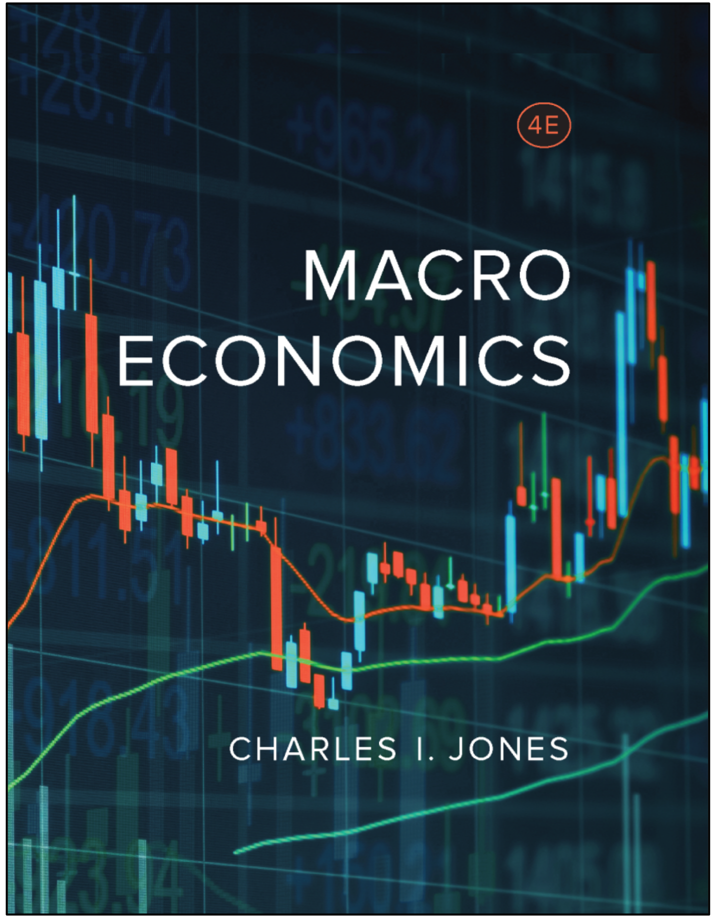
Chapter 10

The Great Recession: A First Look



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10.1 Introduction

- In this chapter, we learn:
  - Some **causes** of the financial crisis that began in the summer of 2007.
  - How the current financial crisis compares to previous recessions.
  - Something about finance.

Introduction

- Financial crisis began in the summer of 2007
- The financial crisis worsened in September 2008
  - Bear Sterns taken over by JP Morgan (March 24)
  - Fannie Mae/Freddie Mac planed in conservatorship. (September 7)
    government sponcers
    × balance
  - Bankruptcy of Lehnam Brothers (Sep. 14)
    investment company.
  - AIG faced liquidity crisis and had to be rescued by the Federal Reserve System (Sep. 16)
- Officially, the worst recession since the Great Depression began in December 2007

10.2 Recent Shocks to the Macroeconomy

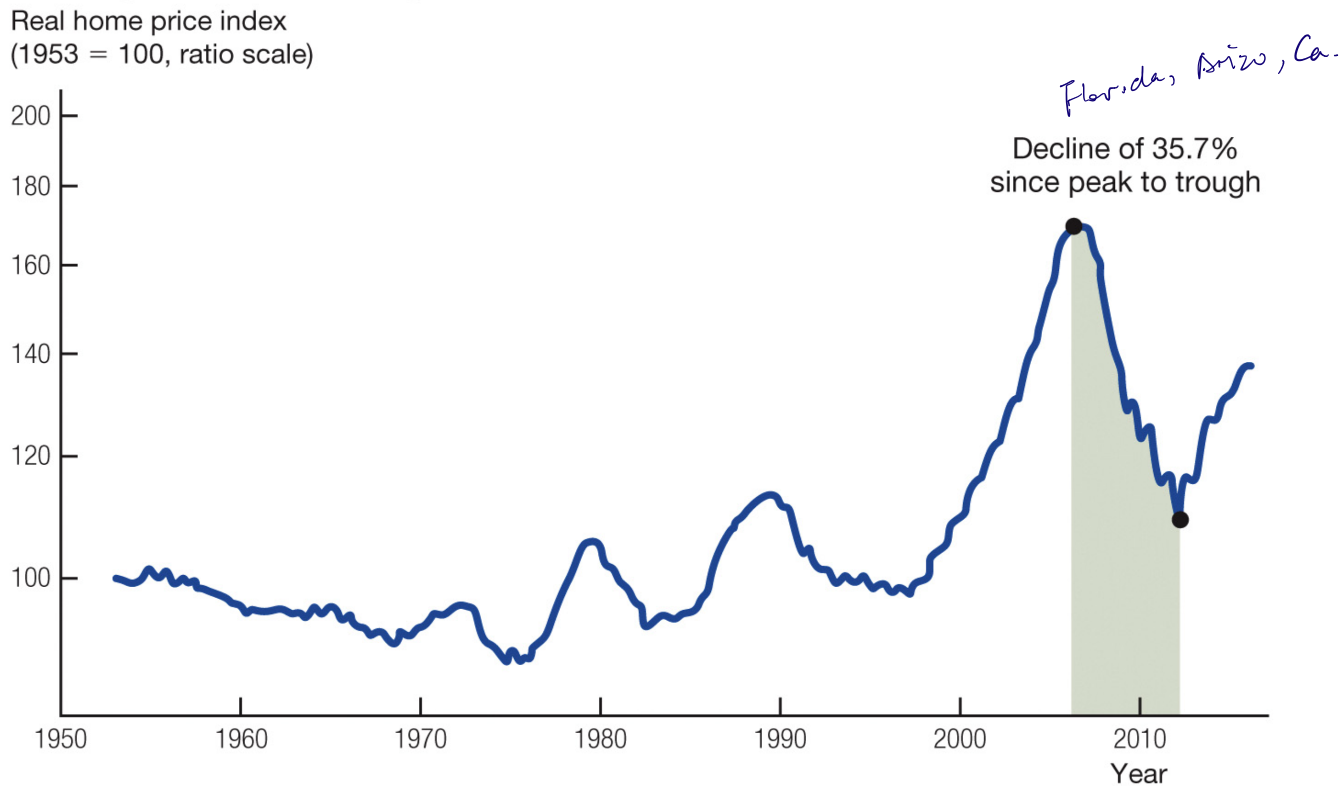
- What shocks to the macroeconomy have caused the global financial crisis?
  - Housing prices
  - Global saving glut
  - Subprime lending and rise in interest rates
  - Previous financial turmoil
  - Oil prices

Housing Prices

- From 1991 to 2006,
  - Housing Prices increased by a factor of 2.5.
  - "Housing bubble" value change due to services, location, ...
- From mid-2006 to the beginning of 2012, (Jan).
  - Housing price plummeted by 35%
  - The bubble blust

Bursting Bubble in U.S. Housing Prices

A Bursting Bubble in U.S. Housing Prices?



Subprime Lending and the Rise in Interest Rates—1

贷款

- Mortgages are used to buy homes
- Low interest rates in 1990s and early 2000s:
  - global savings glut
  - low federal funds rate
- Many borrowers were "subprime":
  - conventional wisdom was that subprime borrowers had
    - poor credit records
    - high debt-to-income ratios

    } together ruled out much mortgages ...

  - New research tells a different story.

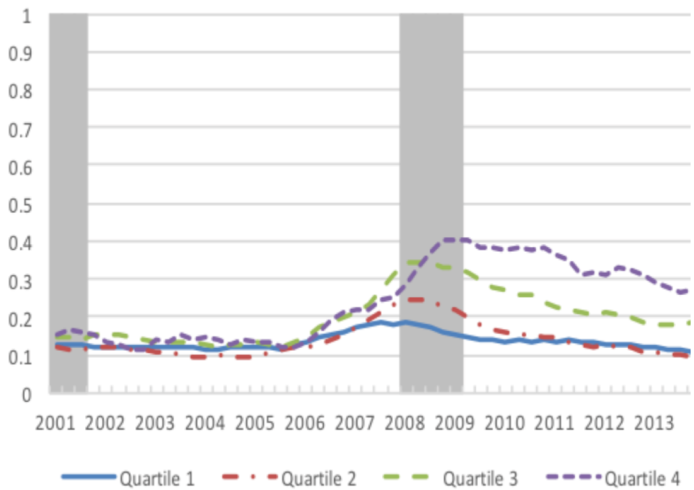
lower the qualification base.

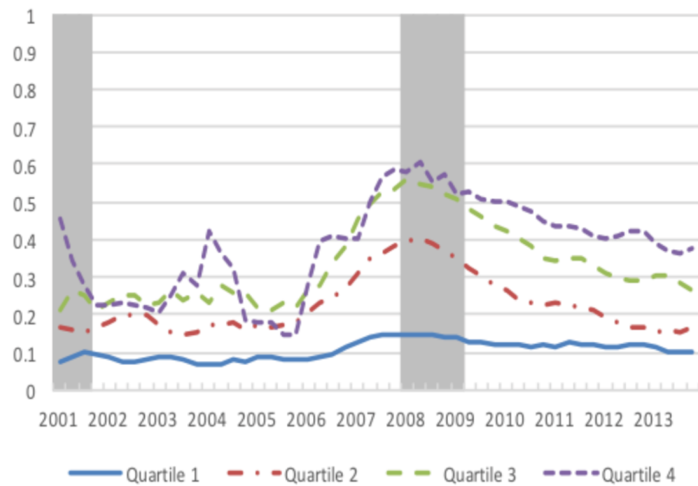
~~down pay requirement.~~

Subprime Lending and the Rise in Interest Rates—2

- Features of subprime mortgages:
  - High loan-to-value ration (small down payment).
  - Adjustment insterest rate (fixed interests for 1, 2, or 3 years; adjustment indexed by reference interest rate such as Federal Funds rate)
- Typical subprime borrower:
  - Low credit score, high debit-to-income ratio.
  - Short-term real estate investors.

Subprime Lending and the Rise in Interest Rates—3





各 25% low → high   maybe investors

Share of Delinquencies (90+ days)

Share of Foreclosures

Subprime Lending and the Rise in Interest Rates—4

- Between 2004 and 2006

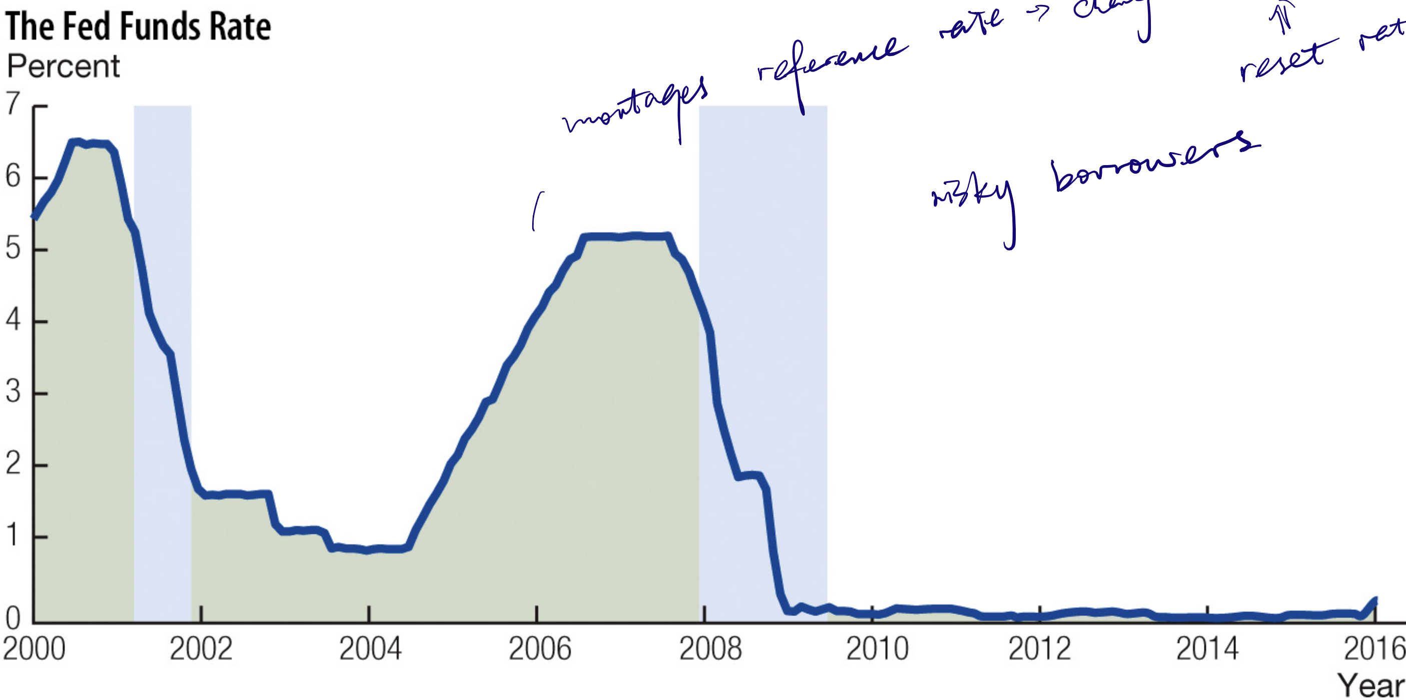
  inflation, Fed stay ahead

  - the Fed raised its interest rate from 1.25% to 5.25%
  - higher interest rates (>teaser) for subprime debtors
- By August 2007,

  adjustable rate mortgages

  - 16% of subprime ARMs were in default
  - This led to a downward spiral of the housing market

Fed Funds Rate



mortgages reference rate → change interest rate
⇑
reset rate.

risky borrowers

The Financial Turmoil—1

eg. 2 people (ability) half-half.
27 - - - . . (- - - - . .) $\frac{2}{27}$ percentage).
↙ less risky. (diverse the risk).

- Securitization
  - pooling a group of financial instruments, dividing them up, and selling in prices.
  - intended to diversify risk
- In part due to securitization, bank lending standards decreased. **Why?** optimal for everyone to check credit.

Securitization

loans — Homeowners
Purchase home

loans — Banks
Package loans

loans — Third Parties
Sell loans.

MBS — Investors
Repackage loans

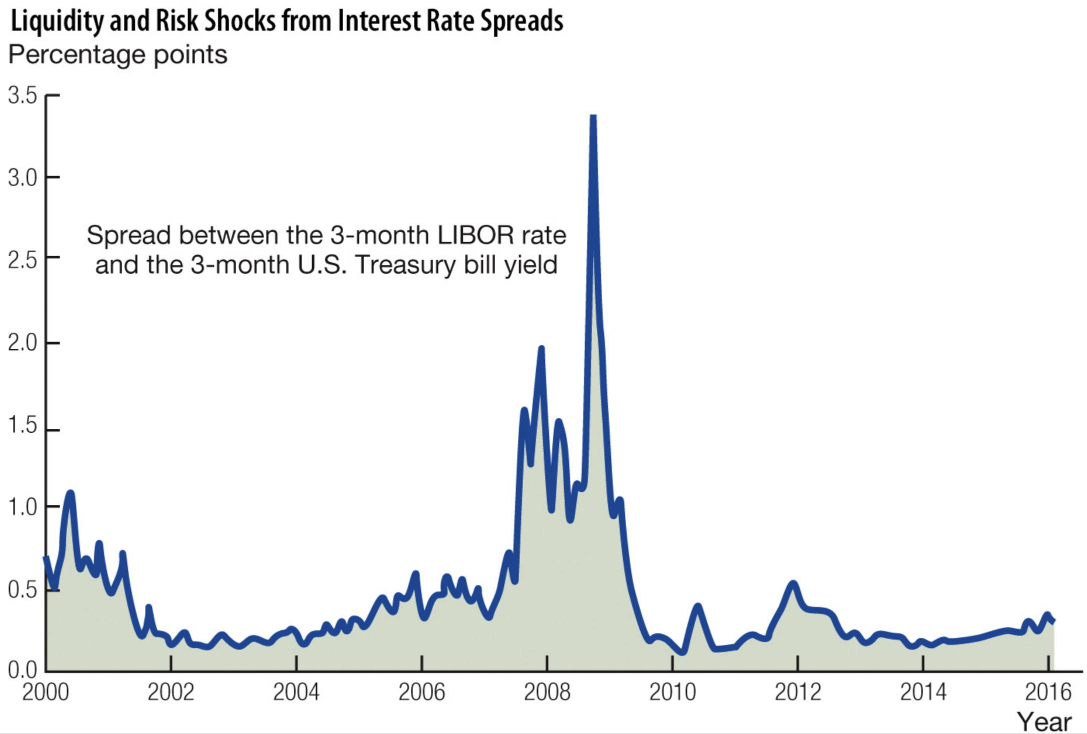
CDO or SIV — Investors.

↓ motivation on one particular mortgage.
⇑
don't know who default.

rank mortgage by how solid they are

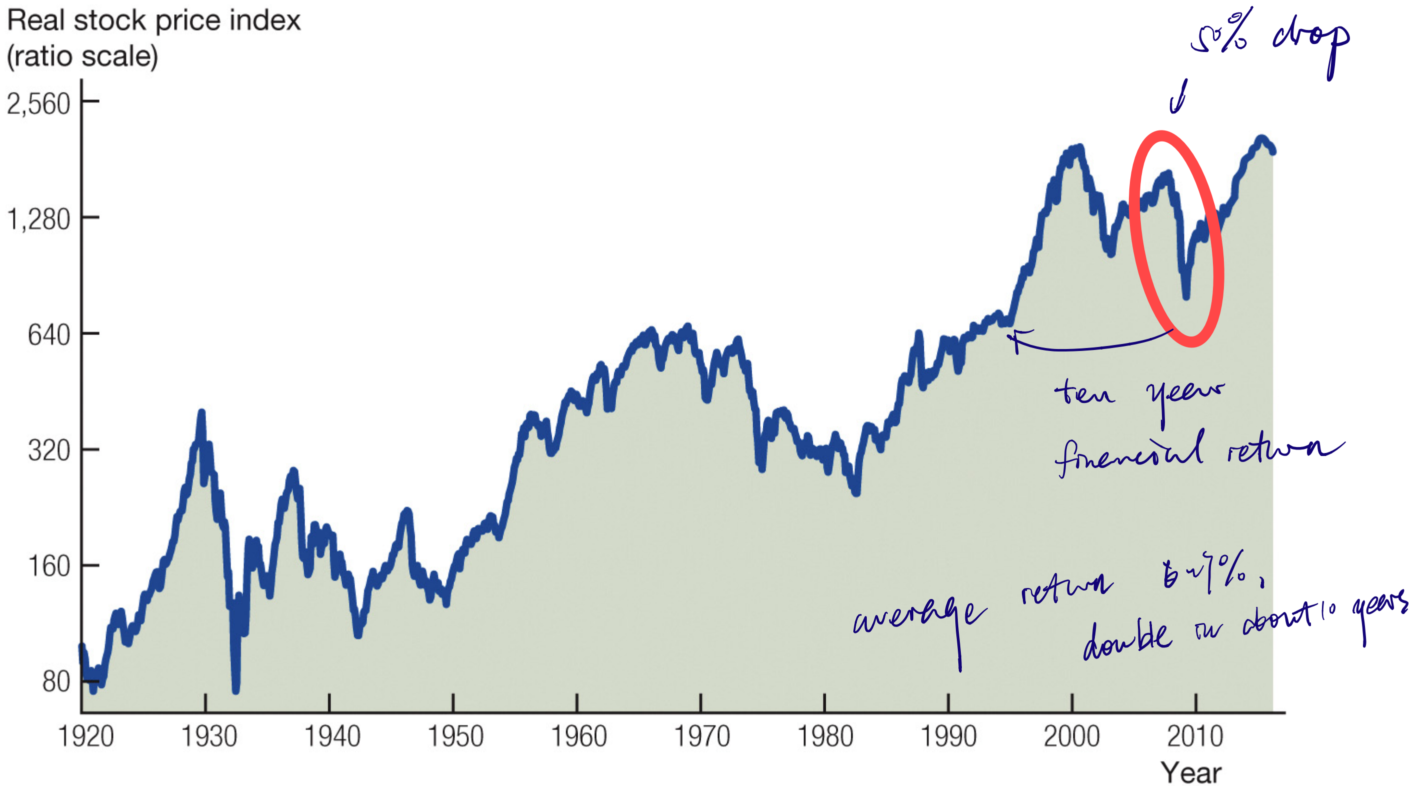
The Financial Turmoil—2

- August 2007: “flight to safety” (Treasury Bills)



S&P 500 Stock Price Index (Real)

The S&P 500 Stock Price Index (Real)



The Fed and the Treasury Department Respond—1

- March 2008:
  - The Fed made discount loans to primary dealers
  - The Fed would loan up to $200 billion of Treasury securities in exchange for MBSs
  - Helped JPMorgan Chase acquire Bear Stearns

The Fed and the Treasury Department Respond—2

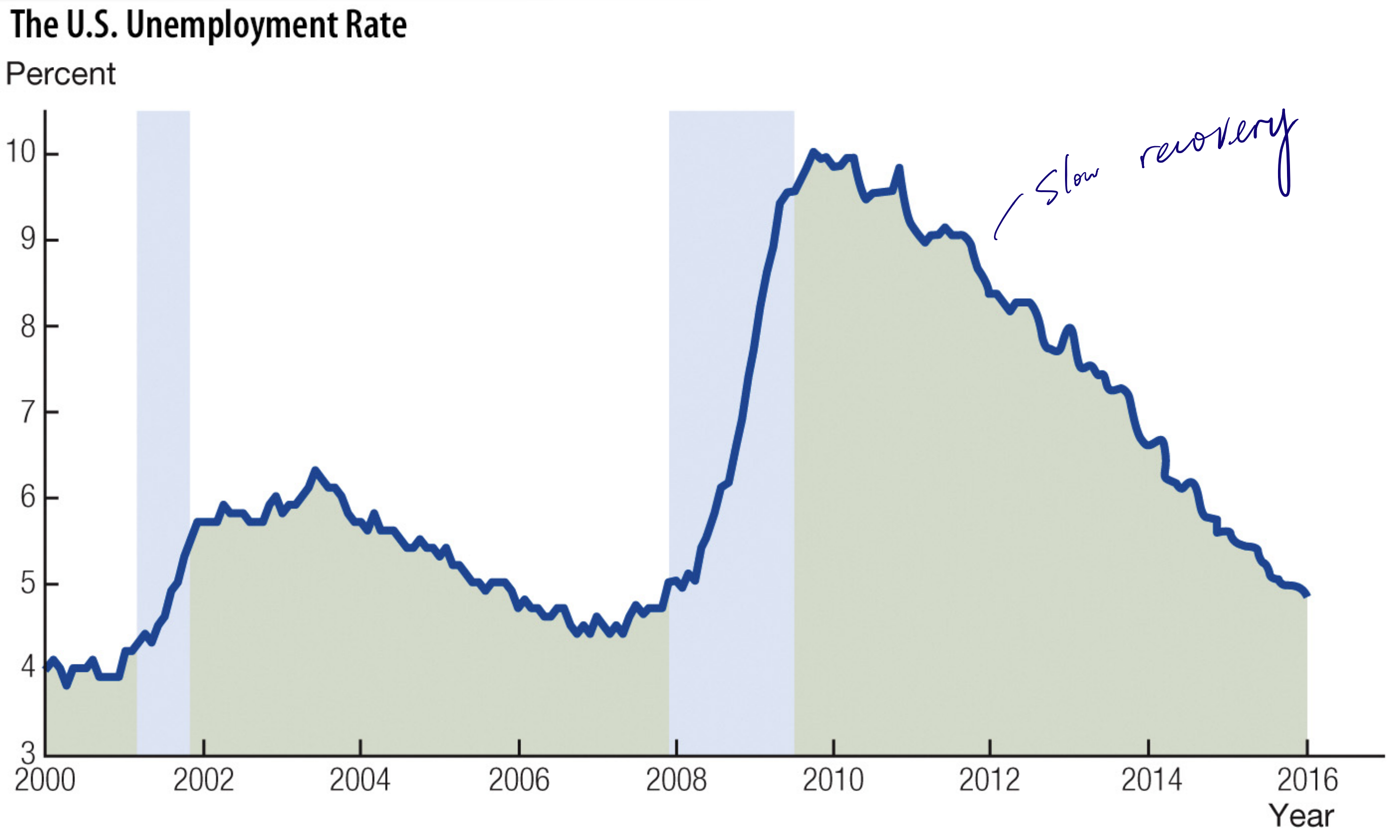
- September 2008:
  - Lehman Brothers went bankrupt
  - Merrill Lynch was sold to Bank of America
  - The Fed organized an $85 billion bailout of AIG
- October 2008:
  - Troubled Asset Relief Program (TARP)
  - Controversial program since it raised moral hazard problem (**why?**)

10.3 Macroeconomic Outcomes

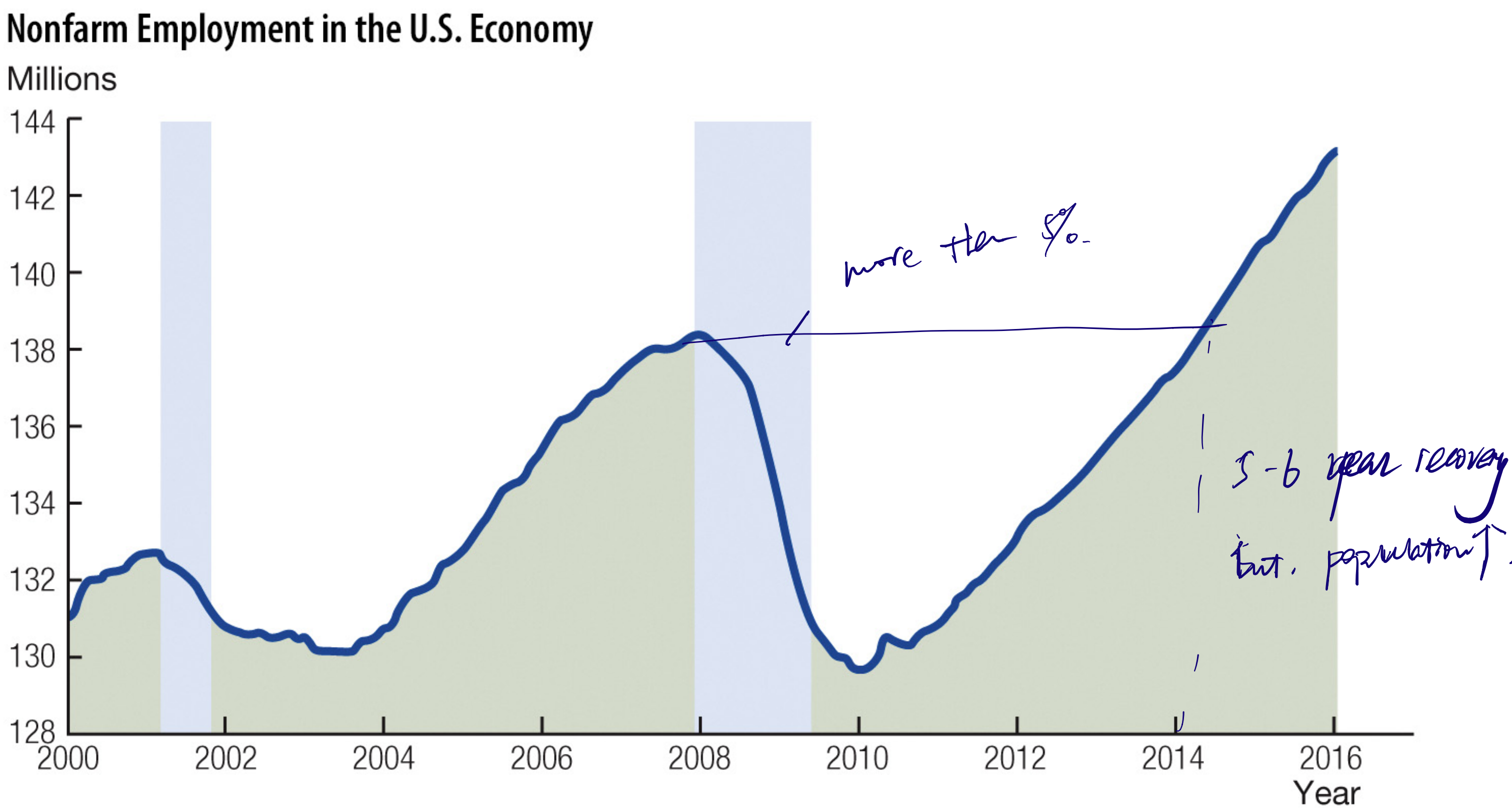
- The recession, starting in December 2007, was first visible in unemployment
- By 2009:
  - Output was 7% below potential
  - Unemployment was more than 10%
- February 2010:
  - 8.5 million jobs lost (cumulative)

5% of all jobs.

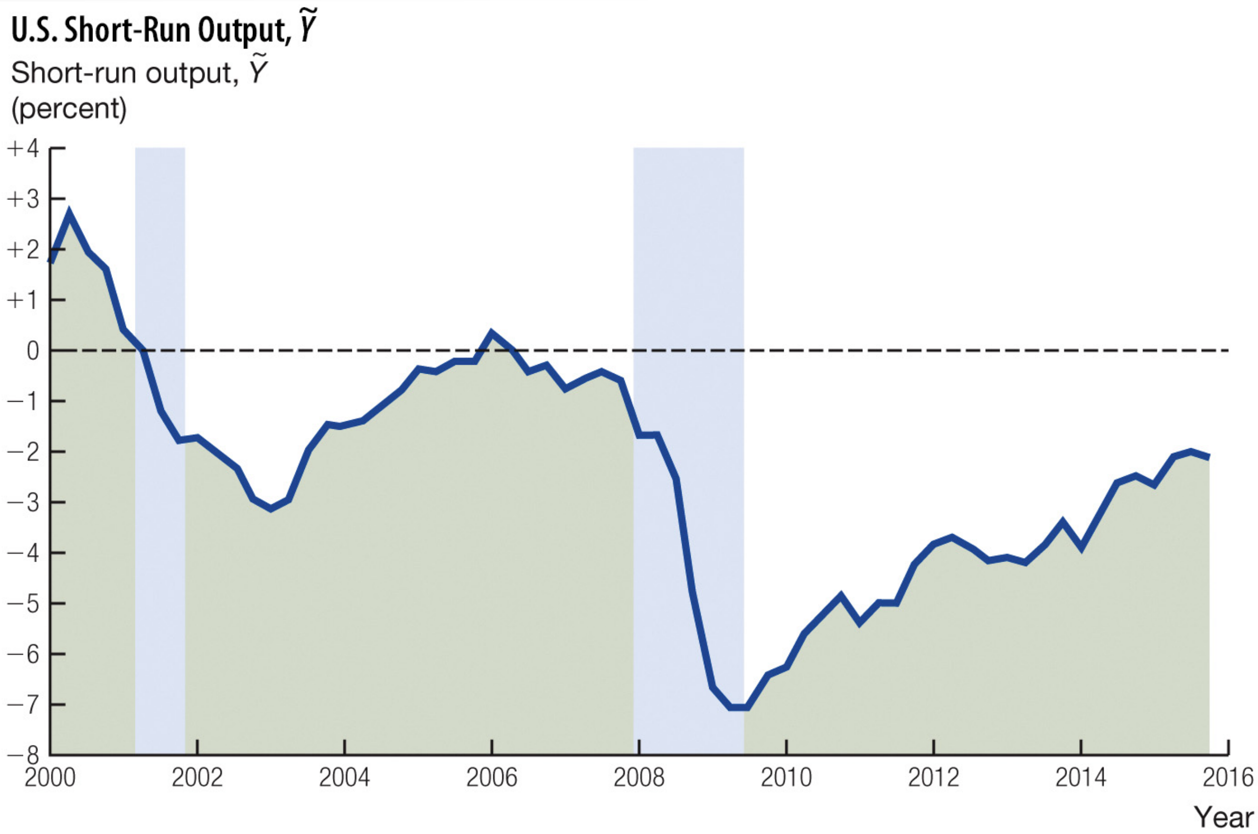
U.S. Unemployment Rate



Nonfarm Employment in the U.S. Economy



U.S. Short-Run Output, $\tilde{Y}$



Changes in Key Macroeconomic Variables

TABLE 10.1

Changes in Key Macroeconomic Variables: Previous Recessions and the Great Recession

	Average of previous recessions since 1950		The Great Recession
GDP	−1.7%		−4.7%
Nonfarm employment	−2.5%		−6.3%
Unemployment rate	2.5		4.5
Components of GDP			
Consumption	0.4%		−3.4%
Investment	−14.4%	⇒ most contributive. ⇐	−34.0%
Government purchases	1.2%		5.5%
Exports	−1.5%		−10.3%
Imports	−4.2%		−18.7%

Source: The FRED database.

Case Study: A Comparison to Other Financial Crises

- According to a study by Reinhart and Rogoff summarizing worldwide financial crises, the typical crisis features:
  - unemployment rate increase of 7% for five years
  - a doubling of government debt
  - a 10% decline in real GDP

Average Outcomes of 20th-Century Financial Crises

TABLE 10.2

Average Outcomes of Twentieth-Century Financial Crises

Economic statistic	Average outcome
Housing prices	−35%
Equity price	−56%
Unemployment	+7 percentage points
Duration of rising unemployment	4.8 years
Real GDP	−9.3%
Duration of falling GDP	1.9 years
Increase in real government debt	+86%

Source: Carmen Reinhart and Kenneth Rogoff, "The Aftermath of Financial Crises," Harvard University Working Paper, December 2008.

10.4 Fundamentals of Financial Economics

- Balance sheet
  - Accounting tool
    - Left side: assets
    - right side: liabilities and net worth
  - by construction, the two sides sum to the same value.

Balance Sheets

- Assets
  - item of value that an institution owns
- Liability
  - an amount that is owed to someone else.
- Equity (net worth or capital)
  - difference between total assets and total liabilities
  - Represents the value of an institution to its shareholders

Balance Sheets

2008: short term level to
financial firm / markets

- Household balance sheet
- Federal Reserve balance sheet
  - https://research.stlouisfed.org/datatrends/usfd/page7.php
  - https://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm
- Bank balance sheet

Hypothetical Bank's Balance Sheet

TABLE 10.4

A Hypothetical Bank's Balance Sheet (billions of dollars)

Assets		Liabilities	
Loans	1,000	Deposits	1,000
Investments	900	Short-term debt	400
Cash and reserves	100	Long-term debt	400
Total assets	2,000	*Total liabilities*	1,800
		Equity (net worth)	200

Banking Regulations

- Banks are also subject to numerous financial regulations

presuade the public that bank
x corrupt.

- Two key regulations are:
  - The **reserve requirement:** mandates that banks keep a certain percentage of deposits on reserve
  - The **capital requirement:** mandates that capital be a certain fraction of assets.

have enough buffer. (net worth).
meet some percentage.

Leverage—1

- Leverage

  want to be low.

  - The ratio of total liabilities to net worth
  - magnifies any changes in the value of assets and liabilities
  - also applies to homeowners

    ↓

    want to have equity.

    × want to walk away from

Leverage—2

- If a bank is highly leveraged, it may have
  - Large gains (returns on equity) generated by small increases in market prices.
  - large loss by small decrease in prices.
- Insolvency
  - Liability > assets
  - equity < 0.
- Before the financial crisis, many investment banks were highly leveraged

Leverage—3

- Same mechanism for private households:
  - Equity = down payment
  - Asset = real estate investment
  - Liability = mortgage balances, other debt (CC, students loans, auto)