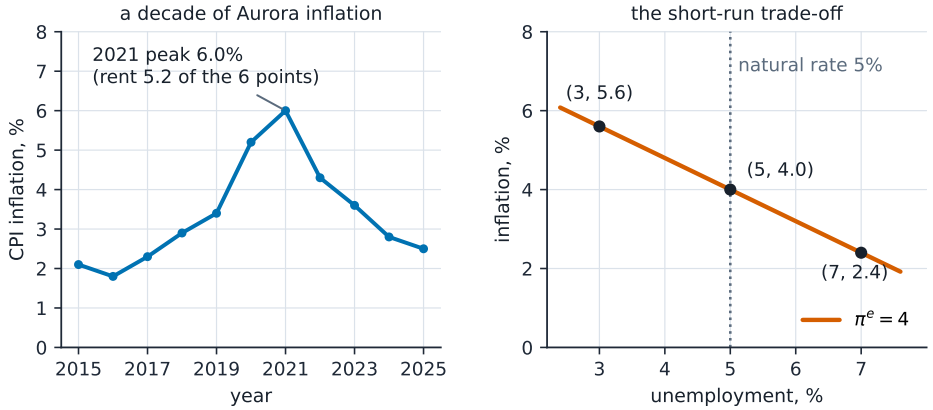
Compute a price index from a basket and attribute the headline to items; apply the Fisher equation; read the Phillips trade-off and the labour statistics honestly.

## 1 Key knowledge and worked examples

### ■ The index, the equation, the trade-off

CPI = cost of the fixed basket relative to base 100; contributions are weighted item rates. **Fisher** : $(1+i) = (1+r)(1+\pi)$. **Phillips** : $\pi = \pi^e - \beta(u - u^n)$ – a lease, not a deed.

**Prices and jobs: an index you can audit, a trade-off that expires**




*An index you can audit item by item; a trade-off that expires when expectations move*

### ■ Worked example. Aurora's basket

Basket 920 → 975: CPI 106.0, inflation 6.0% ✓; rent contributed 5.22 of the 6 points ✓. Fisher at 5% nominal, 3% inflation: real = 1.05/1.03 − 1 = 1.94% ✓. Phillips ($\pi^e = 4$, $\beta = 0.8$, $u^n = 5$): u = 3 → $\pi = 5.6$ ✓.

## 2 Practice

A country's basket: 12 loaves at £1.50 (now £1.65), one month of rent at £600 (now £672), 30 bus rides at £4 (now £4.20).

**2.1** Compute the basket cost in both years, the CPI, and inflation. [3]

**2.2** Compute each item's rate and weight, and attribute inflation to the three items in points. [4]

**2.3** A deposit pays 8% and inflation is 5%. The Fisher real rate (two decimals)? And the naive subtraction answer? [2]

**2.4** With $\pi = 3 - 0.7(u - 4)$: compute inflation at u = 6 and at u = 4, and state what u = 4 is called. [3]

**2.5** Unemployment falls from 6.2% to 5.8% while participation falls from 63.0% to 61.5% of working-age adults. In two lines, say why the "improvement" may not be one. [2]

## Solutions

**2.1**

- Base: $12(1.50) + 600 + 30(4) = 18 + 600 + 120 = £738$.
- Now: $12(1.65) + 672 + 30(4.20) = 19.8 + 672 + 126 = £817.8$.
- CPI $= 817.8/738 \times 100 = 110.8$; inflation $= \mathbf{10.8}\%$.

**2.2**

- Rates: loaves +10%, rent +12%, bus +5%.
- Weights: $18/738 = 2.44\%$, $600/738 = 81.3\%$, $120/738 = 16.3\%$.
- Points: $0.24 + 9.76 + 0.81$.
- $= 10.8$ ✓ – rent is nine-tenths of the headline.

**2.3**

- Fisher: $1.08/1.05 - 1 = \mathbf{2.86}\%$.
- Naive: $8 - 5 = 3.0\%$ – overstated by 0.14 points.

**2.4**

- $u = 6$: $\pi = 3 - 0.7(2) = \mathbf{1.6}\%$.
- $u = 4$: $\pi = \mathbf{3.0}\%$ – inflation at expectations.
- $u = 4$ is the **natural rate**.

**2.5**

- The labour force shrank faster than employment: discouraged workers left, and the rate falls mechanically when they do.
- Check employment or participation directly before calling it an improvement.

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