

An Introduction to the Short Run

— Week 6 —

Vivaldo Mendes

Dep. of Economics — Instituto Universitário de Lisboa

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Summary

- 1 The Long Run, the Short Run, and Shocks
- 2 The Short-Run Model
- 3 Okun's Law: Output and Unemployment
- 4 Filling in the Details
- 5 Required reading

I – The Long Run, the Short Run, and Shocks

The long run vs the short run

- 1 The long-run model: determines potential output and long-run inflation.
- 2 The short-run model: determines current output and current inflation.
- 3 Potential output:
 - 1 The amount the economy would produce if all inputs were utilized at their long-run sustainable levels
- 4 Current output:
 - 1 The current level of output (and the current inflation rate as well) is endogenous.
 - 2 Current output may deviate from potential output because of economic shocks

Trends and Fluctuations

- ① Output is equal to the long-run trend plus short-run fluctuations:

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

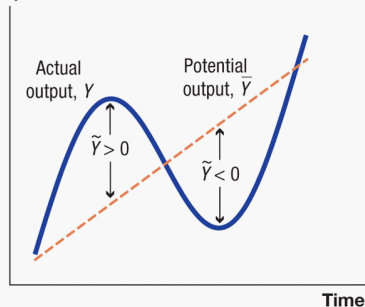
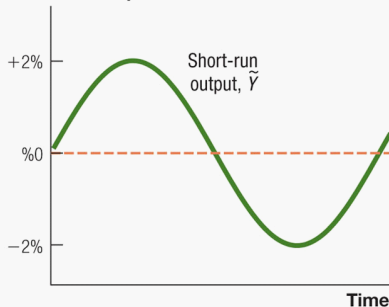
- ① The long-run trend is potential output.
- ② The short-run fluctuations are the percentage change of deviations from potential GDP.

$$\tilde{Y}_t \equiv \frac{Y_t - \bar{Y}_t}{\bar{Y}_t}$$

Actual vs potential output: short-run fluctuations

FIGURE 9.1

Economic Fluctuations and Short-Run Output

Output

Short-run output


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Short-Run Output in the United States

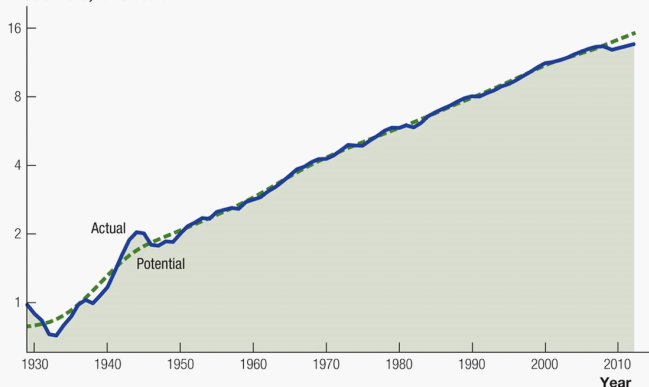
- 1 Fluctuations in U.S. GDP:
 - 1 Are relatively hard to see when graphed over a long period of time.
 - 2 But not in short periods of time
- 2 The Great Depression was the large negative gap of the 1930s when actual output was well below potential.
- 3 A recession:
 - 1 Begins when actual output falls below potential, and short-run output becomes negative.
 - 2 Ends when short-run output starts to rise and become less negative
 - 3 Output is usually below potential for approximately two years, which results in a loss of about \$3,000 per person.
 - 4 Between 1.5 million and 3 million jobs are lost.

Actual and potential real GDP for the US

FIGURE 9.2

U.S. Real GDP, Actual and Potential, 1929–2012

Trillions of chained
2005 dollars, ratio scale

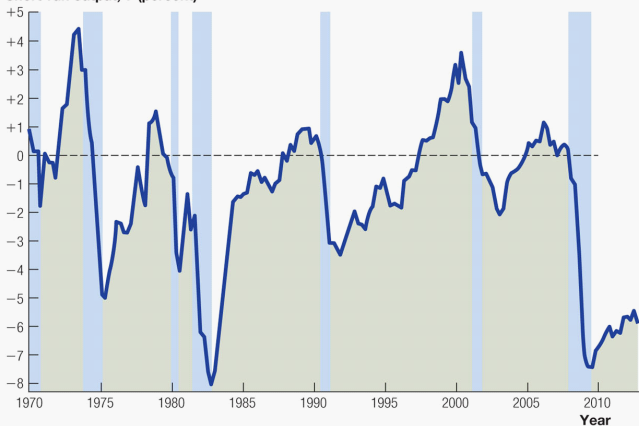


Economic Fluctuations for the US

FIGURE 9.3

U.S. Economic Fluctuations, 1960–2012

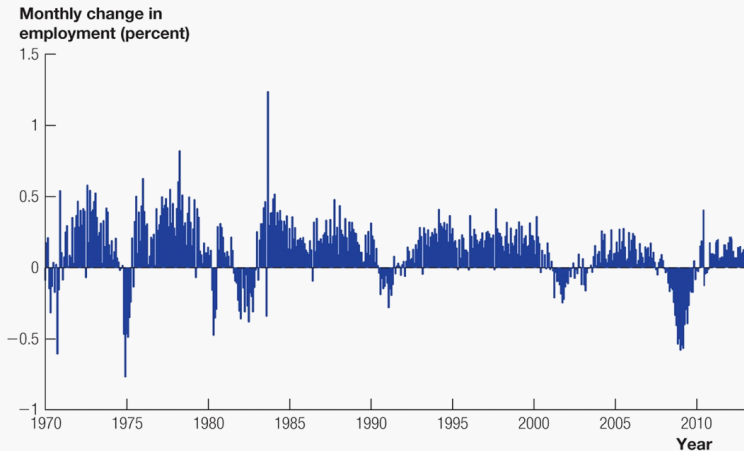
Short-run output, \tilde{Y} (percent)



Changes in Employment the US

FIGURE 9.4

Changes in U.S. Employment, 1970–2012



II – The Short-Run Model

Short-run model features

- 1 An open economy exists where **global** booms and recessions impact the local economy.
- 2 The economy will exhibit long-run growth and fluctuations.
- 3 Central Bank manages monetary policy to smooth fluctuations

Three fundamental premises

Premise 1

- The economy is constantly being hit by shocks.
- Shocks: factors that cause fluctuations in output or inflation.

Premise 2

- Monetary and fiscal policies affect output.
- Policymakers may be able to neutralize shocks to the economy.

Premise 3

- There is a dynamic trade-off between output and inflation.
- The Phillips curve is the dynamic trade-off between output and inflation.

The Phillips curve shows

- 1 A boom increases inflation.
- 2 A recession decreases inflation.
- 3 A positive relationship between the change in inflation and short-run output:

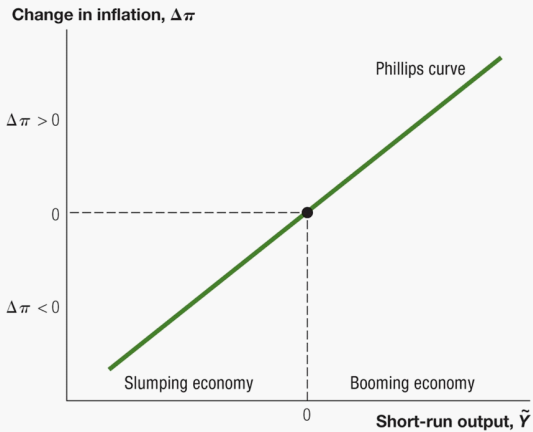
The Phillips Curve

- 4 See next figure

The Phillips curve

FIGURE 9.6

The Phillips Curve



The Phillips Curve

- ① When an economy is booming, most firms are producing above potential.
 - ① To maintain this, firms must raise wages.
 - ② Firms must raise prices.
- ② Self correcting mechanism:
 - ① Firms raise prices, the inflation rate increases
 - ② Less demand for products
 - ③ Firms cut costs and lay off workers
 - ④ Inflation rate falls back down to previous levels
- ③ Self correcting mechanism takes a lot of time to work: quick remedy
 - ① Monetary policy: in a boom, Central Bank increases interest rates

Self correcting mechanism is very slow ... but there is a remedy

- 1 Self correcting mechanism takes a lot of time to work
- 2 Fortunately, there is quick and efficient remedy:

Monetary Policy and Fiscal Policy

- 3 In a boom, Central Bank increases interest rates (Central Bank rates)
- 4 In a recession, Central Bank cuts interest rates
- 5 Example:
 - 1 1979: inflation was increasing because of oil prices
 - 2 Monetary Policy: raise interest rates
 - 3 What happens? Recession.

Empirical version of the Phillips curve for the U.S

FIGURE 9.7

Measuring the Phillips Curve, 1960–2012

Change in inflation, $\Delta\pi$



III – Okun's Law: Output and Unemployment

Okun's Law

- 1 Natural rate of unemployment:
 - 1 The rate of unemployment that prevails in the long run
 - 2 When real GDP is equal to potential GDP
- 2 Cyclical unemployment:
 - 1 The difference between current unemployment and the natural rate of unemployment

Cyclical
unemployment

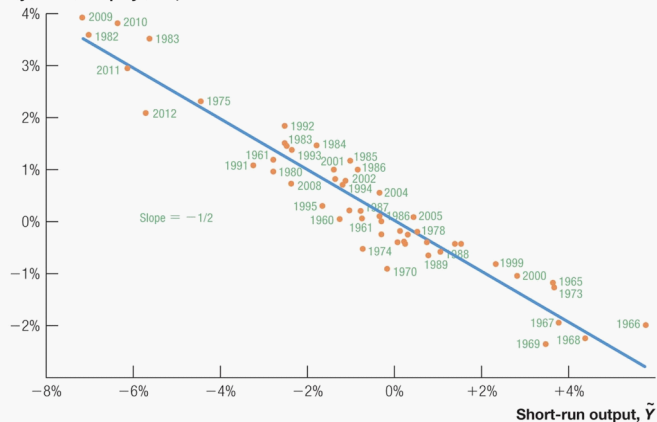
$$u - \bar{u} = -\frac{1}{2} \times \tilde{Y}_t$$

↑ Current rate of unemployment
 ↑ Natural rate of unemployment
 ↑ Short-run output

Okun's Law: evidence

FIGURE 9.8

Okun's Law for the U.S. Economy, 1950–2012

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

IV – Filling in the Details (our next steps)

Our next steps

- 1 The IS curve:
 - 1 Shows how an economy's output in the short run depends negatively on the real interest rate.
- 2 The MP curve:
 - 1 Shows how monetary policy affects the real interest rate.
- 3 DSGE Models:
 - 1 Shows how business cycle models and growth models are connected at the frontier of macroeconomics

V – Required readings

Required reading

For this week you are required to read **Chapter 9** of our adopted textbook.



Charles I. Jones (2014). *Macroeconomics, Third Edition*, W. W. Norton & Company.