Key Macro Variables and Concepts

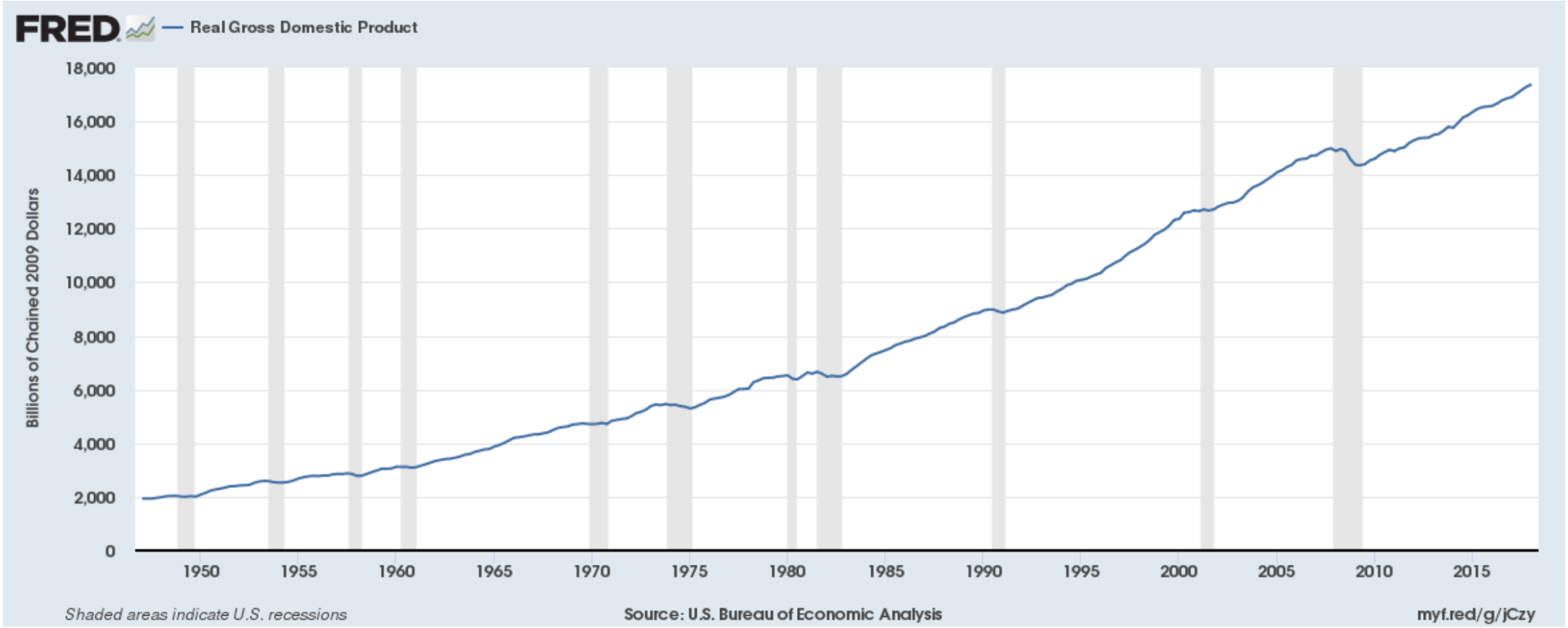
Time Perspective and Macroeconomic Questions

Outline

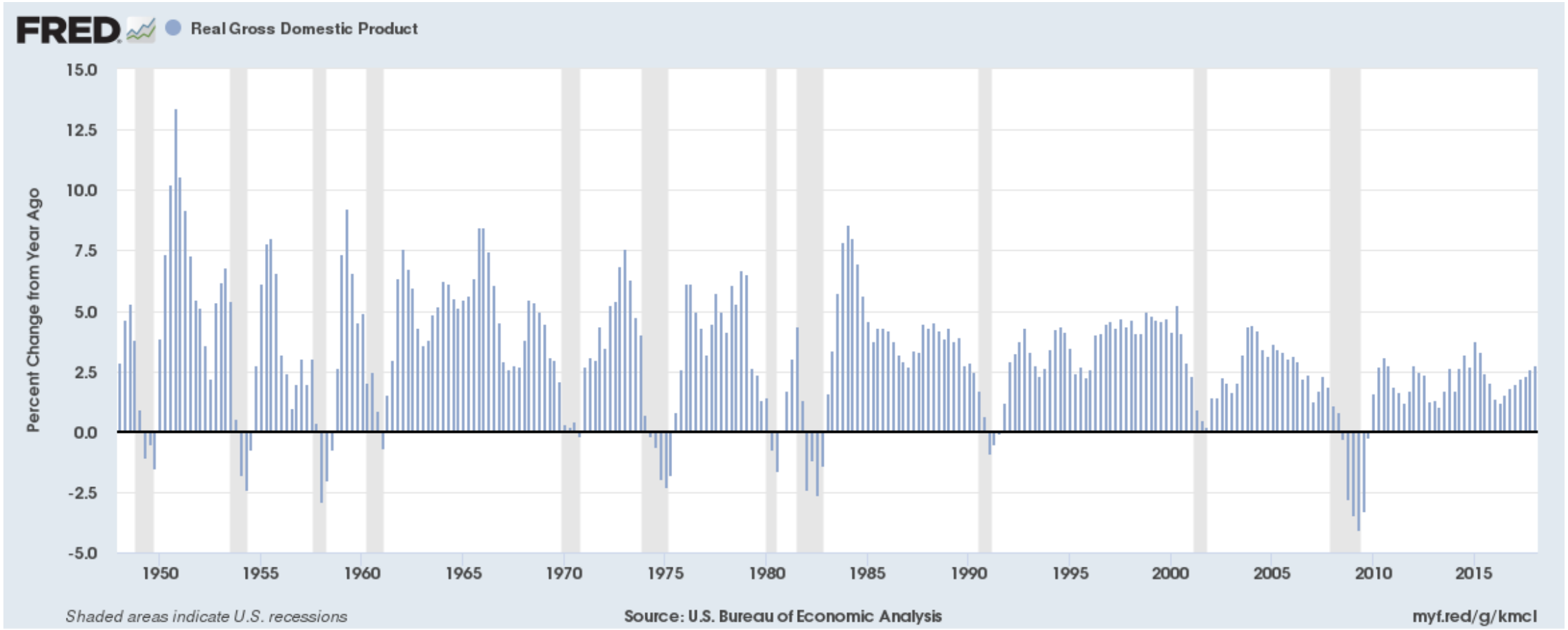
1. Key Macroeconomic Variables
2. Business Cycles
3. Economic Growth

- Textbook Readings: Ch. 8, p. 252; Ch. 9, p. 278; Ch. 10, pp. 337-345

Macroeconomists care about long run growth...



…and short-term fluctuations



Basic Concepts

- Long-Term Trends
  - **Long-run** movements in key macro variables
  - Measurement: Changes in a **decade**, 50 years, etc.

- Business Cycle (Boom and Bust Cycle)
  - **Short-run** movements in key macro variables
  - Measurement: **Quarterly**, annual movements

Key Macroeconomic Variables

- Measuring the **value of economic activity**: **Gross Domestic Product**
- From national income to **individual income**:
  - **Personal income** and income per capita
  - **Corporate profits** and earnings per share
- Measuring the **cost of living**: **Inflation Rate**
- Measuring **joblessness**: **Unemployment Rate**
- Measuring the **cost of borrowing**: **Interest Rates** and **Stock Markets**

Why Do We Care About These Variables?

- **Macro statistics** provide a summary of the **success of an economy**
- Political/economic **debates** on how to improve the economy's performance
- Macro variables are like an **economic report card**
- Governments are **judged** to be successes or failures to a large extent based on this report card

Stock and Flows

- Many economic variables measure a **quantity** (money, goods, etc.)
- Two types of quantity variables
  - **Stock**: Quantity measured **at a given point** in time
  - **Flow**: Quantity measured **per unit of time**

- Stocks and flows are measured in **different units**
- Stocks and flows are **often related**

Stock	Flow
Wealth	Income and Expenditure
Number of unemployed people	Number of people losing their jobs
Amount of capital in the economy	Amount of investment
Government debt	Government budget deficit

Gross Domestic Product (GDP)

- GDP is the most important **flow variable** in macroeconomics
- **GDP**: *market value of all final goods and services produced within an economy in a given period of time* (quarter, year)
  - Sum of money value (**Price x Quantity**) of output (goods and services)
  - Otherwise: 10 apples + 5 diamonds =?= 14 apples + 1 diamond

- **Nominal** GDP: Uses **current** prices
  - Misleading to gauge economy's ability to satisfy demands
- **Real** GDP: Uses **constant** prices
  - Better measure of economic well-being, not influenced by price changes

Growth of Income or Output

Define:

Y_t = Real Income
= Real Output
= Real GDP
= Real Gross Domestic Product

$\Delta Y_t = Y_t - Y_{t-1}$ = Change in Real Income
= Change in Real Output
= Change in Real GDP

$\frac{\Delta Y_t}{Y_{t-1}}$ = Growth Rate of Real Income
= Growth Rate of Real Output
= Growth Rate of Real GDP

Expansions & Recessions

$$\frac{\Delta Y_t}{Y_{t-1}} > 0 \quad \text{Real Income is rising}$$

$$\Rightarrow \text{Economy is in an Expansion}$$

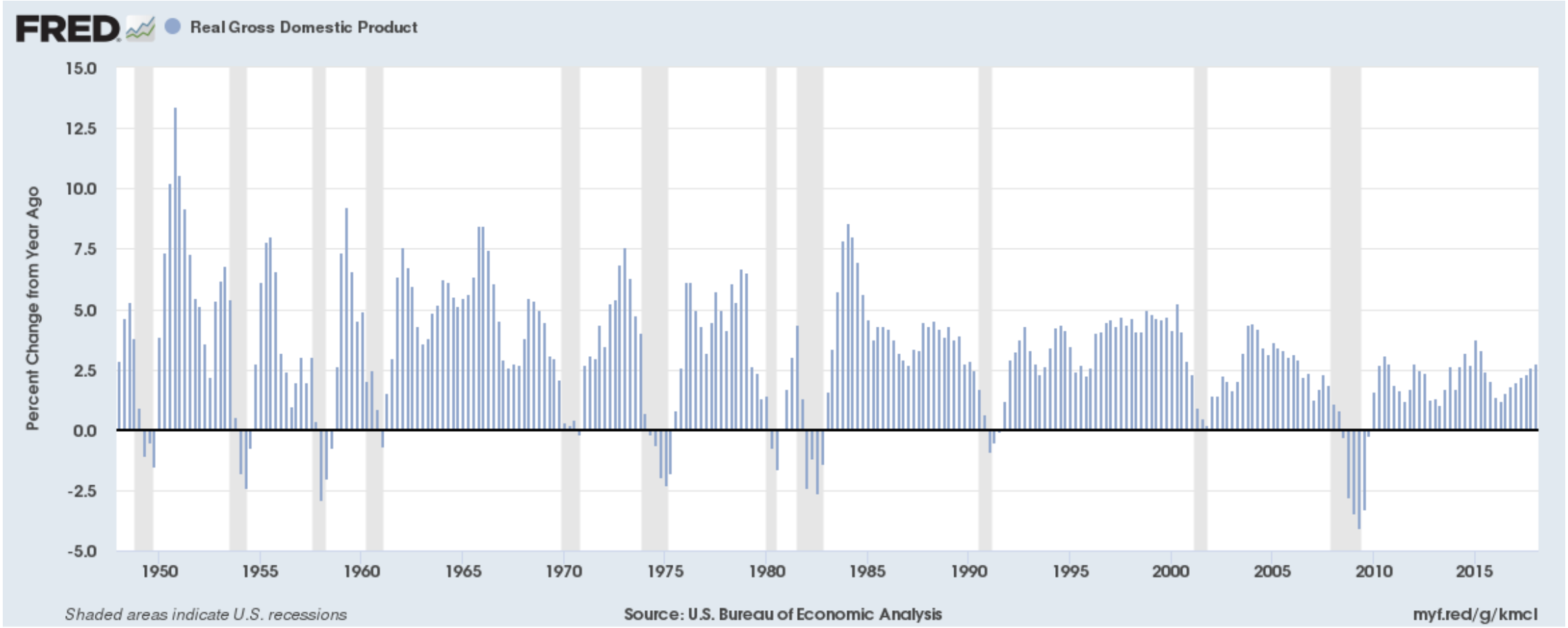
$$\frac{\Delta Y_t}{Y_{t-1}} < 0 \quad \text{Real Income is falling}$$

$$\Rightarrow \text{Economy is in a Recession}$$

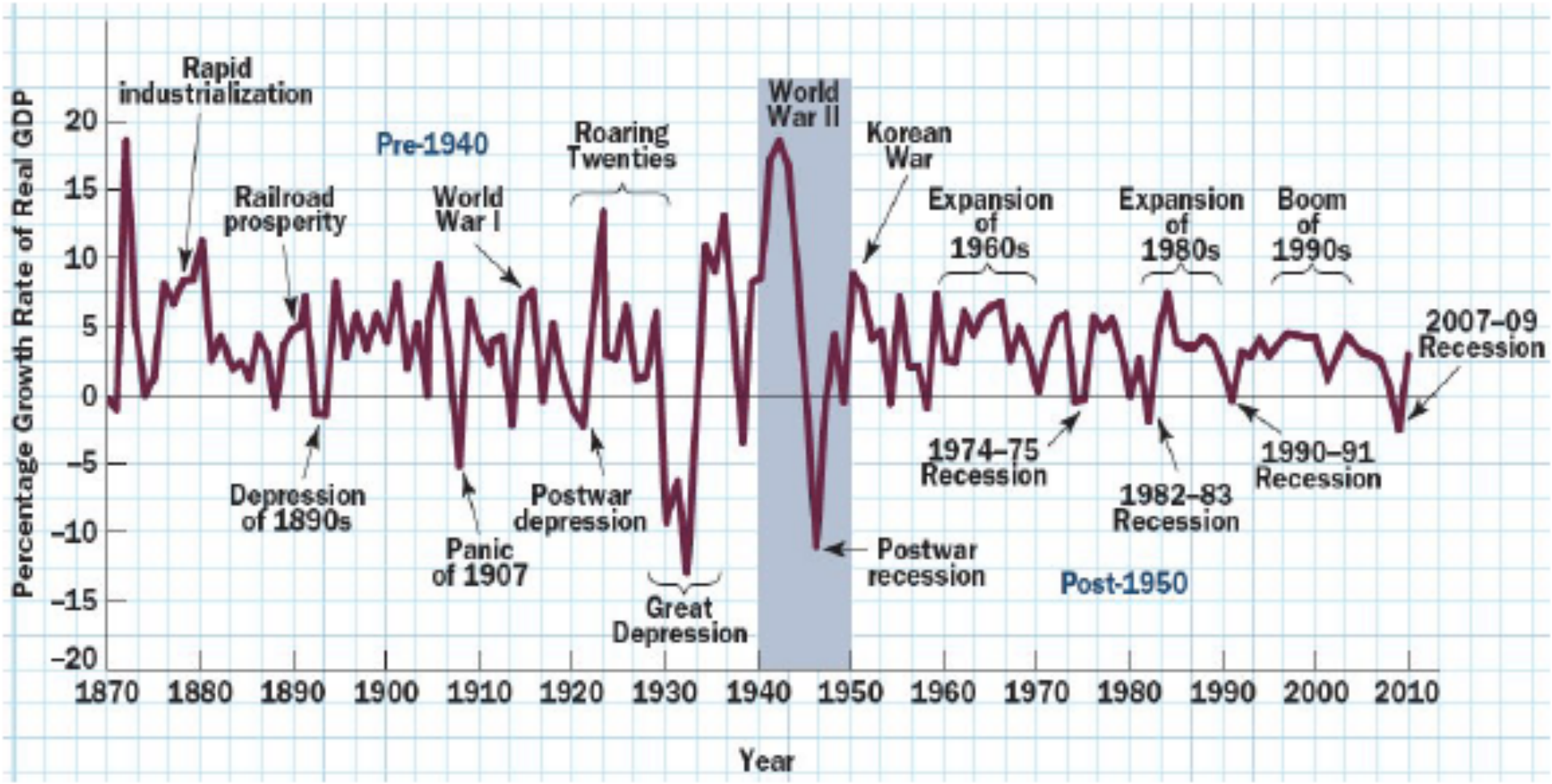
Business Cycle: Conventional Definitions

- **Business Cycle**:
  - Alternating periods of expansions and recessions
- **Expansions**:
  - Two or more consecutive quarters of **positive** growth of ***real*** GDP
- **Recessions**:
  - Two or more consecutive quarters of **negative** growth of ***real*** GDP

Negative Real GDP Occurs Regularly



Recessions Are the Feature of Our History



Key Observations: GDP

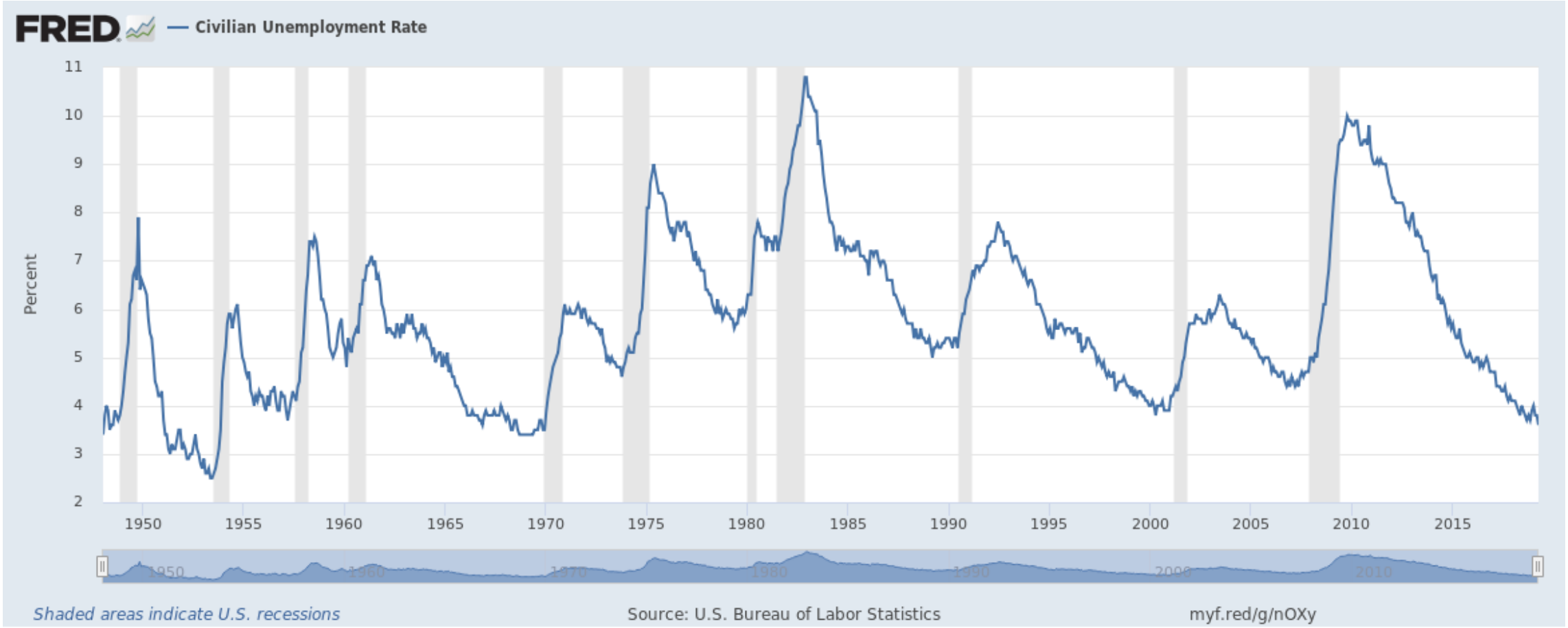
- Substantial Expansions: "**Booms**"
  - 20s, 60s, 80s & 90s
- Serious Recessions: "**Deep Slumps**"
  - 30s, 46-47, 74-75, 82-83 & 07-09
- Great Moderation: 1985-2007
  - Growth rate **less volatile** after WWII than before
- Great Recession: 2007-2009
- Secular Stagnation: 2010-?

Unemployment Rate

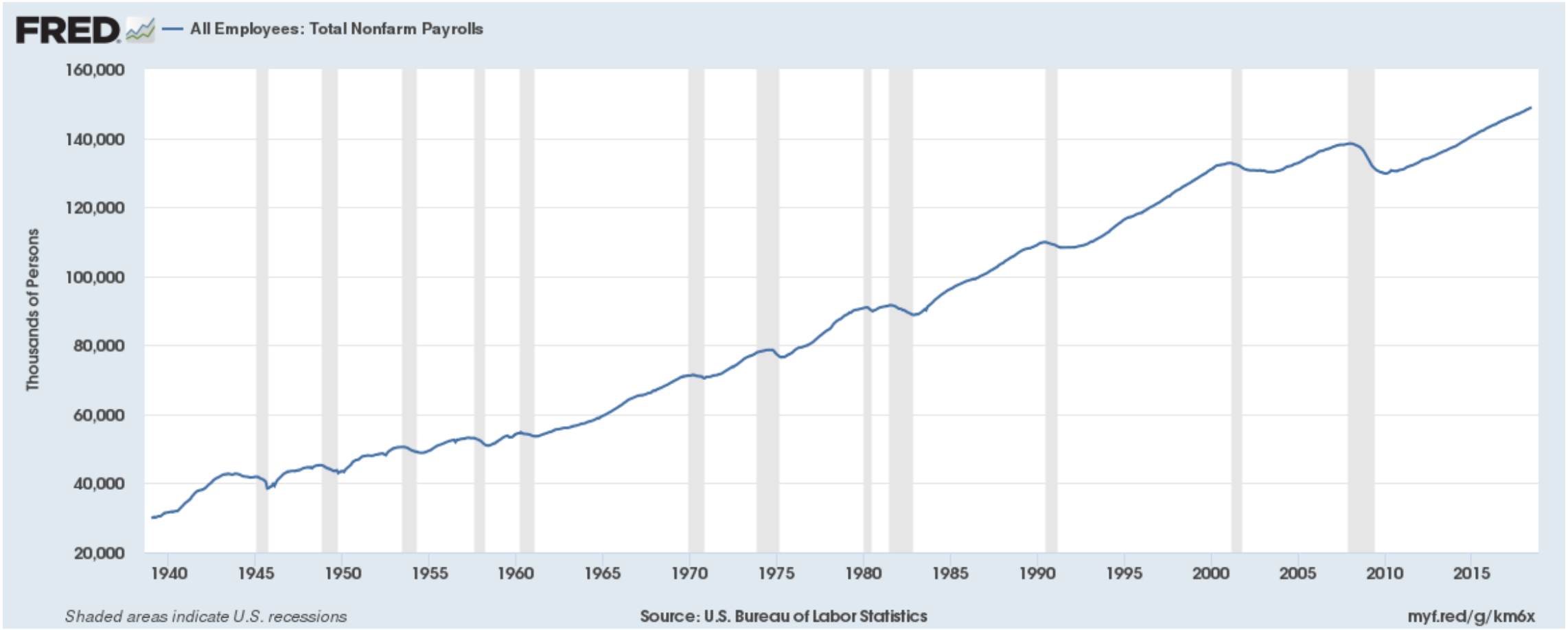
$$U_t = \text{Unemployment Rate}$$

$$= \frac{\text{Number of Workers Unemployed}}{\text{Labor Force}}$$

Job Market is Affected by Business Cycles



Effect of Recessions on Employment



Key Observations: Unemployment

- **Booms**: Low & Falling Unemployment

- **Recessions**: High & Rising Unemployment
  - Great Depression: Unemployment rate hit **25%**
  - High unemployment rates: 74-75; 80-82; 07-09
  - Unemployment rate tends to decline **slowly** after recessions

Soaring Unemployment = Broken Invisible Hand

- Markets, when they work, match supply and demand
- Prices, in theory, **fall** if there is **too much supply**
- When 10 million people suddenly cannot find work, **why don't wages fall** until everyone who wants a job can get a job?
- We will work hard to answer this question!

Inflation Rate

P_t = Average Level of Prices
= Implicit Price Deflator for GDP

$\Delta P_t = P_t - P_{t-1}$ = Change in the Price Level

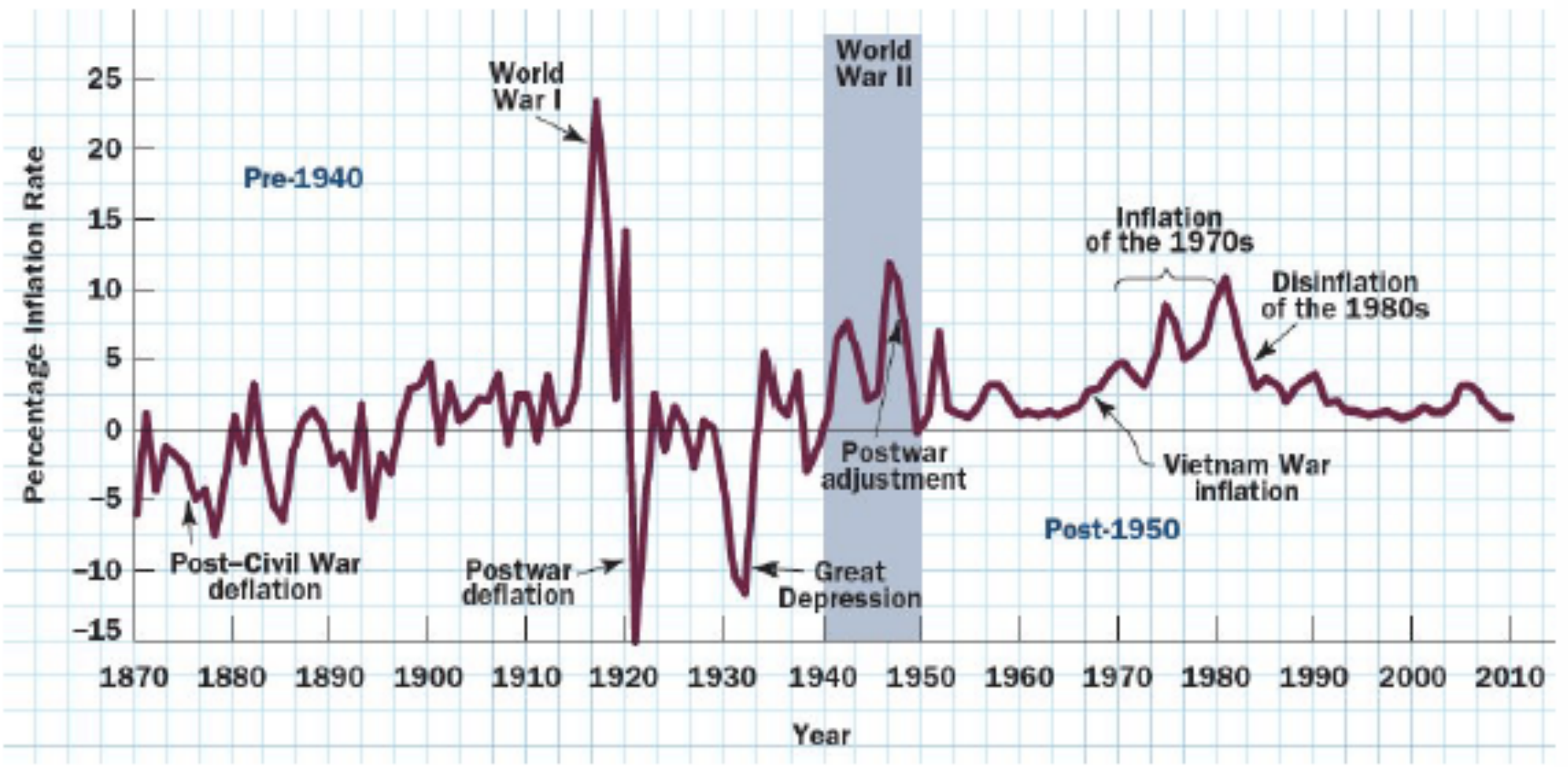
$\frac{\Delta P_t}{P_{t-1}} = \pi_t$ = Rate of Inflation

Inflation and Deflation

$\pi_t > 0$ Inflation: Price level is rising
or the Cost of Living is rising

$\pi_t < 0$ Deflation: Price level is falling
or the Cost of Living is falling

The Inflation Rate in the US (1870-2010)



Key Observations: Inflation

- Substantial **Inflations**
  - WWI, WWII, 70s
- Substantial **Deflations**
  - Late 1800s, Post WWI, 30s
- No deflation **after** WWII
- Inflation much **less volatile** after WWII than before

Economic Cycles

- **Pro-cyclical** variables
  - Consumption, Investment, Industrial Production, Employment
- **Counter-cyclical** variables
  - Unemployment
- **Acyclic** variables
  - Wages

Business Cycle Questions

- What causes expansions and recessions?
- Why was GDP growth less volatile after WWII than before?
- What caused the most recent recession, i.e. the Great Recession?
- What macroeconomic policies can be followed to prevent recessions or to sustain expansions?

Long-Run Trends

- Long run performance is a **critical issue**
  - Why do some countries, over half-century periods, do much better than others?

- Economists look at **income/capita**, to give nation/states long-run performance assessments

- **Income/capita**: A useful, but far from perfect measure

TABLE 1

The Variety of Growth Experiences

Country	Period	Real GDP per Person at Beginning of Period[a]	Real GDP per Person at End of Period[a]	Growth Rate (per year)
Japan	1890–2003	$1,280	$28,620	2.79%
Brazil	1900–2003	663	7,480	2.38
Mexico	1900–2003	987	8,950	2.16
China	1900–2003	610	4,990	2.06
Germany	1870–2003	1,859	27,460	2.05
Canada	1870–2003	2,022	29,740	2.04
United States	1870–2003	3,412	37,500	1.82
Argentina	1900–2003	1,952	10,920	1.69
India	1900–2003	575	2,880	1.58
United Kingdom	1870–2003	4,094	27,650	1.45
Indonesia	1900–2003	759	3,210	1.41
Pakistan	1900–2003	628	2,060	1.16
Bangladesh	1900–2003	531	1,870	1.16

[a]Real GDP is measured in 2003 dollars.

Source: Robert J. Barro and Xavier Sala-i-Martin, *Economic Growth* (New York: McGraw-Hill, 1995), tables 10.2 and 10.3; *World Development Report 2005*, Table 1; and author's calculations.

Small Differences in Growth Rates Matter

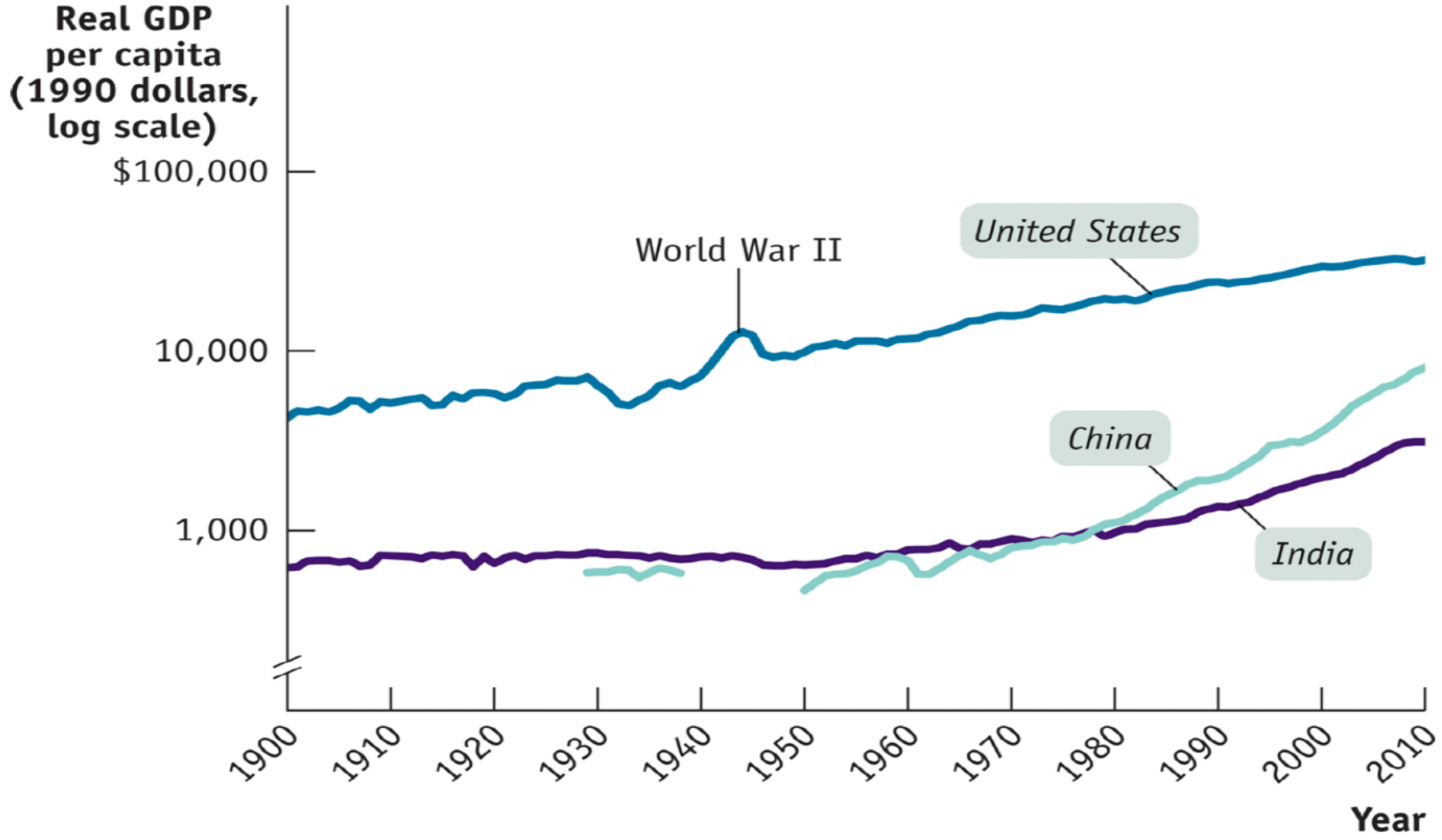
- How much will your generation have to share, when you are retiring?

- 3.4% growth for 50 years:
  - Economy is 5.4 times larger, when you retire

- 2.0% growth for 50 years:
  - Economy is 2.7 times larger, when you retire

Appreciate the power of compounding!

Comparing Economies



Long-Term Growth Questions

- What causes sustainable growth?
- What are the main drivers of long-term growth?
- Is there convergence among different countries?
- Should there be long-term growth?