Can the Bank fool the island twice?

Expectations and the Phillips curve: inflation is expected inflation plus the gap, why holding unemployment low makes inflation climb, what it costs to bring it down, and why belief makes it cheaper.

1 The Phillips curve

expected + the gap

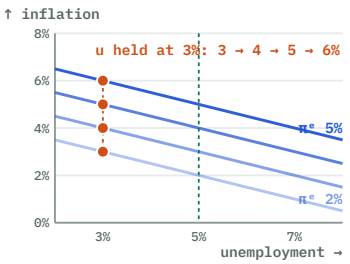
- **Expected inflation (π^e)** = the inflation people expect when they set prices and wages for the year · **π** = inflation · **u** = unemployment rate
- Coralia: $\pi = \pi^e - 0.5 \times (u - 5)$ · natural rate **5%** (Lesson 5) · each point of u below 5% ⇒ +½ point of π · above ⇒ −½
- **Phillips curve** = lower unemployment ⟺ higher inflation, **for a given π^e** · Macro 9 drew it with slope 1 and natural rate 4% (other toy numbers)

UNEMPLOYMENT U	3%	5%	7%	9%
π if π^e = 2%	3%	2%	1%	0%
π if π^e = 4%	**5%**	**4%**	**3%**	**2%**

2 Fooled once

adaptive expectations

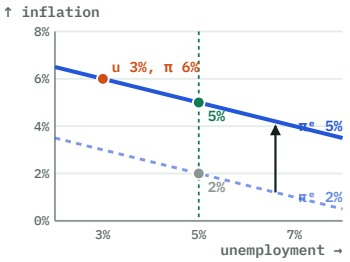
- **Adaptive expectations** = people expect this year the inflation they saw last year
- Bank holds u at **3%** (2 below 5%) ⇒ π = π^e + 1 every year ⇒ **3 → 4 → 5 → 6%** · the curve shifts **up** a point a year · inflation does not settle, it **keeps rising** (the accelerationist idea)
- Milton Friedman, American, **1968** · Edmund Phelps, American, **1967** ⇒ the trade-off lasts only until expectations catch up



3 Shift or move along

what moves the curve

- Change in **u** (Bank's rate, a boom, Treasury spending) ⇒ move **along** the curve
- Change in **π^e** (contracts, news, a trusted target) ⇒ the **whole curve shifts**, up or down by the change
- Read π^e off a point: u 3%, π 6% ⇒ $\pi^e = 6 - 1 = 5\%$ · back at u = 5% ⇒ π = **5%**, not 2% · only lower π^e brings π down for good



4 Sacrifice ratio

the price of a cut

- **Point-years** = years × points of u above 5% · **sacrifice ratio** = point-years ÷ points of inflation cut
- 6% → 2% at u 7%: 5, 4, 3, 2 ⇒ **4 years** × 2 = 8 point-years ÷ 4 = **2** · at u 9%: 2 years × 4 = 8 · 8% → 2% at 9%: 6, 4, 2 ⇒ 3 years × 4 = **12** ÷ 6 = 2 · at 7%: 6 years, also 12 ⇒ a harder squeeze is **quicker, not cheaper**
- Laurence Ball, American, **1994**: real **disinflations** (times a country brought inflation down) · cost varies a lot · smaller when the cut is quick

5 Fooled twice?

belief and credibility

- **Rational expectations** = people use all they know, the model and the Bank's plans too · John Muth, American, **1961** · Robert Lucas, American (Nobel 1995), 1970s
- **Credibility** = people believe the Bank ⇒ π^e falls **at once** · full belief: π^e 2%, u 5% ⇒ π = 2% with no extra unemployment · half belief: π^e 8 → 5 at once ⇒ at u 7%: 4, 3, 2 ⇒ **3 years** (6 point-years) instead of 6 (12)
- **Inflation target** = a number the central bank announces to anchor π^e · New Zealand law in force **Feb 1990** (first, 0–2% by 1992) · US Fed (US central bank) 2% **Jan 2012** · ECB (euro area's central bank) 2% restated **Jul 2021**

6 From menu to treadmill

the real story

- A. W. Phillips, New Zealand economist in London, **1958**: British years of low unemployment = fast-rising wages · Paul Samuelson and Robert Solow, Americans, **1960**, US data: a possible **menu**
- US Fed under Paul Volcker (chair 1979–87): CPI (consumer-price) inflation **13.5%** (1980) → **3.2%** (1983) · unemployment peak **10.8%** Nov–Dec 1982 (BLS, US statistics office) · worth it? low inflation for decades ⟺ millions of jobs lost: still debated
- Watch out: the Phillips curve is **not a permanent menu** · "expected" = what shops and workers expect, **not** economists' forecast · next at university: the **New Keynesian Phillips curve**

Eleven ideas behind the big picture · 1 Spending decides output · 2 A lower interest rate means more spending: the IS curve · 3 The Bank picks the rate; the IS curve then picks the output · 4 AD is IS–LM at every price level · 5 Full employment is where wage setters and price setters agree · **6 Inflation is expected inflation plus the gap: you cannot fool everyone twice**