

Output, Unemployment and the Inflation Rate

GRADUATE MACRO – LAB SESSION 3

ETTORE GALLO

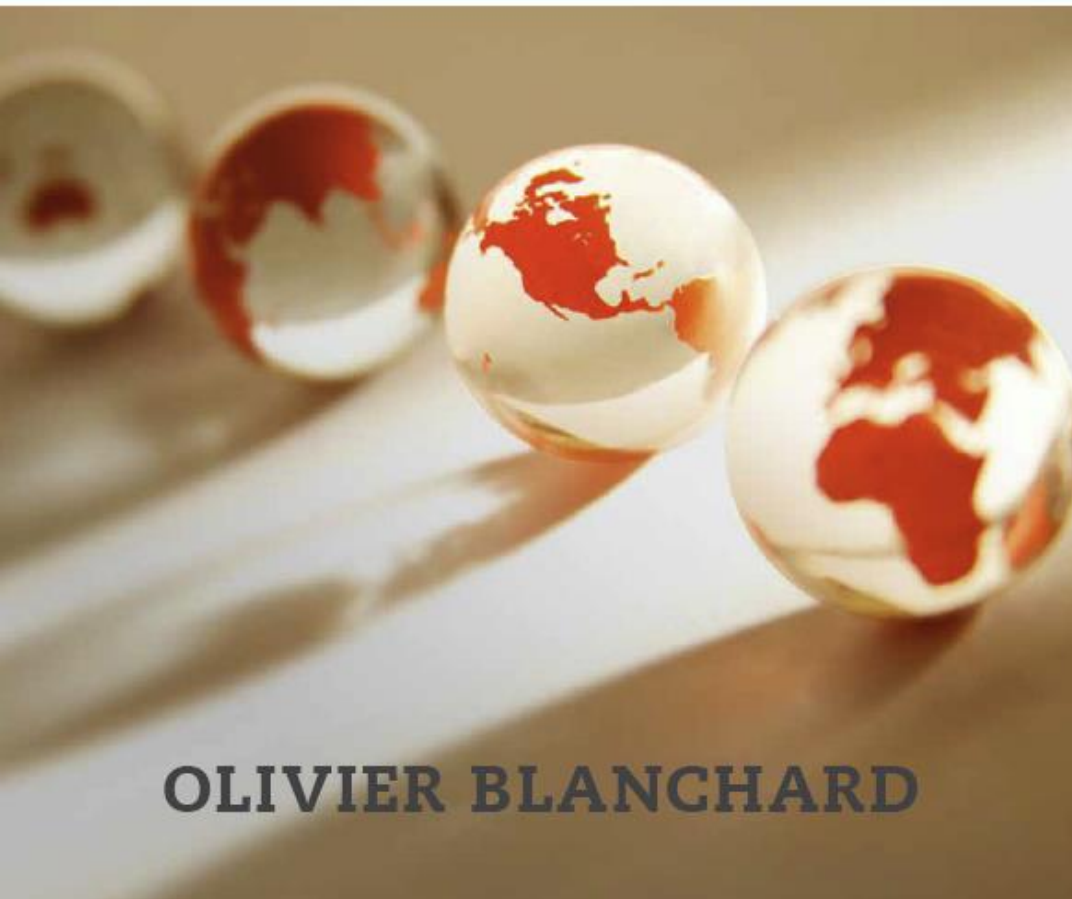


Class Outline

1. Aggregate Output
2. The Unemployment Rate
3. The Inflation Rate
4. Output, Unemployment, and the Inflation Rate:
Okun's Law and the Phillips Curve
5. The Short Run, the Medium Run, and the Long Run
6. The Keynesian cross diagram: comparative statics

MACROECONOMICS

SEVENTH EDITION



OLIVIER BLANCHARD

A Tour of the Book

Chapter 2

2-2 The Unemployment Rate

- **Employment** is the number of people who have a job.
- **Unemployment** is the number of people who do not have a job but are looking for one.
- The **labor force** is the sum of employment and unemployment.

$$L = N + U$$

labor force = employment + unemployment

FOCUS: Labor Force Statistics in the US

- Produced by Bureau of Labor Statistics (**BLS**), in the U.S. Dept. of Labor
- **Current Population Survey (CPS)**
 - Based on regular survey of 60,000 households
 - Based on “adult population” (16 yrs or older)

FOCUS: Labor Force Statistics in the US

- BLS divides population into 3 groups:
 - Employed: paid employees, self-employed, and unpaid workers in a family business
 - Unemployed: people not working who have looked for work during previous 4 weeks
 - Not in the labor force: everyone else
- Labor force = Employed + Unemployed
 - The total # of workers

2-2 The Unemployment Rate

- **Who is not in the labor force**
 - **Retired people**
 - **Full-time students**
 - **Discourage workers** are those who give up looking for a job and so no longer counted as unemployed.
 - Others
- The **participation rate** is the ratio of the labor force to the total population of working age.
- Because of discourage workers, a higher unemployment rate is typically associated with a lower participation rate.

2-2 The Unemployment Rate

- The **unemployment rate** is the ratio of the number of people who are unemployed to the number of people in the labor force.

$$u = \frac{U}{L}$$

unemployment rate = unemployment / labor force

Labor Force Statistics

- Unemployment rate (“u-rate”):
 - % of the labor force that is unemployed

$$u\text{-rate} = 100 \times \frac{\text{\# of unemployed}}{\text{Labor force}}$$

- Labor-force participation rate
 - % of the adult population that is in the labor force
 -

$$\begin{aligned} & \text{Labor-force participation rate} \\ &= 100 \times \frac{\text{Labor force}}{\text{Adult population}} \end{aligned}$$

10 Active Learning 1

Calculate labor force statistics

Compute the labor force, u-rate, adult population, and labor force participation rate using this data:

| Adult population of the U.S. by group, June 2016 | |
|---|---------------|
| # of employed | 151.1 million |
| # of unemployed | 7.8 million |
| not in labor force | 94.5 million |

$$\begin{aligned}\text{Labor force} &= \text{employed} + \text{unemployed} = \\ &= 151.1 + 7.8 = \mathbf{158.9 \text{ million}}\end{aligned}$$

$$\begin{aligned}\text{U-rate} &= 100 \times (\text{unemployed})/(\text{labor force}) = \\ &= 100 \times 7.8/158.9 = \mathbf{4.9\%}\end{aligned}$$

$$\begin{aligned}\text{Population} &= \text{labor force} + \text{not in labor force} \\ &= 158.9 + 94.5 = \mathbf{253.4 \text{ million}}\end{aligned}$$

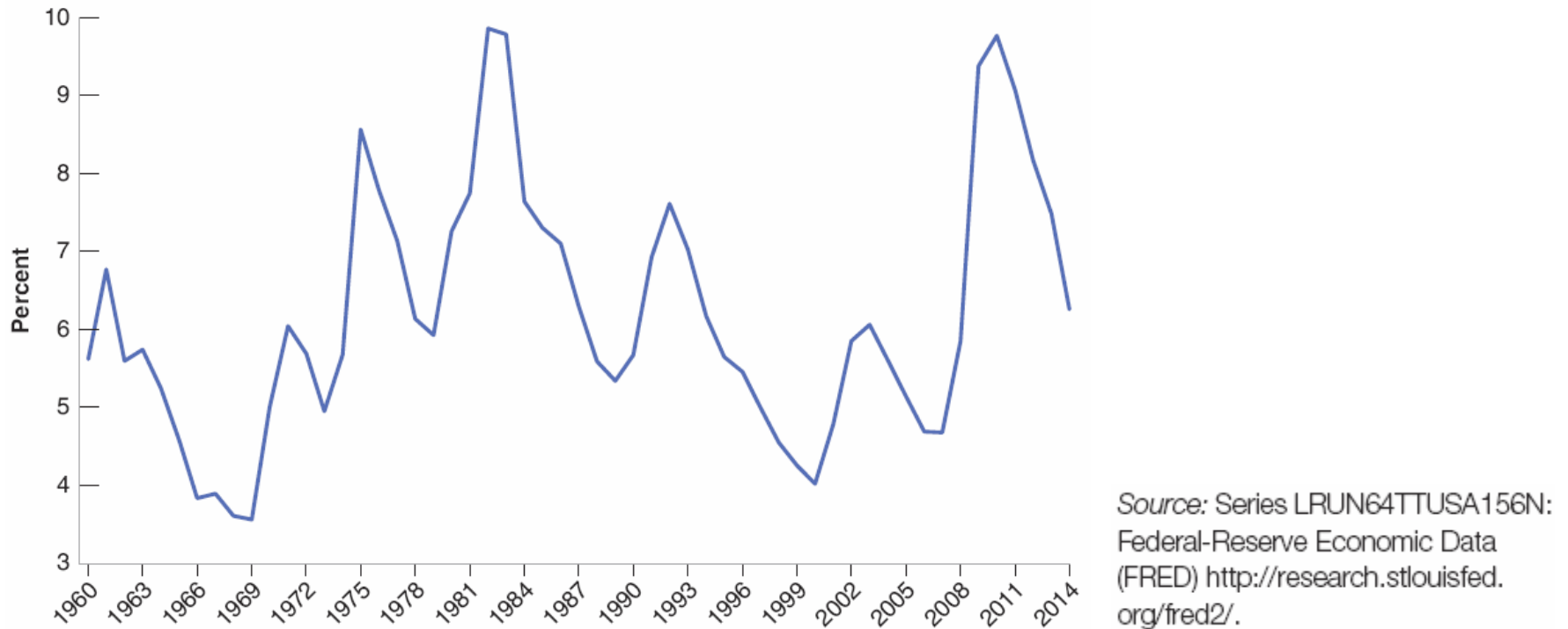
$$\begin{aligned}\text{LF partic. Rate} &= 100 \times (\text{labor force})/(\text{population}) \\ &= 100 \times 158.9/253.4 = \mathbf{62.7\%}\end{aligned}$$

2-2 The Unemployment Rate

- Why Do Economists Care about Unemployment?
 1. Direct effect on the welfare of the unemployed, especially those remaining unemployed for long periods of time.
 2. A signal that the economy is not using its human resources efficiently.
- Very low unemployment can also be a problem as the economy runs into labor shortages.

2-2 The Unemployment Rate

Figure 2-3 U.S. Unemployment Rate, 1960–2014

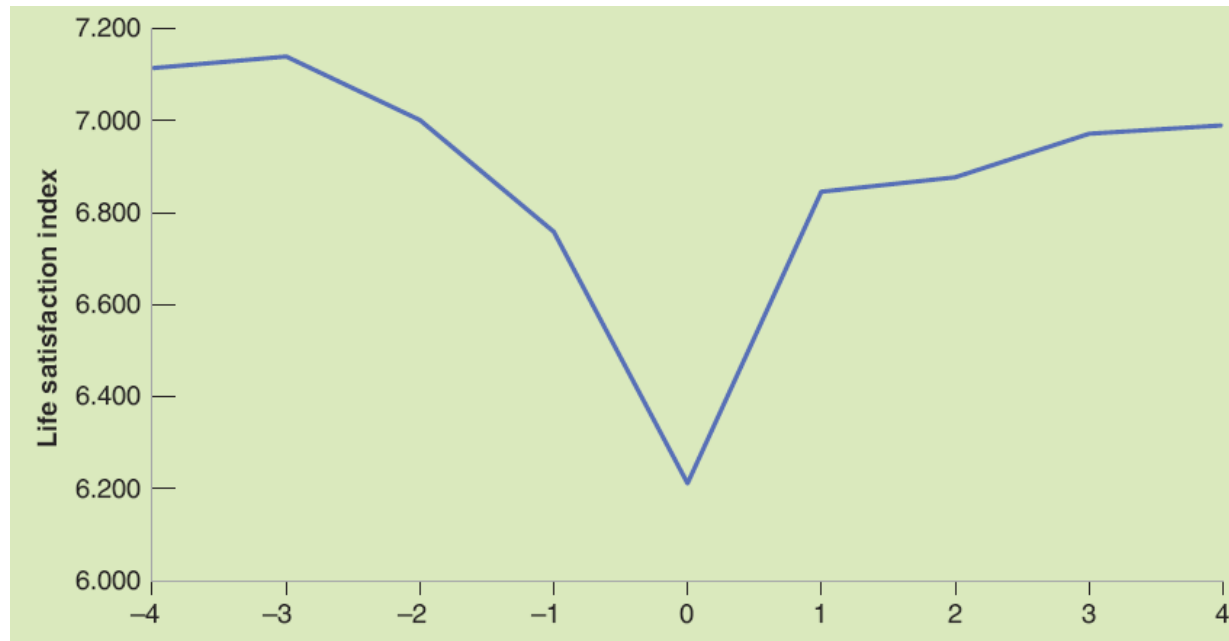


- Since 1960, the U.S. unemployment rate has fluctuated between 3 and 10%, going down during expansions and going up during recessions.
- The effect of the recent crisis is highly visible, with the unemployment rate reaching close to 10% in 2010, the highest such rate since the early 1980s.

FOCUS: Unemployment and Happiness

- Results of the German Socio-Economic Panel survey suggest that (1) becoming unemployed leads to a large decrease in happiness, (2) happiness declines before the actual unemployment spell, and (3) happiness does not fully recover even four years later.

Figure 1 Effects of Unemployment on Happiness



Source: Winkelmann 2014.

Labor Force Statistics for Different Groups

- The BLS publishes these statistics for demographic groups within the population.
 - These data reveal widely different labor market experiences for different groups.

Labor Force Statistics for Whites & Blacks,

June 2016

| Adults (20 yrs & older) | | |
|-------------------------|---------------|----------------------|
| | <i>u-rate</i> | <i>LF part. rate</i> |
| White, male | 4.0% | 71.9% |
| White, female | 4.0 | 57.6 |
| Black, male | 8.2 | 67.8 |
| Black, female | 7.3 | 60.9 |

Labor Force Statistics for Whites & Blacks,

June 2016

| Teens (16–19 yrs) | | |
|-------------------|---------------|----------------------|
| | <i>u-rate</i> | <i>LF part. rate</i> |
| White | 14.1% | 37.0% |
| Black | 31.2 | 29.2 |

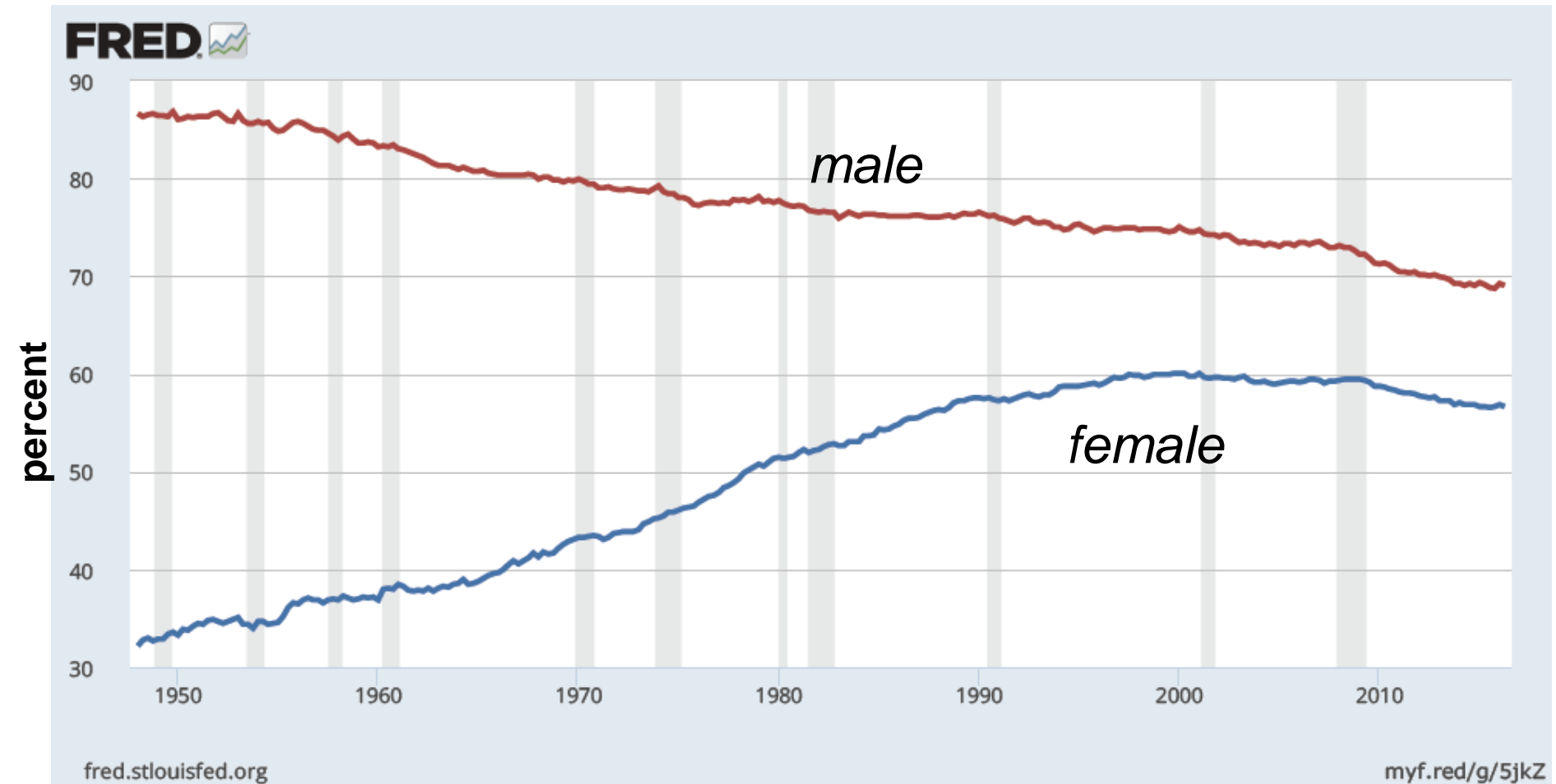
Labor Force Statistics for Other Groups, June 2016

| All ages | | |
|----------|---------------|----------------------|
| | <i>u-rate</i> | <i>LF part. rate</i> |
| Asian | 3.5% | 63.2% |
| Hispanic | 5.8 | 65.6 |

19 Labor Force Statistics by Education Level, June 2016

| Adults (25 yrs & older) | | |
|---------------------------------|---------------|----------------------|
| | <i>u-rate</i> | <i>LF part. rate</i> |
| less than h.s. | 7.5% | 45.2% |
| h.s. diploma | 5 | 57.2 |
| some college or assoc degree | 4.2 | 66.0 |
| bachelor's degree or more | 2.5 | 74.4 |

LF Participation Rates by Sex, 1948–2016



Measures of Labor Underutilization

| Measure and Description | | Rate |
|-------------------------|---|------|
| U-1 | Persons unemployed 15 weeks or longer, as a percent of the civilian labor force (includes only very long-term unemployed) | 2.0% |
| U-2 | Job losers and persons who have completed temporary jobs, as a percent of the civilian labor force (excludes job leavers) | 2.3 |
| U-3 | Total unemployed, as a percent of the civilian labor force (official unemployment rate) | 4.9 |
| U-4 | Total unemployed, plus discouraged workers, as a percent of the civilian labor force plus discouraged workers | 5.3 |
| U-5 | Total unemployed plus all marginally attached workers, as a percent of the civilian labor force plus all marginally attached workers | 6.2 |
| U-6 | Total unemployed, plus all marginally attached workers, plus total employed part-time for economic reasons, as a percent of the civilian labor force plus all marginally attached workers | 9.9 |

Note: The Bureau of Labor Statistics defines terms as follows:

- *Marginally attached workers* are persons who currently are neither working nor looking for work but indicate that they want and are available for a job and have looked for work sometime in the recent past.
- *Discouraged workers* are marginally attached workers who have given a job-market-related reason for not currently looking for a job.
- *Persons employed part-time for economic reasons* are those who want and are available for full-time work but have had to settle for a part-time schedule.

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Limitations of the u-rate

In each of the following, **what happens to the u-rate?** Does the u-rate give an accurate impression of what's happening in the labor market?

- A. Sue lost her job and begins looking for a new one.
- B. Jon, a steelworker who has been out of work since his mill closed last year, becomes discouraged and gives up looking for work.
- C. Sam, the sole earner in his family of 5, just lost his \$80,000 job as a research scientist. Immediately, he takes a part-time job at McDonald's until he can find another job in his field.

23 Active Learning 2

Answers

A. Sue lost her job and begins looking for a new one.

u-rate rises

A rising u-rate gives the impression that the labor market is worsening, and it is.

24 Active Learning 2

Answers

B. Jon has been out of work since last year, becomes discouraged, stops looking for work.

Discouraged workers would like to work but have given up looking for jobs

- classified as “not in the labor force” rather than “unemployed”

U-rate falls because Jon is no longer counted as unemployed.

A falling u-rate gives the impression that the labor market is improving, but it is not.

25 Active Learning 2

Answers

C. Sam lost his \$80,000 job, and takes a part-time job at McDonald's until he finds a better one.

U-rate unchanged because a person is “employed” whether they work full or part time.

Things are worse, but the u-rate fails to show it.

2-3 The Inflation Rate

- **Inflation** is a sustained rise in the general level of prices—the **price level**.
- The **inflation rate** is the rate at which the price level increases.
 - Growth rate of the price level
- **Deflation** is a sustained decline in the price level (negative inflation rate).

2-3 The Inflation Rate

- The **GDP deflator** in year t (P_t) is the ratio of nominal GDP to real GDP in year t :

$$P_t = \frac{\text{Nominal GDP}_t}{\text{Real GDP}_t} = \frac{\$Y_t}{Y_t}$$

- It is called an **index number** (1 in 2009), which has no economic interpretation.
- The rate of change has a clear interpretation: the rate of inflation.

$$\pi_t = (P_t - P_{t-1})/P_{t-1}$$

2-3 The Inflation Rate

- Remember: real GDP is nominal GDP deflated by the GDP deflator:

$$Y_t = \$Y_t / P_t$$

- Defining the price level as the GDP deflator implies a simple relation between nominal GP, real GDP, and the GDP deflator:

$$\$Y_t = P_t Y_t$$

- Nominal GDP is equal to the GDP deflator times real GDP.*
- The rate of growth of nominal GDP is equal to the rate of inflation plus the rate of growth of real GDP.

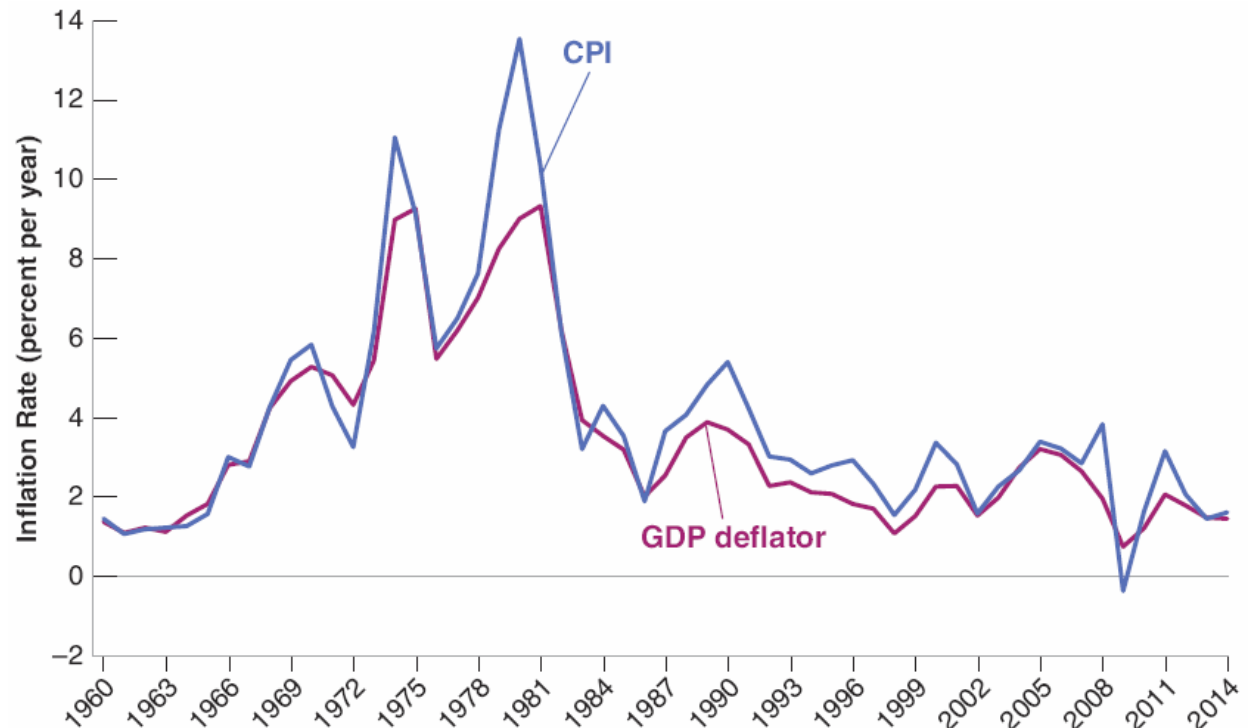
2-3 The Inflation Rate

- The set of goods produced in the economy is not the same as the set of goods purchased by consumers because:
 - Some of the goods in GDP are sold not to consumers but to firms, to the government, or to foreigners.
 - Some of the goods bought by consumers are not produced domestically but are imported from abroad.
- The **Consumer Price Index (CPI)** is a measure of the **cost of living**.
- The CPI is published monthly by the Bureau of Labor Statistics (BLS), which collects price data for 211 items in 38 cities.
- The CPI gives the cost in dollars of a specific list of goods and services over time.

2-3 The Inflation Rate

Figure 2-4 Inflation Rate, Using the CPI and the GDP Deflator, 1960–2014

The inflation rates, computed using either the CPI or the GDP deflator, are largely similar.



Source: Calculated using series
USAGDPDEFAISMEI,
CPALTT01USA659N Federal
Reserve Economic Data (FRED)
<http://research.stlouisfed.org/fred2/>.

2-3 The Inflation Rate

- The CPI and GDP deflator moved together most of the time.
- Exception: In 1979 and 1980, the increase in the CPI was significantly larger than the increase in the GDP deflator due to the price of imported goods increasing relative to the price of domestically produced goods.

2-3 The Inflation Rate

- *Pure inflation* is proportional increase in all prices and wages.
 - This type of inflation causes only a minor inconvenience as relative prices are unaffected.
 - Real wage (wage measured by goods rather than dollars) would be unaffected.
 - There is no such thing as pure inflation.

2-3 The Inflation Rate

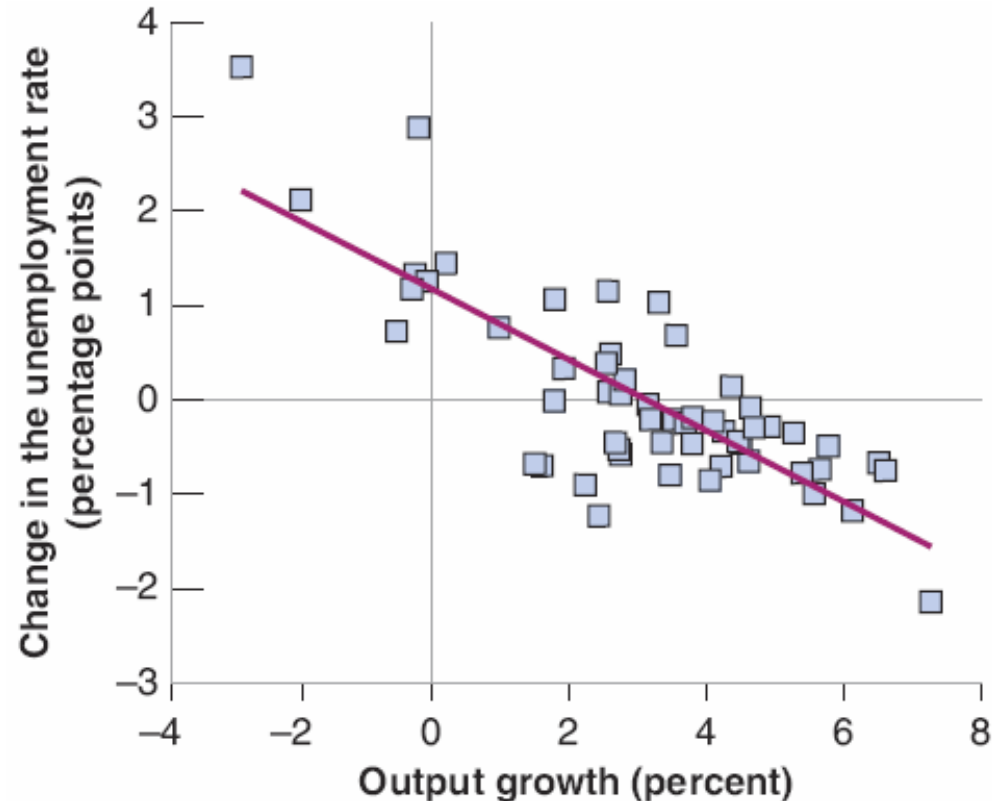
- Why Do Economists Care about Inflation?
 - Inflation affects income distribution when not all prices and wages rise proportionally.
 - Inflation leads to distortions due to uncertainty, some prices that are fixed by law or by regulation, and its interaction with taxation (*bracket creep* in taxes).
- Most economists believe the “best” rate of inflation to be a low and stable rate of inflation between 1 and 4%.

2-4 Output, Unemployment, and the Inflation Rate: Okun's Law and the Phillips Curve

Figure 2-5 Changes in the Unemployment Rate versus Growth in the United States, 1960–2014

Output growth that is higher than usual is associated with a reduction in the unemployment rate.

Output growth that is lower than usual is associated with an increase in the unemployment rate.



Source: See Figures 2-2 and 2-3.

2-4 Output, Unemployment, and the Inflation Rate: Okun's Law and the Phillips Curve

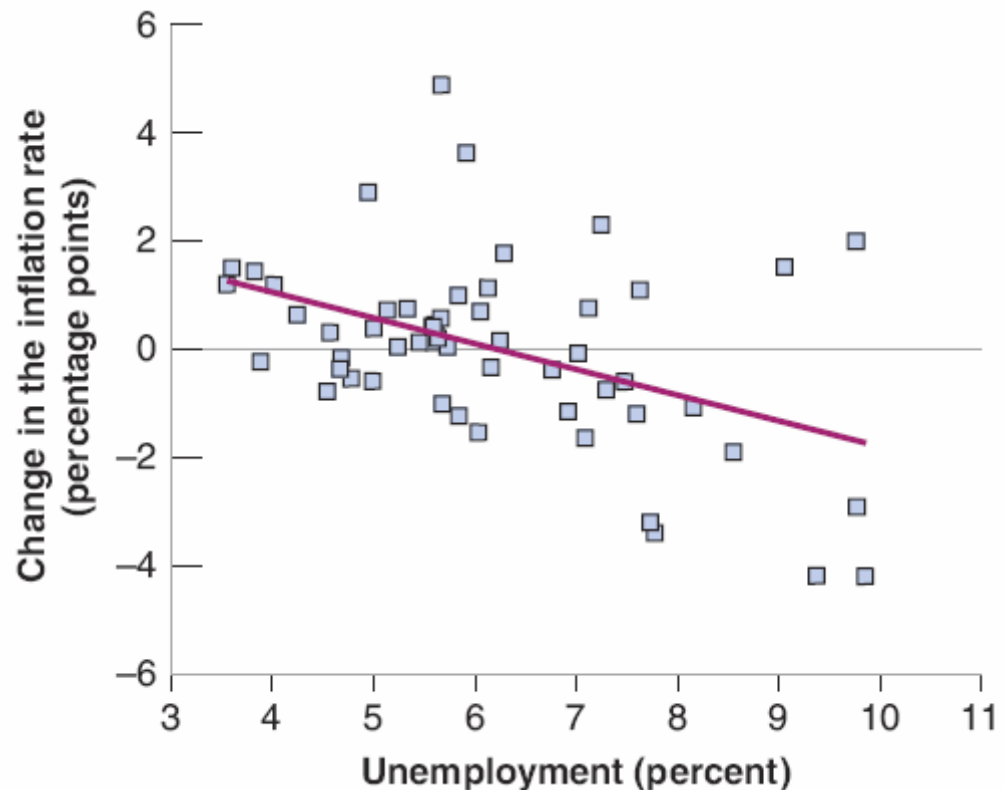
- **Okun's law** is a relation first examined by U.S. economist Arthur Okun.
- In Figure 2-5, the line that best fits the points is downward sloping.
- The slope of the line is -0.4 , which implies that, on average, an increase in the growth rate of 1% decreases the unemployment rate by -0.4% .
- The line crosses the horizontal axis where output growth is 3%, meaning that it takes a growth rate of 3% to keep unemployment constant.

2-4 Output, Unemployment, and the Inflation Rate: Okun's Law and the Phillips Curve

Figure 2-6 Changes in the Inflation Rate versus the Unemployment Rate in the United States, 1960–2014

A low unemployment rate leads to an increase in the inflation rate.

A high unemployment rate leads to a decrease in the inflation rate.



Source: See Figures 2-3 and 2-4.

2-4 Output, Unemployment, and the Inflation Rate: Okun's Law and the Phillips Curve

- The Phillips curve is a relation first explored in 1958 by New Zealand economist A.W. Phillips.
- Figure 2-6 plots the change in the inflation rate against the unemployment rate, along with the line that best fits the points.
- The line is downward sloping, meaning that higher unemployment leads, on average, to a decrease in inflation, and vice versa.
- The line crosses the horizontal axis where the unemployment rate is equal to about 6%, meaning that inflation typically increased when unemployment was below 6%.

2-5 The Short Run, the Medium Run, and the Long Run

- In the **short run** (e.g., a few years), year-to-year movements in output are primarily driven by movements in demand.
- In the **medium run** (e.g., a decade), the economy tends to return to the level of output determined by supply factors, such as the capital stock, the level of technology, and the size of the labor force.
- In the **long run** (e.g., a few decades or more), the economy depends on its ability to innovate and introduce new technologies, and how much people save, the quality of the country's education system, the quality of the government, and so on.