


N. Gregory Mankiw

Principles of
Macroeconomics
Sixth Edition

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**The Short-Run Tradeoff
Between Inflation and
Unemployment**

*Premium
PowerPoint
Slides by
Ron Cronovich*



*In this chapter,
look for the answers to these questions:*

- How are inflation and unemployment related in the short run? In the long run?
- What factors alter this relationship?
- What is the short-run cost of reducing inflation?
- Why were U.S. inflation and unemployment both so low in the 1990s?

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Introduction

- In the long run, inflation & unemployment are unrelated:
 - The inflation rate depends mainly on
 - Unemployment (the "natural rate") depends on
- One of the Ten Principles:
In the short run, society faces a trade-off between inflation and unemployment.

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The Phillips Curve

- **Phillips curve:**
- 1958: A.W. Phillips showed that nominal wage growth was negatively correlated with unemployment in the U.K.
- 1960: Paul Samuelson & Robert Solow found a negative correlation between U.S. inflation & unemployment, named it "the Phillips Curve."

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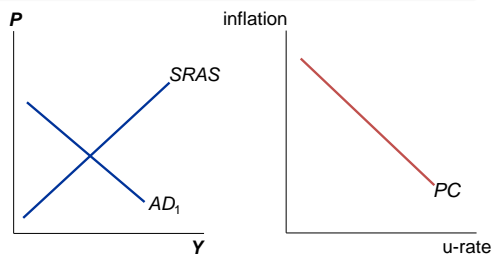
Deriving the Phillips Curve

- Suppose $P = 100$ this year.
- The following graphs show two possible outcomes for next year:
 - A. Agg demand low, small increase in P (i.e., low inflation), low output, high unemployment.
 - B. Agg demand high, big increase in P (i.e., high inflation), high output, low unemployment.

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Deriving the Phillips Curve

A. Low agg demand, low inflation, high u-rate



B. High agg demand, high inflation, low u-rate

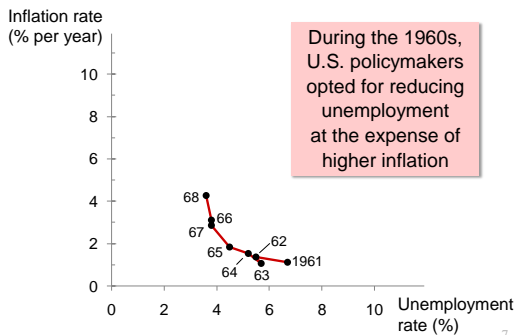
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The Phillips Curve: A Policy Menu?

- Since fiscal and mon policy affect agg demand, the *PC* appeared to offer policymakers a menu of choices:
 -
 -
 - anything in between
- 1960s: U.S. data supported the Phillips curve. Many believed the *PC* was stable and reliable.

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Evidence for the Phillips Curve?



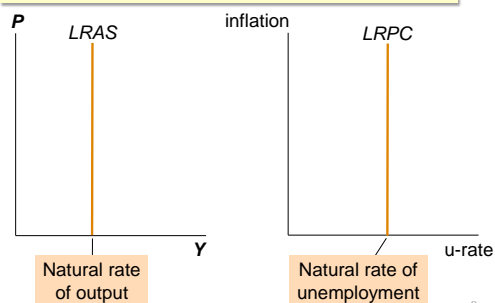
The Vertical Long-Run Phillips Curve

- 1968: Milton Friedman and Edmund Phelps argued that the tradeoff was temporary.
- **Natural-rate hypothesis:** the claim that
 - Based on the classical dichotomy and the vertical *LRAS* curve

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The Vertical Long-Run Phillips Curve

In the long run, faster money growth only causes faster inflation.



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Reconciling Theory and Evidence

- Evidence (from '60s):
PC slopes downward.
- Theory (Friedman and Phelps):
PC is vertical in the long run.
- To bridge the gap between theory and evidence, Friedman and Phelps introduced a new variable:
expected inflation –

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The Phillips Curve Equation

Short run

Fed can reduce u-rate below the natural u-rate by

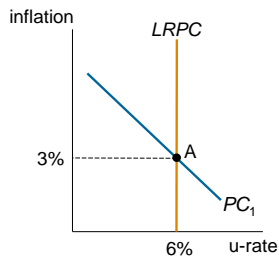
Long run

Expectations catch up to reality,

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How Expected Inflation Shifts the *PC*

Initially, expected & actual inflation = 3%, unemployment = natural rate (6%).



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ACTIVE LEARNING 1

A numerical example

Natural rate of unemployment = 5%

Expected inflation = 2%

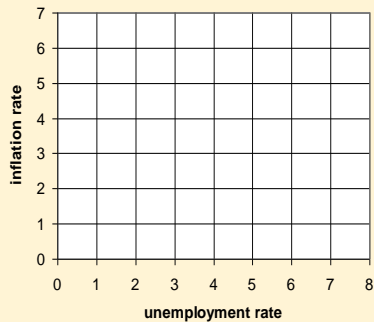
In *PC* equation, $\alpha = 0.5$

- A. Plot the long-run Phillips curve.
- B. Find the u-rate for each of these values of actual inflation: 0%, 6%. Sketch the short-run *PC*.
- C. Suppose expected inflation rises to 4%. Repeat part B.
- D. Instead, suppose the natural rate falls to 4%. Draw the new long-run Phillips curve, then repeat part B.

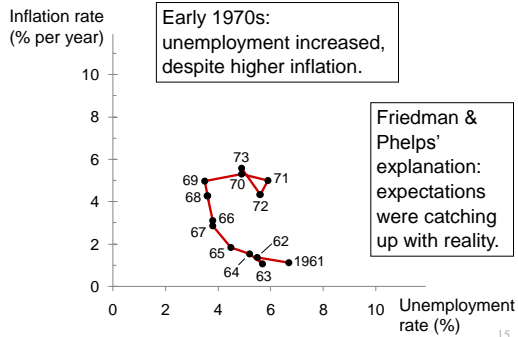
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ACTIVE LEARNING 1

Answers



The Breakdown of the Phillips Curve

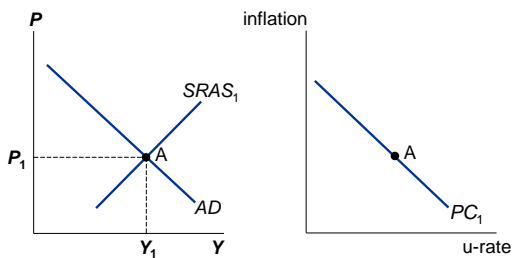


Another PC Shifter: Supply Shocks

- **Supply shock:**
- Example: large increase in oil prices

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How an Adverse Supply Shock Shifts the PC



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The 1970s Oil Price Shocks

Oil price per barrel	
1/1973	\$ 3.56
1/1974	10.11
1/1979	14.85
1/1980	32.50
1/1981	38.00

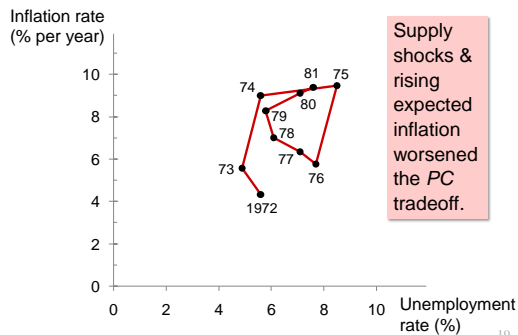
The Fed chose to accommodate the first shock in 1973 with faster money growth.

Result:

1979:
Oil prices surged again, worsening the Fed's tradeoff.

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The 1970s Oil Price Shocks



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The Cost of Reducing Inflation

- **Disinflation:**
- To reduce inflation,

- Short run:

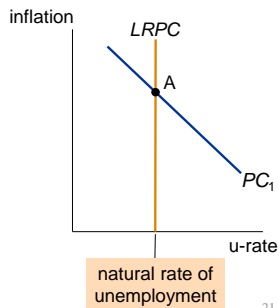
- Long run:

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Disinflationary Monetary Policy

Contractionary monetary policy moves economy from A to B.

Over time,



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The Cost of Reducing Inflation

- Disinflation requires enduring a period of

- Sacrifice ratio:**

- Typical estimate of the sacrifice ratio: _____
 - To reduce inflation rate 1%, must sacrifice
- Can spread cost over time, e.g. To reduce inflation by 6%, can either
 - sacrifice
 - sacrifice

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Rational Expectations, Costless Disinflation?

- Rational expectations:** a theory according to which
- Early proponents: Robert Lucas, Thomas Sargent, Robert Barro
- Implied that disinflation could be

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Rational Expectations, Costless Disinflation?

- Suppose the Fed convinces everyone it is committed to reducing inflation.
- Then,
- Result:

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The Volcker Disinflation

Fed Chairman Paul Volcker

- Appointed in late 1979 under high inflation & unemployment
- Changed Fed policy to disinflation

1981–1984:

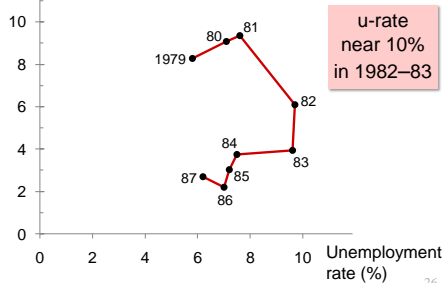
- Fiscal policy was expansionary, so Fed policy had to be very contractionary to reduce inflation.
- Success:

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The Volcker Disinflation

Inflation rate
(% per year)

Disinflation turned out to be very costly



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The Greenspan Era

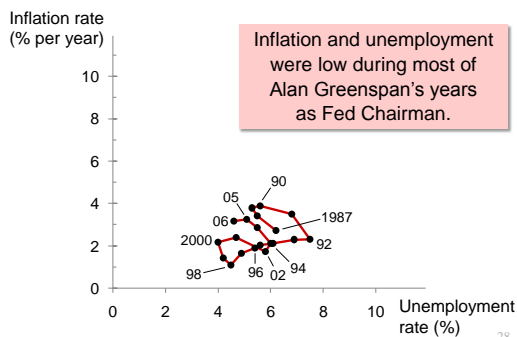
- 1986: Oil prices fell 50%.
- 1989–90: Unemployment fell, inflation rose. Fed raised interest rates, caused a mild recession.
- 1990s: Unemployment and inflation fell.
- 2001: Negative demand shocks created the first recession in a decade. Policymakers responded with expansionary monetary and fiscal policy.



Alan Greenspan
Chair of FOMC,
Aug 1987 – Jan 2006

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The Greenspan Era



The Phillips Curve During the Financial Crisis

- The early 2000s housing market boom turned to bust in 2006
-



Ben Bernanke
Chair of FOMC,
Feb 2006 – present

- Result:

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The Phillips Curve During the Financial Crisis

