Intro to Macro Policy

- In practice, macro policy tends to focus on potential inflation/unemployment trade-offs. Low inflation + full employment are obviously desirable policy objectives, so if there is a trade-off, this suggests some difficult choices might need to be made.

- Keep in mind, there is no essential difference between an upward sloping AS curve and a downward sloping "Phillips Curve".

- Focusing on the Phillips curve is useful from a policy perspective. Policy can directly influence the AD curve, but it can only indirectly influence the Phillips Curve, since it summarizes technology & pricing decisions that are made in the private sector. Hence, the Phillips Curve does in a sense describe available policy options (but as we'll see, it's a very unreliable & elusive set of options!).
During the 1960s, Canadian rates of inflation seemed to lie along a Phillips curve. Inflation rose and unemployment fell fairly steadily during this decade, and policymakers had apparently decided to live with higher inflation in order to reduce unemployment.


The figure shows the combinations of inflation and unemployment experienced in Canada each year from 1970 to 2006. Unlike the situation during the 1960s (see Figure 13.1), after 1970, the relationship between inflation and unemployment seemed to change from what it had been in the 1960s.

Shifts in the Phillips Curve

- Clearly, the data indicate that the Phillips Curve is unstable. Why does it shift?

- There are 2 main reasons:
  1. Expectations of inflation causes it to shift. Only unanticipated inflation should matter.
  2. Changes in the long-run level of "full employment", due perhaps to technology or institutional changes.

- Therefore, we can write down a more sophisticated version of the Phillips Curve, sometimes called the "expectations-augmented Phillips Curve".

\[ \pi = \pi^e - h(u - \bar{u}) \]

- Expected inflation
- "full employment" (the "natural rate of unemployment")
- Expectations Augmented Phillips Curve
Notice that both shifts worsen the inflation/unemployment trade-off.
Figure 14.7
The expectations-augmented Phillips curve is a negative relationship between unanticipated inflation and cyclical unemployment. The figure shows this relationship for the years 1963 to 1997 in Canada. Unanticipated inflation equals actual inflation minus expected inflation, where expected inflation in any year is measured here as the average inflation rate for the preceding two years. Cyclical unemployment for each year is the actual unemployment rate minus an estimate of the natural unemployment rate for that year (see Fig. 14.9). Note that years in which unanticipated inflation is high usually are years in which cyclical unemployment is low.

The Natural Rate Hypothesis

1. The NRH asserts that in the Long-Run (i.e., when $\Pi = \Pi^e$), the economy's unemployment rate is equal to the natural rate and is independent of the inflation rate. (i.e., the Phillips Curve is vertical at $u = u^*$).

2. The Short-Run Phillips Curve intersects the Long-Run Phillips Curve at the expected rate of inflation.

3. A vertical Long-Run Phillips Curve is essentially the same thing as a vertical LRAS Curve.
Testing the NRH

Can we test whether the NRH is true?

Idea #1: Run the regression, $\pi_t = \alpha_0 \pi_t^e - \alpha_1 (u_t - u^n)$

Note: in LR $\pi_t^e = \pi$

$\Rightarrow \pi_t^c = \alpha_0 \pi_t - \alpha_1 (u_t - u^n)$

$\Rightarrow \pi_t^c = \frac{-\alpha_1}{1-\alpha_0} (u_t - u^n)$

Slope of LR Phillips Curve: $-\frac{\alpha_1}{1-\alpha_0}$

Becomes vertical when $\alpha_0 = 1$

Thus, $\text{NRH} \Rightarrow \alpha_0 = 1$

Problem #1: $\pi_t^e$ is unobservable

Idea #2: Assume $\pi_t^e = \sum_{i=1}^{N} \beta_i \pi_{t-i}$ [Adaptive Expectations]

$\Rightarrow \pi_t^c = \alpha_0 (\beta_1 \pi_{t-1} + \beta_2 \pi_{t-2} + \ldots) - \alpha_1 (u_t - u^n)$
Problem #2: \( \alpha_0 \) and \( \beta_i \)'s cannot be separately estimated!

Idea #3: Impose the "intuitive" restriction that \( \Sigma \beta_i = 1 \)
(A permanent one-time increase in inflation eventually becomes fully anticipated).

Empirical Results: \( \alpha_0 < 1 \implies \text{NRH rejected} \)
(Long-Run Phillips Curve Appears to Slope Down, Suggesting a LR trade-off).

Problem #3: The restriction \( \Sigma \beta_i = 1 \) may be inconsistent with the way inflation has historically evolved. For example, if inflation has been "stationary" in the past, then \( \Sigma \beta_i < 1 \). If this is true, then imposing \( \Sigma \beta_i = 1 \) leads to an underestimate of \( \alpha_0 \) and a potentially false rejection of NRH.
Solution: Assume "Rational Expectations" Estimate the $\beta_i$'s from historical data, and impose these values in the NRH regression.

Empirical Result: $\alpha_0 = 1$, NRH confirmed!