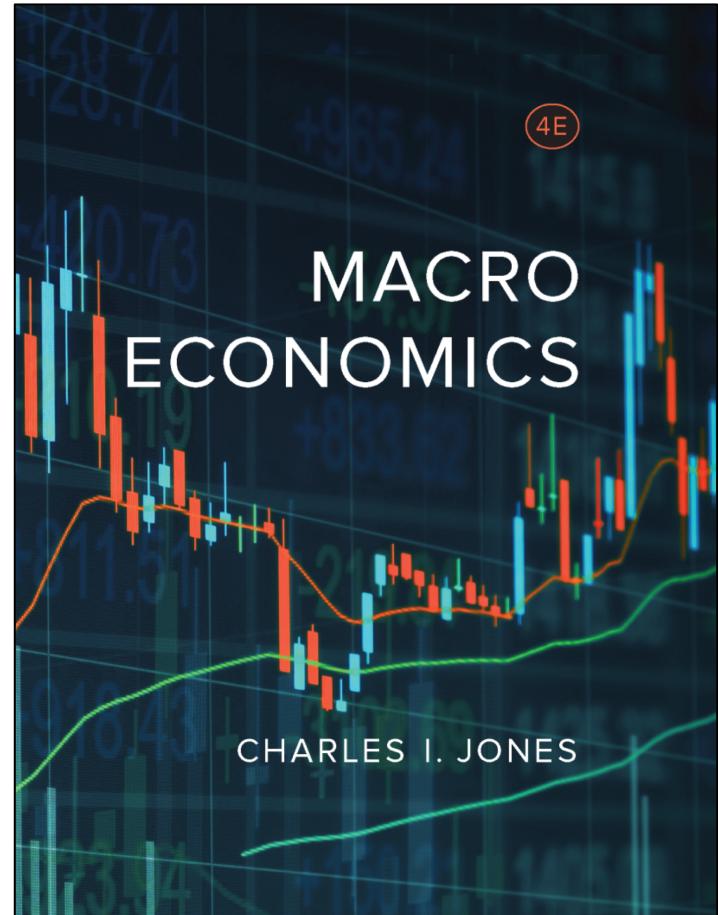


Chapter 9

An Introduction to the Short Run

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9.1 Introduction

- Chapters 3-6 were about **long-run** trends and patterns
 - Some economists would say this was about the supply side of the economy
- Part 3 of the book covers the **short run**
 - Some call this the demand side of the economy
 - the distinction between the demand, supply side is somewhat artificial and modern macroeconomics no longer use them - very frequently

9.1 Introduction

- In this chapter, we learn:
 - How the **gap between actual GDP and potential GDP** measures the economy's performance in the short run
(percentage term)
 - The costs associated with short-run fluctuations in economic activity
 - The relationship between **output and inflation**
(related) mandate federal reserve
 - A simple version of the short-run model that will help us understand these patterns

9.2 The Long Run, the Short Run, and Shocks

- The long-run model is a guide to how the economy behaves on average, i.e. determines **potential** output and long-run inflation
- Potential output = amount of production if all inputs were utilized at their long-run sustainable levels *use capital \Rightarrow capacity* *only natural unemployment.*
- At any given time, the economy is unlikely to exactly equal the long-run average
- The short-run model determines **current** output and **current** inflation

The Long Run, the Short Run, and Shocks

■ In the short-run model

- the current level of output and inflation are endogenous
- Current output deviates from potential output because of economic shocks.
- the long-run is given, i.e. potential output and the long-run inflation rate are exogenous.

e.g. use Solow/Romo model \Rightarrow short run model
different percentage different

Trends and Fluctuations

- Actual output is equal to the long-run trend plus short-run fluctuations:

$$\underbrace{\text{actual output}}_{Y_t} = \underbrace{\text{long-run trend}}_{\tilde{Y}_t} + \underbrace{\text{short-run fluctuations}}_{\text{depends on } \tilde{Y}_t}$$

□ Long-run trend = potential output

□ Short-run fluctuations

$$Y_t = \tilde{Y}_t + (\tilde{Y}_t) \% \text{(percentage)}$$

$$\uparrow \\ f(\tilde{Y}_t)$$

↑
percentage
deviations of
economy.

Short-run fluctuation

- “Detrended output” or short-run output = difference in actual and potential output, expressed as a percentage of potential output:

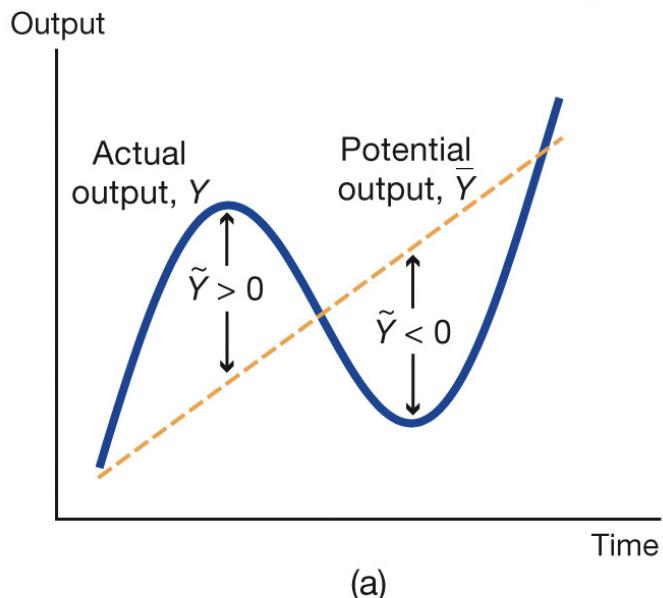
$$\hat{Y}_t^u = \frac{Y_t - \bar{Y}_t}{\bar{Y}_t}$$

$$Y_t = \bar{Y}_t + \frac{Y_t - \bar{Y}_t}{\bar{Y}_t} \cdot \bar{q}_t$$

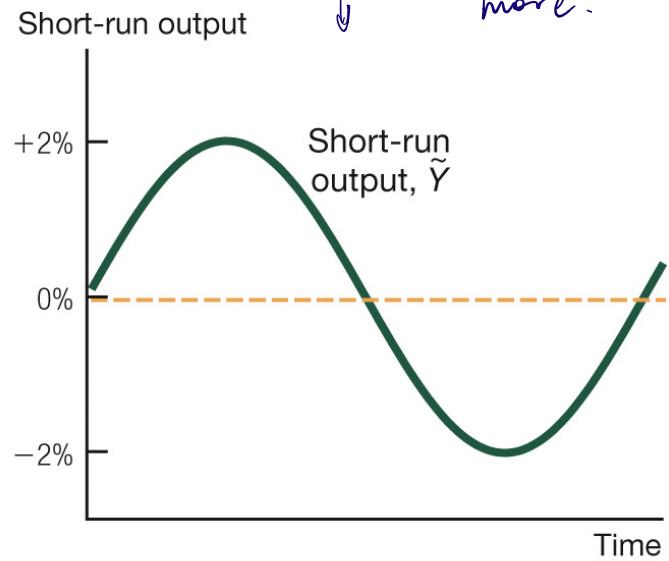
unit of output
+ percentage deviation
of output x output.

Economic Fluctuations and Short-Run Output

Economic Fluctuations and Short-Run Output



work with this
↓ more.



Short-Run Output in the United States

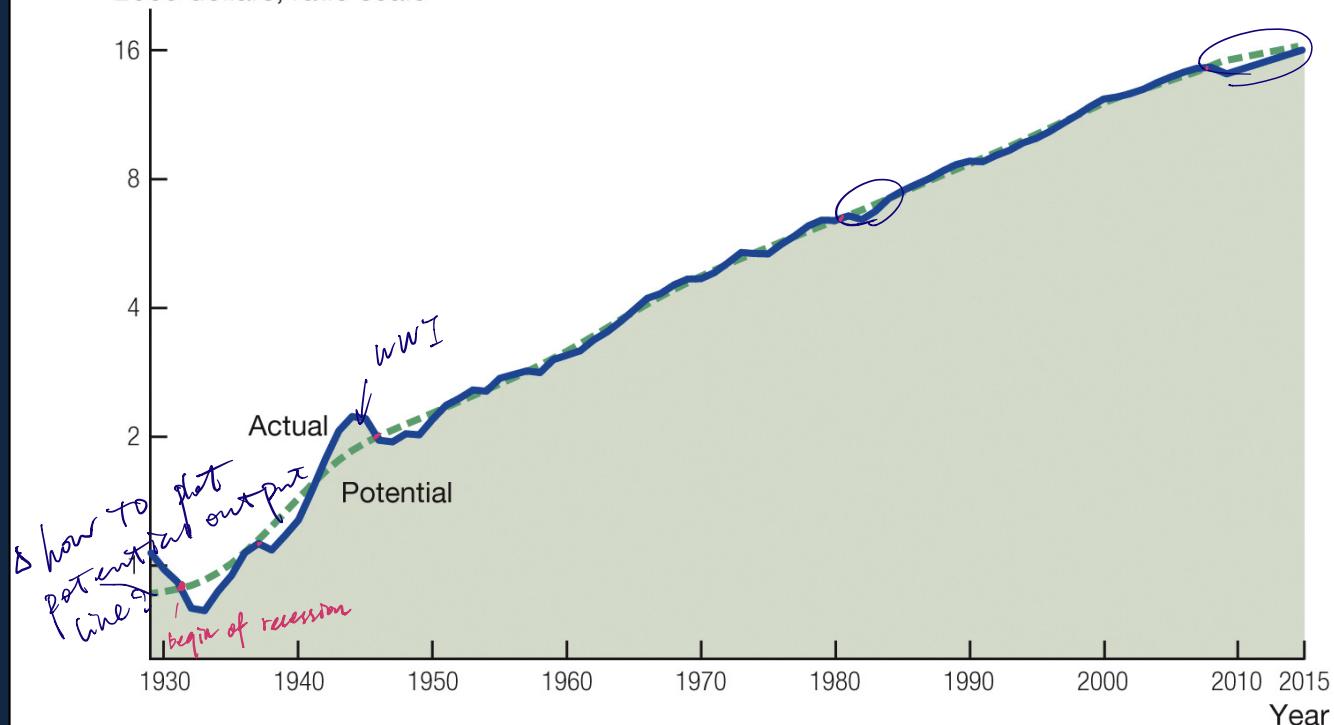
- Fluctuations in U.S. GDP:
 - Difficult to see graphically over a long period of time
 - Have mostly been between + or – 4% since 1950
- The Great Depression:
 - Negative gap during the 1930s
 - Actual output was well below potential

U.S. Real GDP, Actual and Potential, 1929-2015

U.S. Real GDP, Actual and Potential, 1929–2015

Trillions of chained

2009 dollars, ratio scale



Short Run

How much long GDP falls?

A recession:

- ❑ Begins when actual output falls below potential.
 - short-run output becomes negative.
- ❑ Ends when short-run output starts to rise.
 - short-run output becomes less negative.

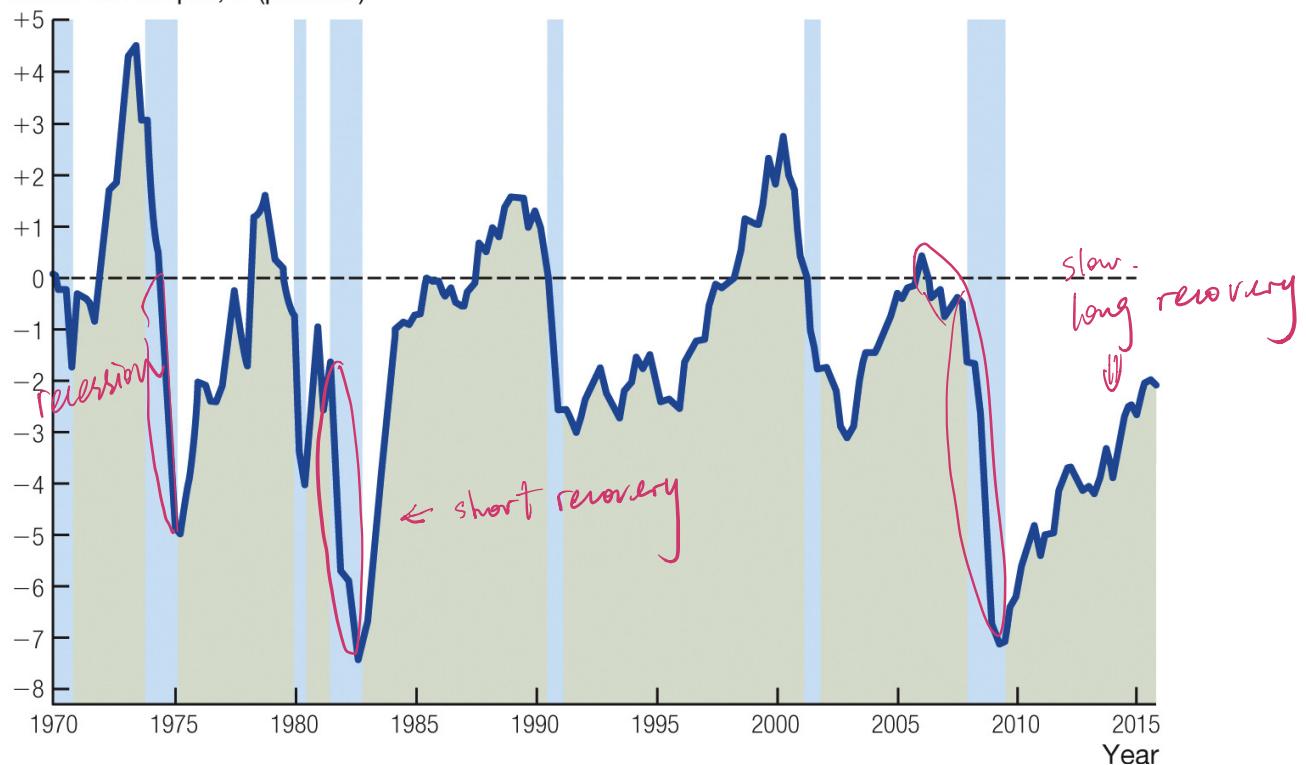
Typically, during a recession:

- ❑ Output is below potential for approximately 2 years, equivalent to the loss of \$3,000 per person.
- ❑ between 1.5 million / 3 million jobs are lost.

U.S. Economic Fluctuations, 1970-2015

U.S. Economic Fluctuations, 1970–2015

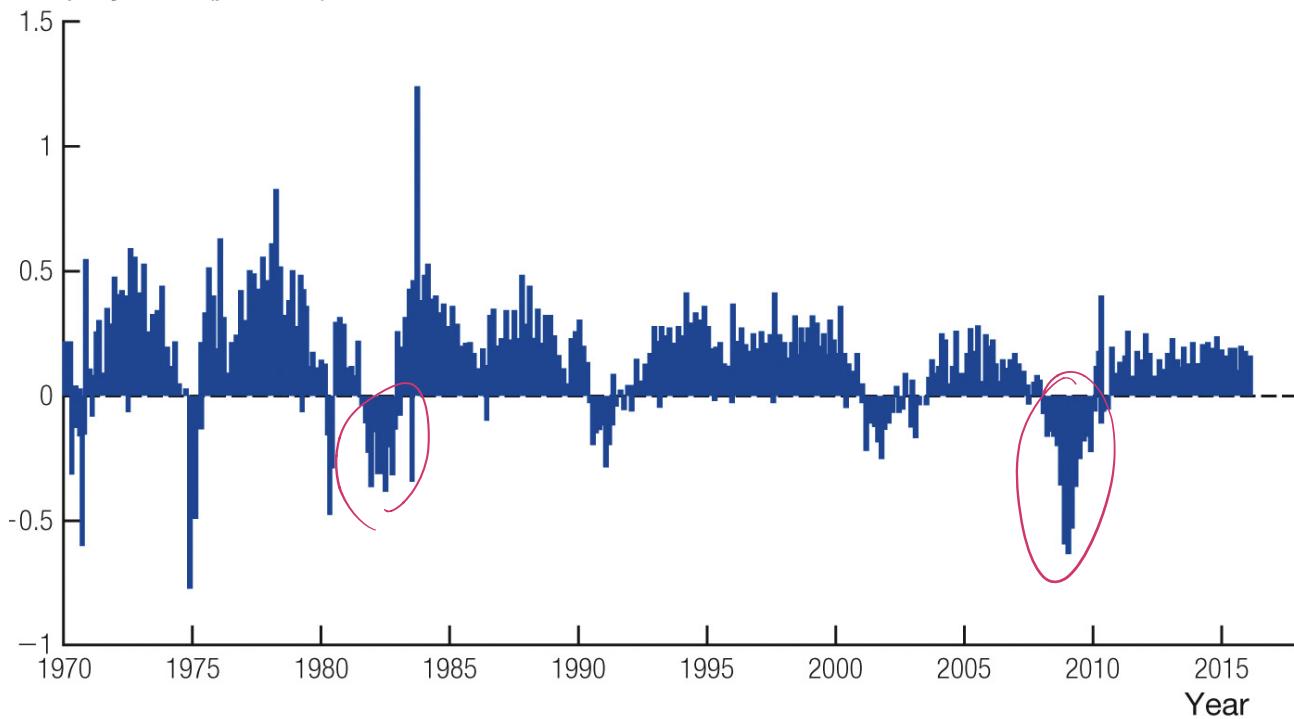
Short-run output, \tilde{Y} (percent)



Changes in U.S. Employment, 1970-2015

Changes in U.S. Employment, 1970–2015

Monthly change in
employment (percent)



Case Study: The Great Depression

- 1930s worldwide calamity
 - 28% of American were unemployed
 - Industrial production declined more than 60%
- The beginning of modern macroeconomics , thanks to John Maynard Keynes (mostly).
Simon Kuznets ⇔ GDP amount to us.

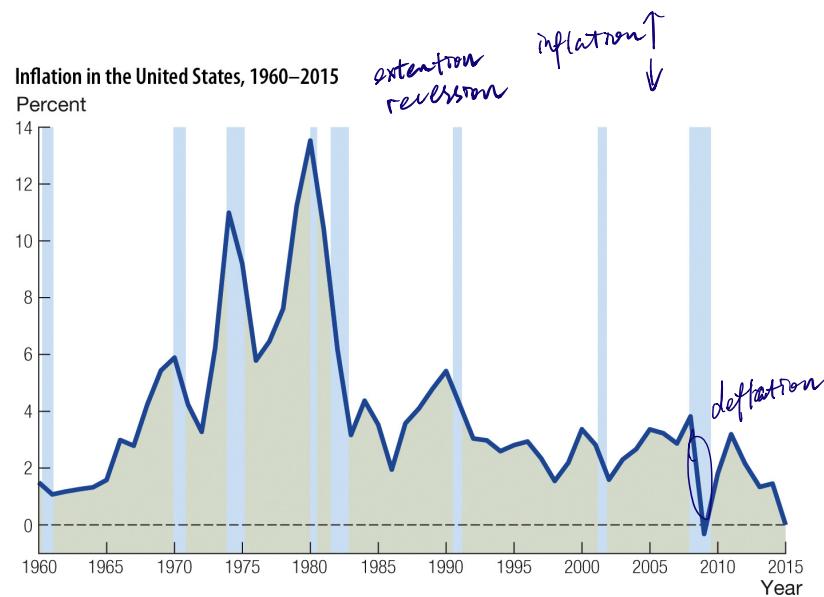
Measuring Potential Output

- There is no directly observable measure of potential output in an economy
 - Ways to measure potential output:
 - assume a perfectly smooth trend passes through quarterly movements of real GDP.
 - Take averages of the surrounding actual GDP numbers.
 - Annualized rate:
 - Rate of change that would apply if the growth rate persisted for an entire year
- U.S. annual
convert into ← European : quarterly or say monthly
annual

The Inflation Rate

- The rate of inflation typically:

- peaks at start of a recession
- falls during the recession



9.3 The Short Run Model

- The short-run model is based on 3 premises:
 - 1) The economy is constantly being hit by shocks:
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 - 2) Monetary and fiscal policies affect output:
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 -
 - 3) There is a trade-off between output and inflation:
 -

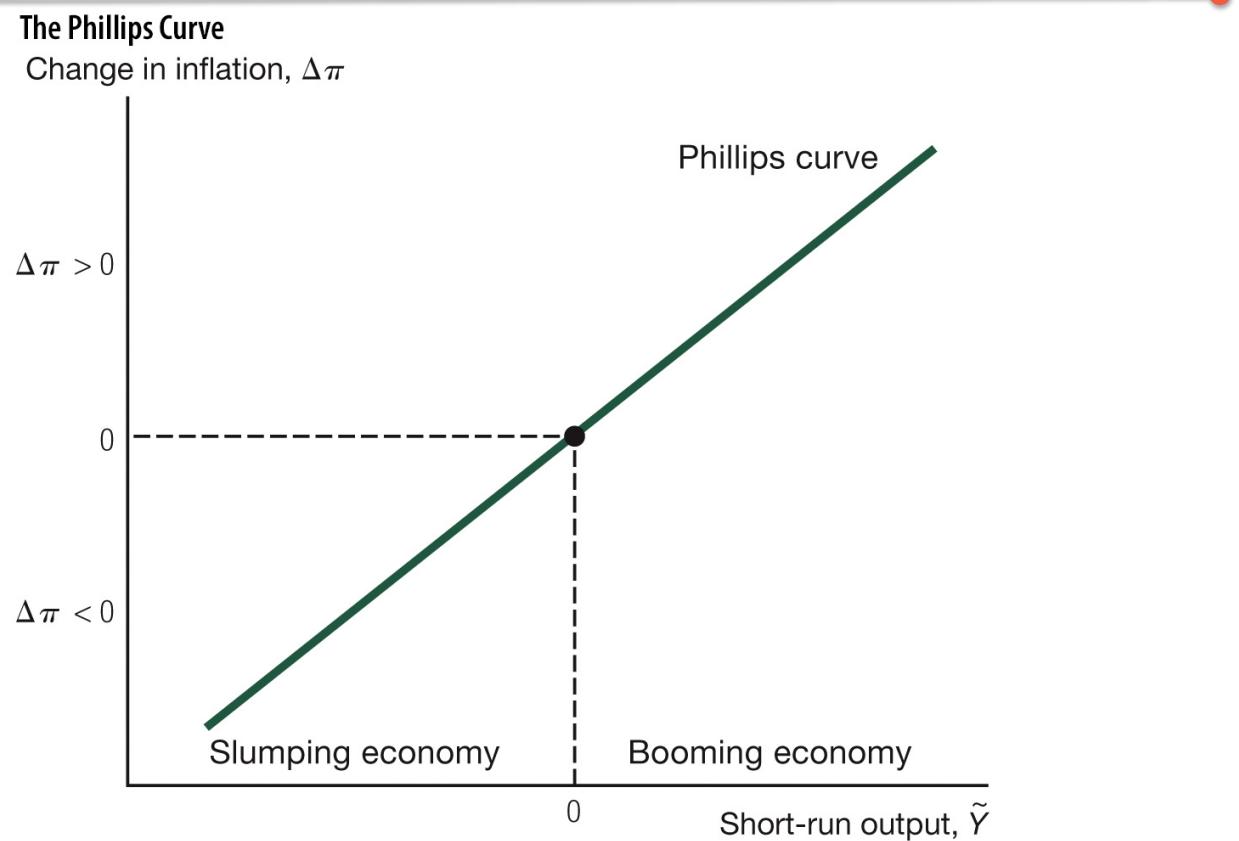
A Graph of the Short-Run Model

- The **Phillips curve** shows:
 - A boom (i.e. output *above* potential output) increases inflation
 - A recession (i.e. output *below* potential output) decreases inflation
 -
- Empirically,
 -

Works in a “Cycle”



The Phillips Curve (Theory)



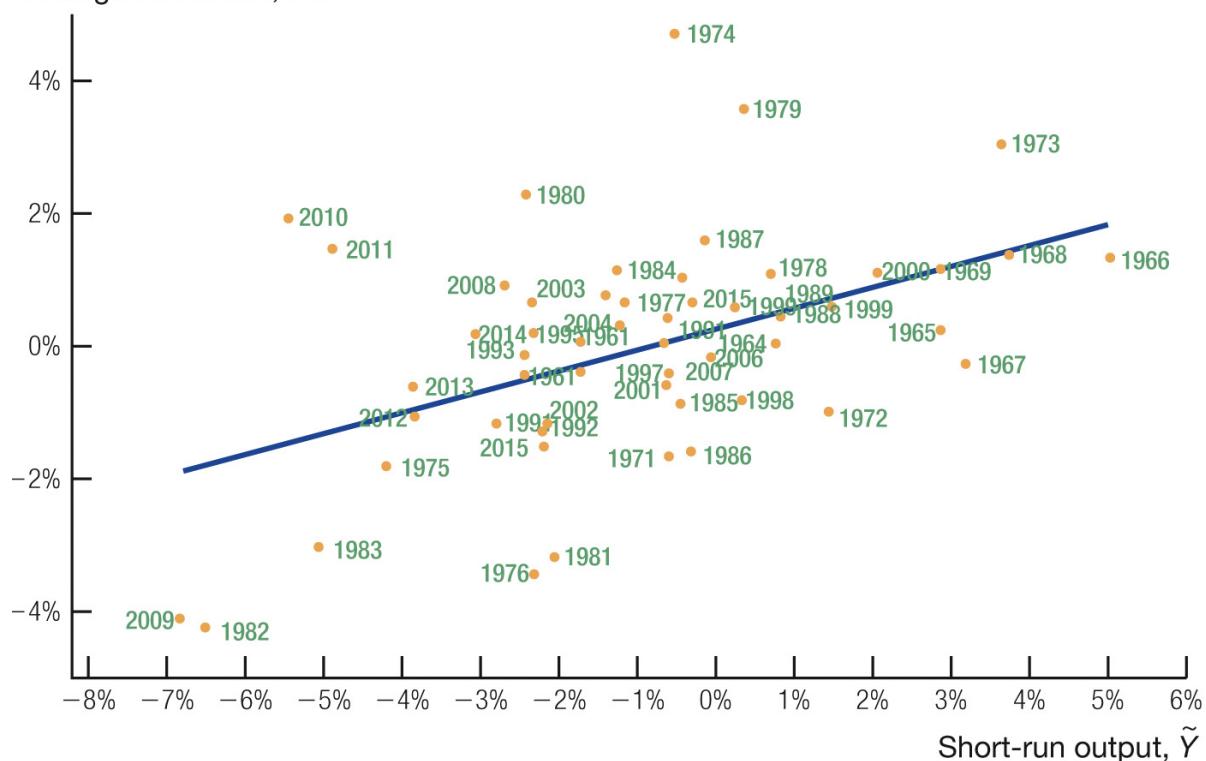
How the Short-Run Model Works

- Assume policymakers can select short-run output through monetary policy
- Idea is to avoid excessive boom-recession cycles in the first place
- -
 -
 -

Measuring the Phillips Curve, 1960-2015

Measuring the Phillips Curve, 1960–2015

Change in inflation, $\Delta\pi$



9.4 Okun's Law: Output and Unemployment

- Natural rate of unemployment:
 - The rate of unemployment that exists in the long run
- Cyclical unemployment
 - Current unemployment minus the natural rate of unemployment
-

Okun's Law

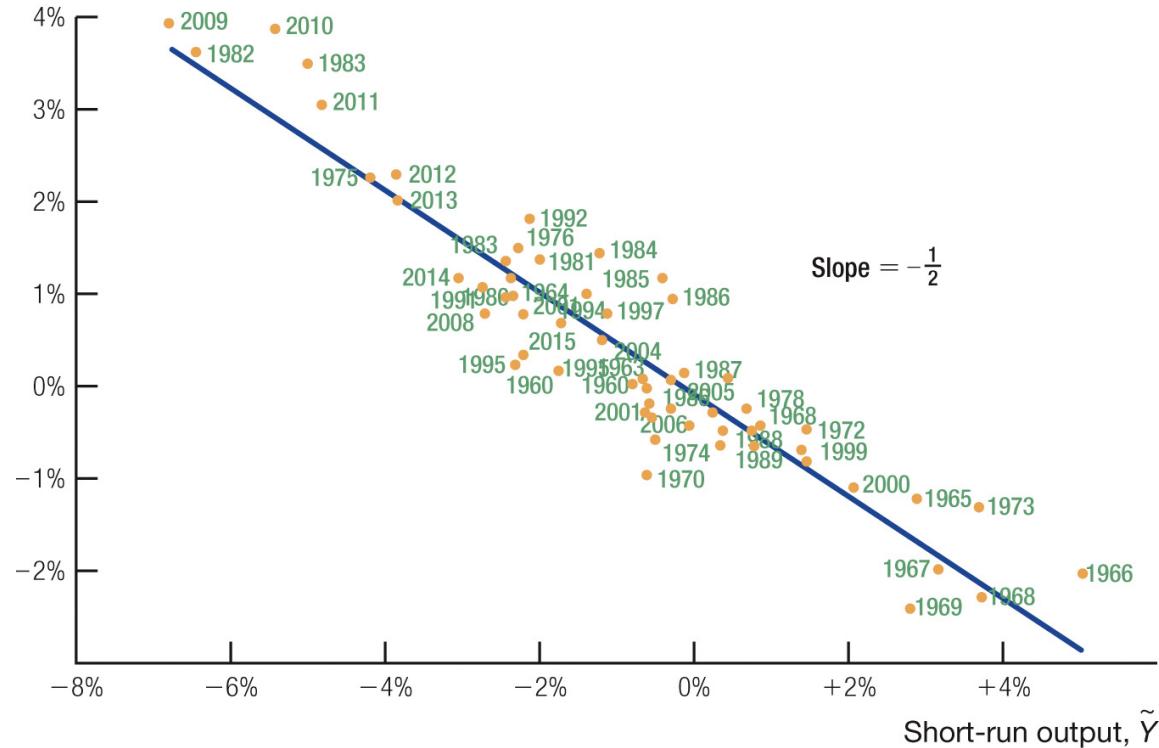
Cyclical
unemployment

$$u - \bar{u} = -\frac{1}{2} \times \tilde{Y}$$

Okun's Law for the U.S. Economy, 1960-2015

Okun's Law for the U.S. Economy, 1960–2015

Cyclical unemployment, $u - \bar{u}$



9.5 Filling in the Details

- Section 9.5 is a “preview of coming attractions”
- For now, let’s just keep in mind that there’s more to come in terms of details of the short-run model:
 - IS curve (real investment): chapter 11
 - MP curve (monetary policy and interest rates): chapter 12