Financial Crises: The Great Depression, the Great Recession, and COVID-19

ECON 40364: Monetary Theory & Policy

Eric Sims

University of Notre Dame

Spring 2025

Readings

Mishkin Ch. 12

Bernanke (2002): "On Milton Friedman's Ninetieth Birthday"

Wheelock (2010): "Lessons Learned?"

Gorton (2010): "Questions and Answers"

Mishkin (2011): "Over the Cliff"

Cecchetti (2009): "Crisis and Responses"

The Financial System and the Economy

The financial system funnels savings into investment

Because of economies of scale, information asymmetries and desire by savers to hold liquid assets, financial intermediation is extremely important for this funneling to work well

Although there isn't an exact definition, we can think of a financial crisis as a situation in which financial intermediation does not work well

Without effective financial intermediation, investment and aggregate demand collapse, and the economy goes into a recession

Short-Term Debt

Financial crises are everywhere and always caused by problems related to short-term debt (Doug Diamond, 2007)

Intermediaries finance illiquid, long-term assets with short-term, liquid liabilities

When things start going south, holders of these short-term, liquid liabilities "want out"

This creates liquidity pressures for intermediaries – they need cash but have invested in long-term, illiquid assets

To come up with cash, they need to sell assets / reduce the supply of credit

But this causes asset prices to fall in the aggregate, which makes balance sheets look worse, which increases pressure on liability holders to "run"

Why is Short-Term Debt a Problem?

Short-term debt promised fixed face value redemptions – i.e. \$1 in deposits redeemable for \$1 in cash

But the asset side of a balance sheet "floats" in value, and everyone trying to sell at the same time causes assets to lose value

This becomes a problem – e.g.. you have to pay out \$1 in cash for assets that used to be worth \$1 but are now worth \$0.8

With fixed value, short-term debt, liquidity pressures can easily turn into a solvency problem

In contrast, without debt finance (but in particular short-term debt, which can be withdrawn or not rolled over on short notice), institutions cannot become insolvent due to liquidity pressures alone

- e.g., difference between standard mutual fund (floating share value) and money market mutual fund (fixed share value)

Stages of Financial Crises

Mishkin's book lays out three stages of a financial crisis that are common:

1. Phase one: credit/asset boom and bust (i.e., "bubbles")
2. Phase two: banking crisis
3. Stage three: debt deflation, macro consequences

We will discuss each of these before looking at specifics from the Great Depression and Great Recession (and, to some extent, COVID-19)

Phase One

Financial crises often follow periods of excessive credit growth (banks and other financial institutions making increasingly risky loans) and asset price booms

Eventually, the party stops. Borrowers can't make good on obligations

With loans going bad, financial institutions try to de-leverage by cutting back on lending

With asset prices falling, the net worth and collateral of non-financial firms deteriorates, which makes it harder for them to access credit

As a result, credit declines, investment declines, and economic activity contracts

Phase Two: Banking Crisis

Deteriorating balance sheets due to loans going bad and asset price declines lead some financial institutions to become insolvent

But then fear takes over: depositors and other short term funders begin to fear that otherwise healthy banks / financial institutions might also go out of business

Information asymmetry is important here: if you know that 10 percent of banks are bad, most banks are not bad, but you can't identify the good from the bad. Your downside risk is sufficiently high that you have an individual incentive to "run" anyway

But financial system can't deal with runs because of maturity/liquidity mismatch

Banks and financial institutions try to sell off illiquid assets, which can result in fire-sale dynamics – everyone trying to do this leads to falling prices, which means selling doesn't raise much money and falling asset prices exacerbate other issues

Debt Deflation

The large decline in aggregate demand often leads to disinflation or even outright deflation

This is potentially bad for several reasons:

1. Expectations of falling prices push real interest rates up, particularly if the central bank is constrained by the zero lower bound
2. Falling prices increases the real burden of debt

Higher real interest rates result in less demand, which can result in even further falls in prices ("deflationary spiral")

Increasing real burden of debt makes credit markets operate less well

Great Depression

The Great Depression is generally dated to be from 1929-1933

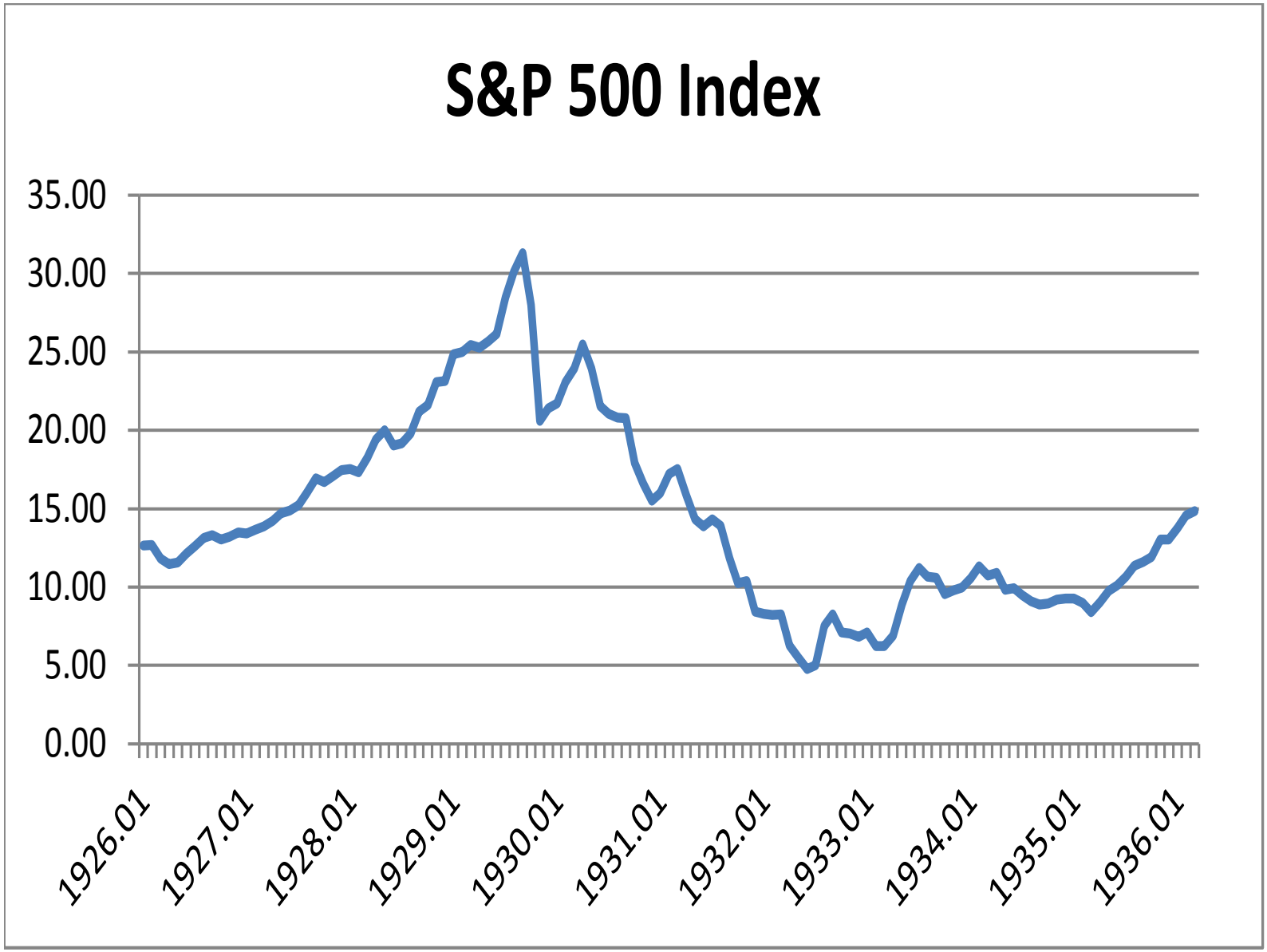
The unemployment rate in the US rose to 25 percent (in comparison, only 10 percent during Great Recession, and peaked very temporarily at 14 percent in COVID recession)

Worldwide GDP fell by an estimated 15 percent!

Associated with the stock market collapse in October 1929 and ensuing banking panics in the early

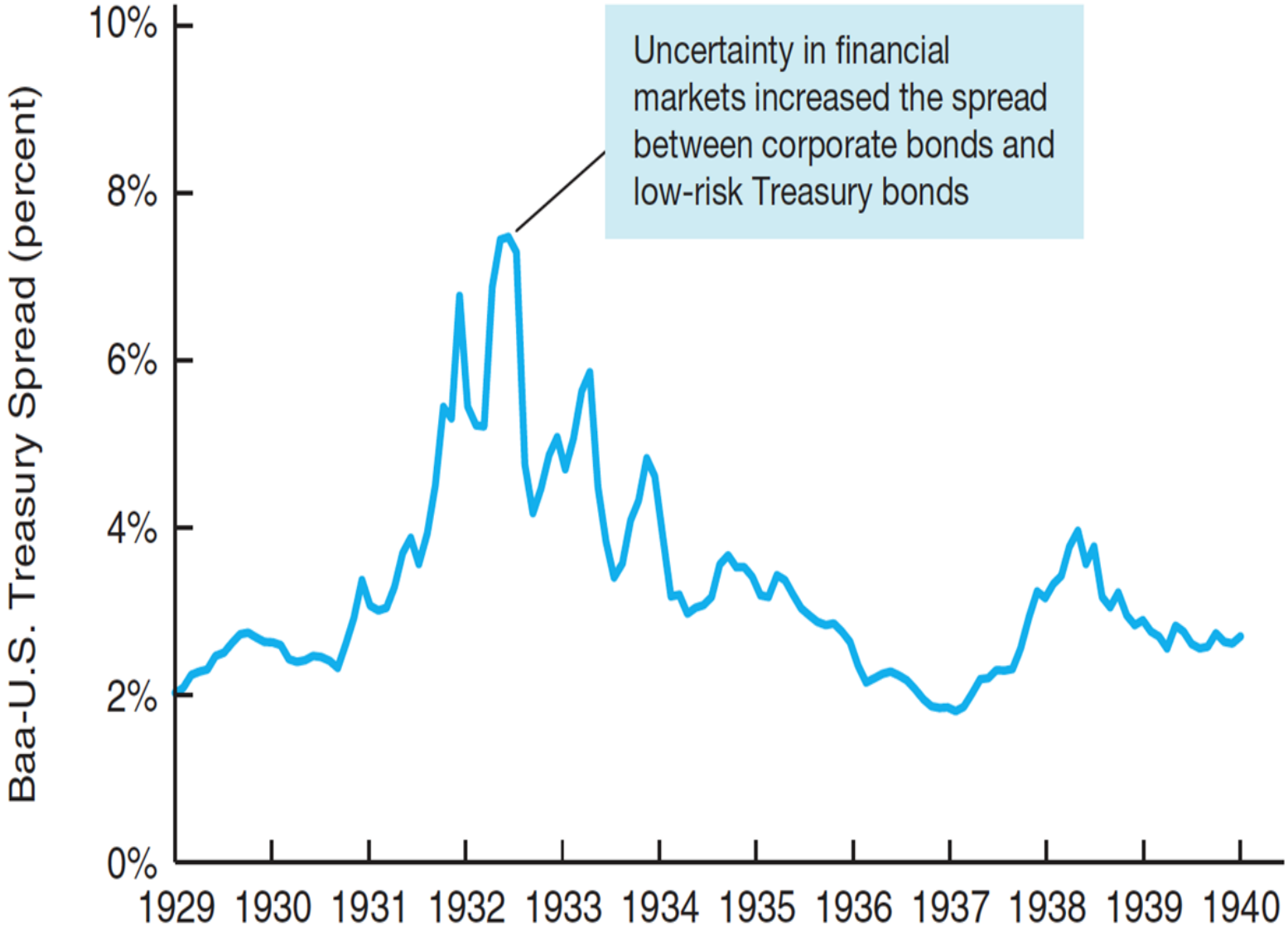
Close to one third of commercial banks failed!

Stock Market

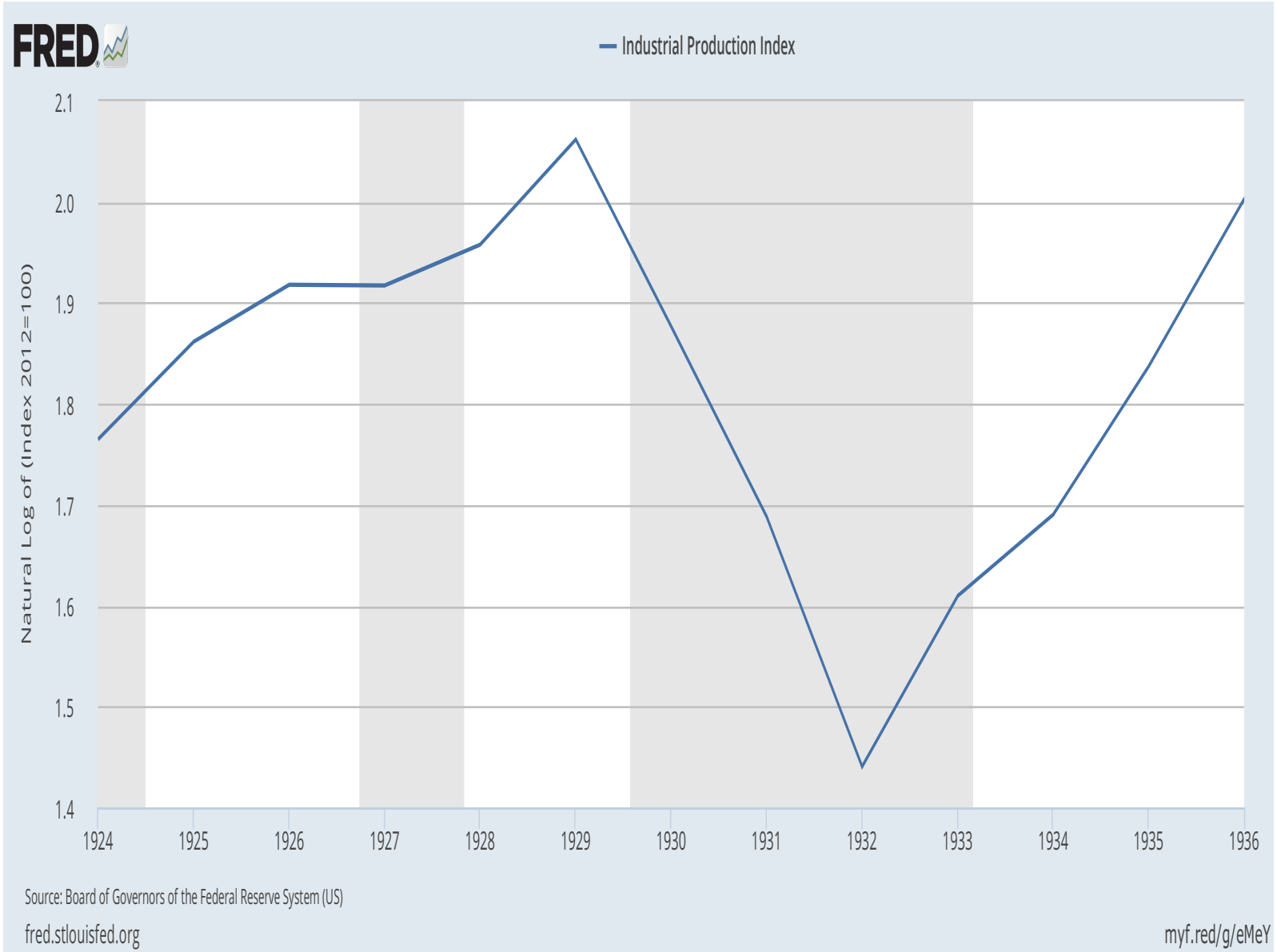


Bank Runs

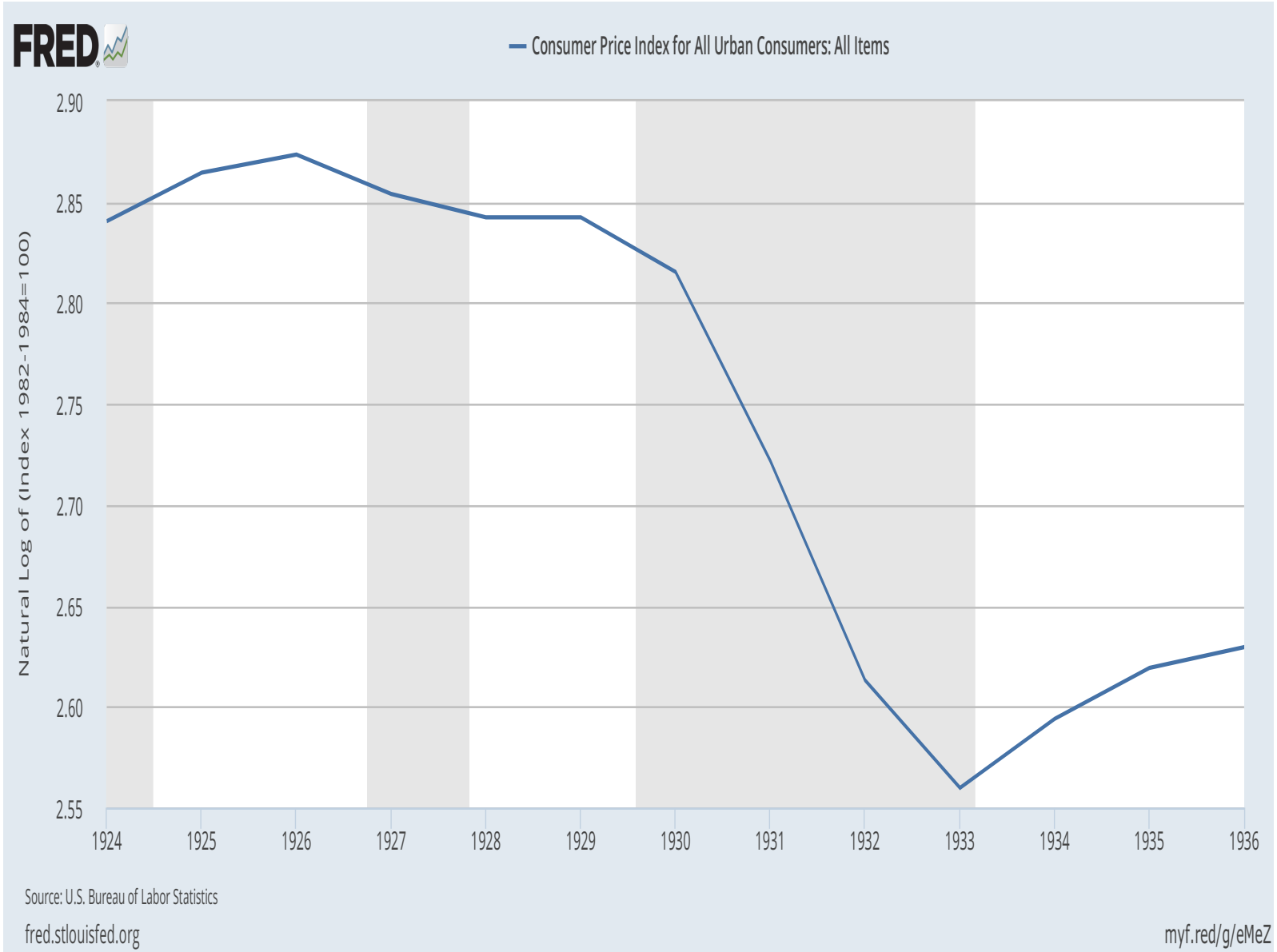
Credit Market Distress



Decline in Economic Activity



Deflation


FRED
Consumer Price Index for All Urban Consumers: All Items
Natural Log of (Index 1982-1984=100)
2.90
2.85
2.80
2.75
2.70
2.65
2.60
2.55
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
Source: U.S. Bureau of Labor Statistics
fred.stlouisfed.org
myf.red/g/eMeZ

Friedman and Schwartz

A fairly strong consensus about the severity of the Great Depression comes out of Friedman and Schwartz's *A Monetary History of the United States*

The main thrust of the argument is summarized in Bernanke (2002)

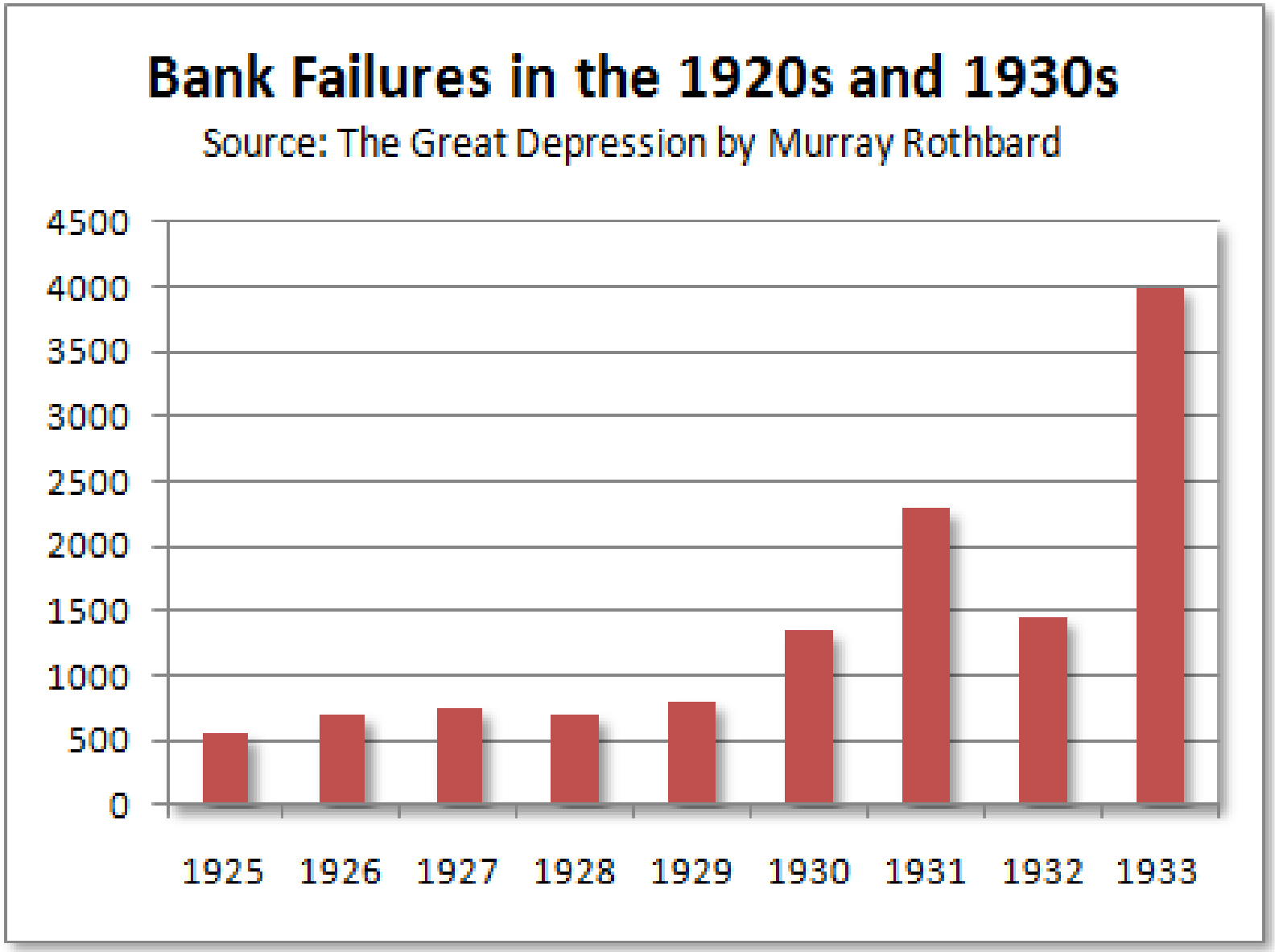
In essence, excessively tight monetary policy allowed an ordinary recession to become a full-fledged financial crisis and depression

Bank failures shot through the roof, and the money supply declined precipitously

This worsened financial conditions and led to the observed deflation

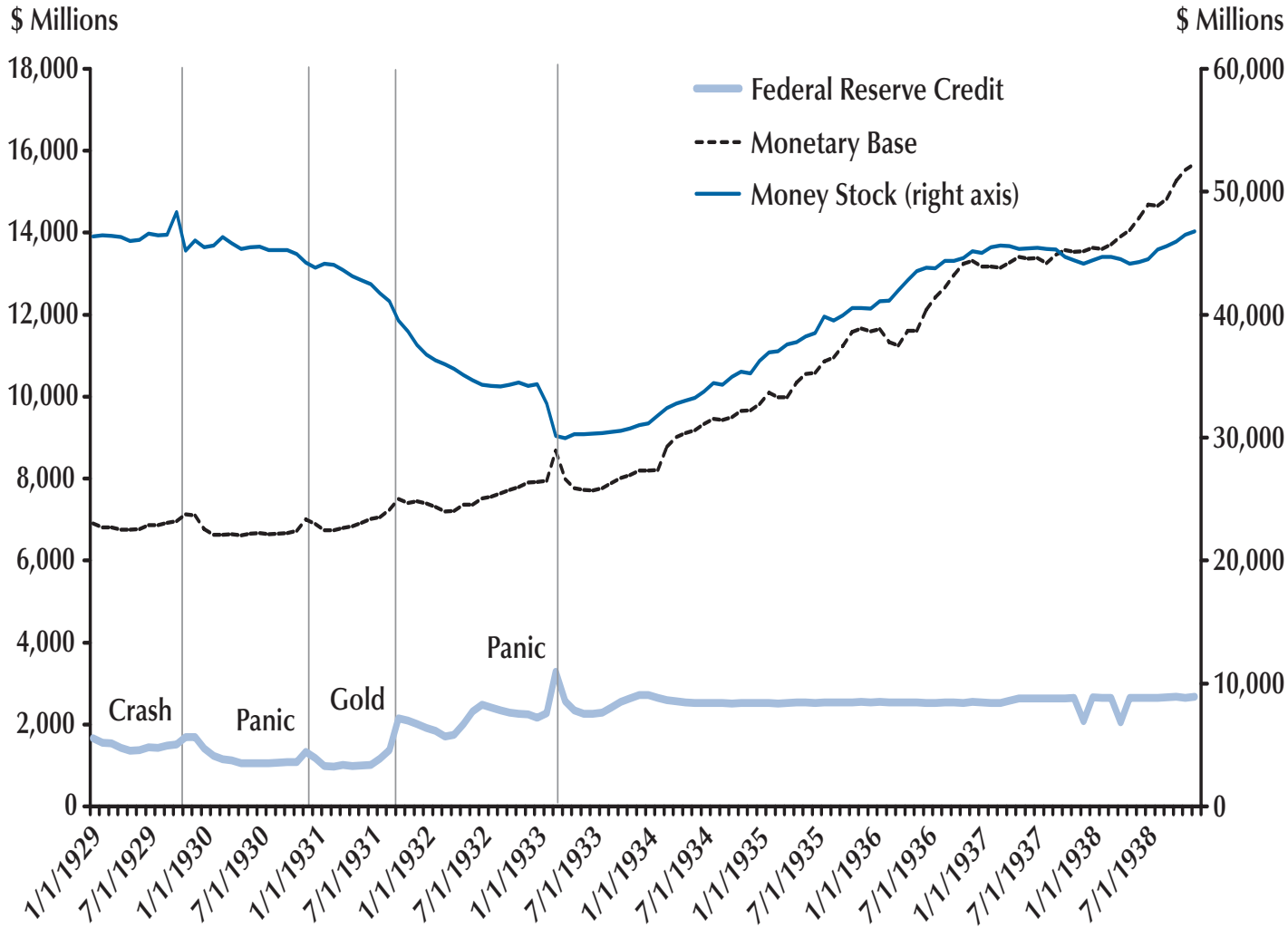
Fed either did not understand its role as lender of last resort (which is why it was founded) or misinterpreted market signals (particularly the stigma associated with discount lending)

Bank Failures



Non-Accommodative Monetary Policy

Federal Reserve Credit and the Monetary Aggregates



Bernanke's Famous Quote

In 2002, on the occasion of Milton Friedman's 90th birthday, Ben Bernanke, then a Fed governor, said:

> *"Regarding the Great Depression. You're right, we did it. We're very sorry. But thanks to you, we won't do it again."*

This quote proved to be quite prescient with the financial crisis and ensuing Great Recession with Bernanke as chair of the Fed

This mindset likely also played a role in the "over" reaction to COVID-19

The Financial Crisis and Great Recession

These terms are often used synonymously

The Great Recession is officially dated from December 2007 to June 2009. Most of the decline in output occurred in the fall of 2008 and winter/spring of 2009

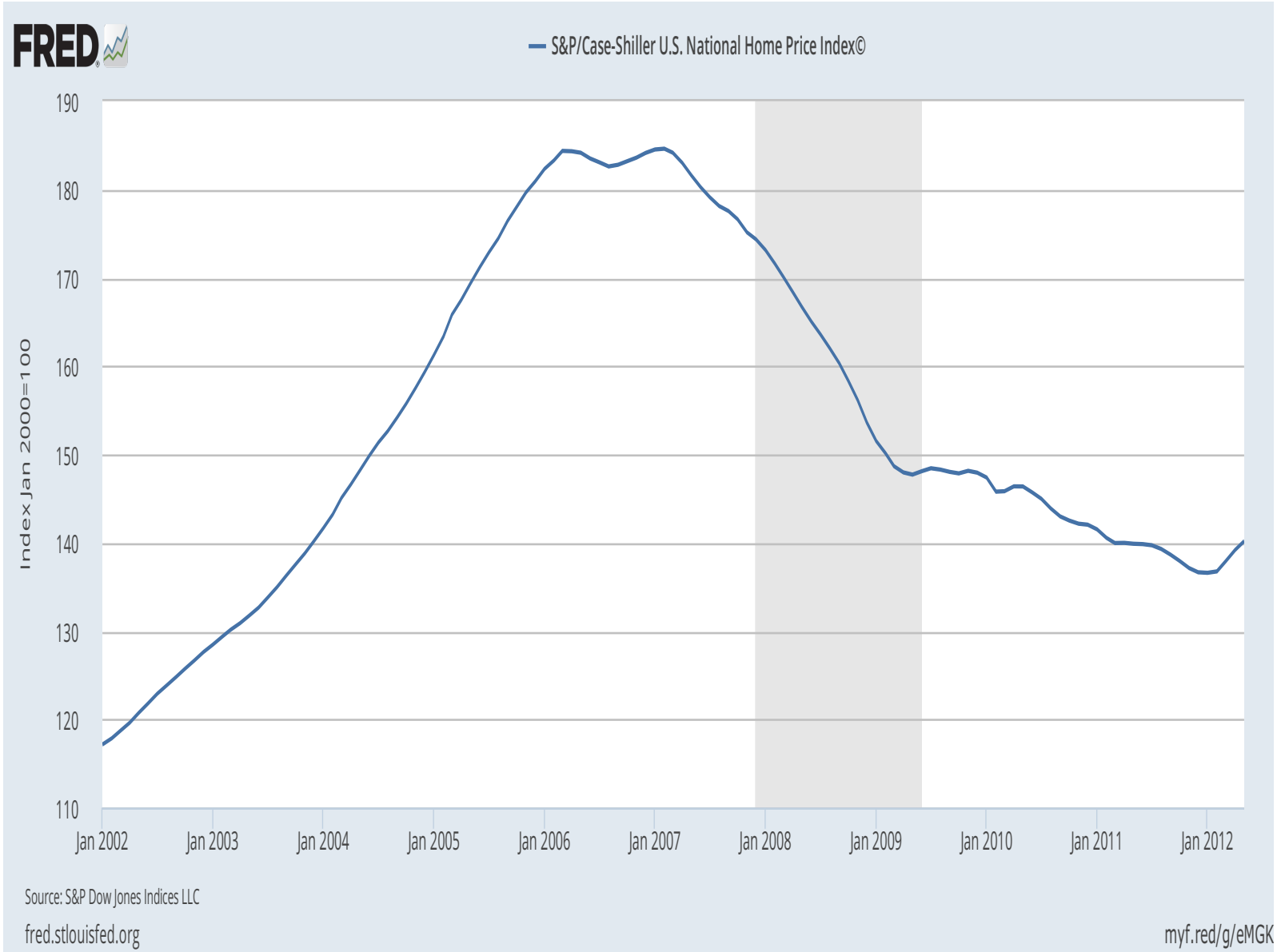
The financial crisis precedes that somewhat, typically dated to having begun in late summer of 2007

The financial crisis has its origins in problems in the US housing market, particularly so-called "subprime" mortgages

$$\text{Housing Market Collapse} \rightarrow \text{Financial Crisis} \rightarrow \text{Recession}$$

We have some idea of how a financial crisis can lead to a recession. But how can a housing market collapse lead to a financial crisis?

Housing Prices



Subprime Balance Sheet

Why do declines in house prices matter?

Can trigger defaults by pushing homeowners "underwater"
Suppose someone gets a no-down payment home loan:

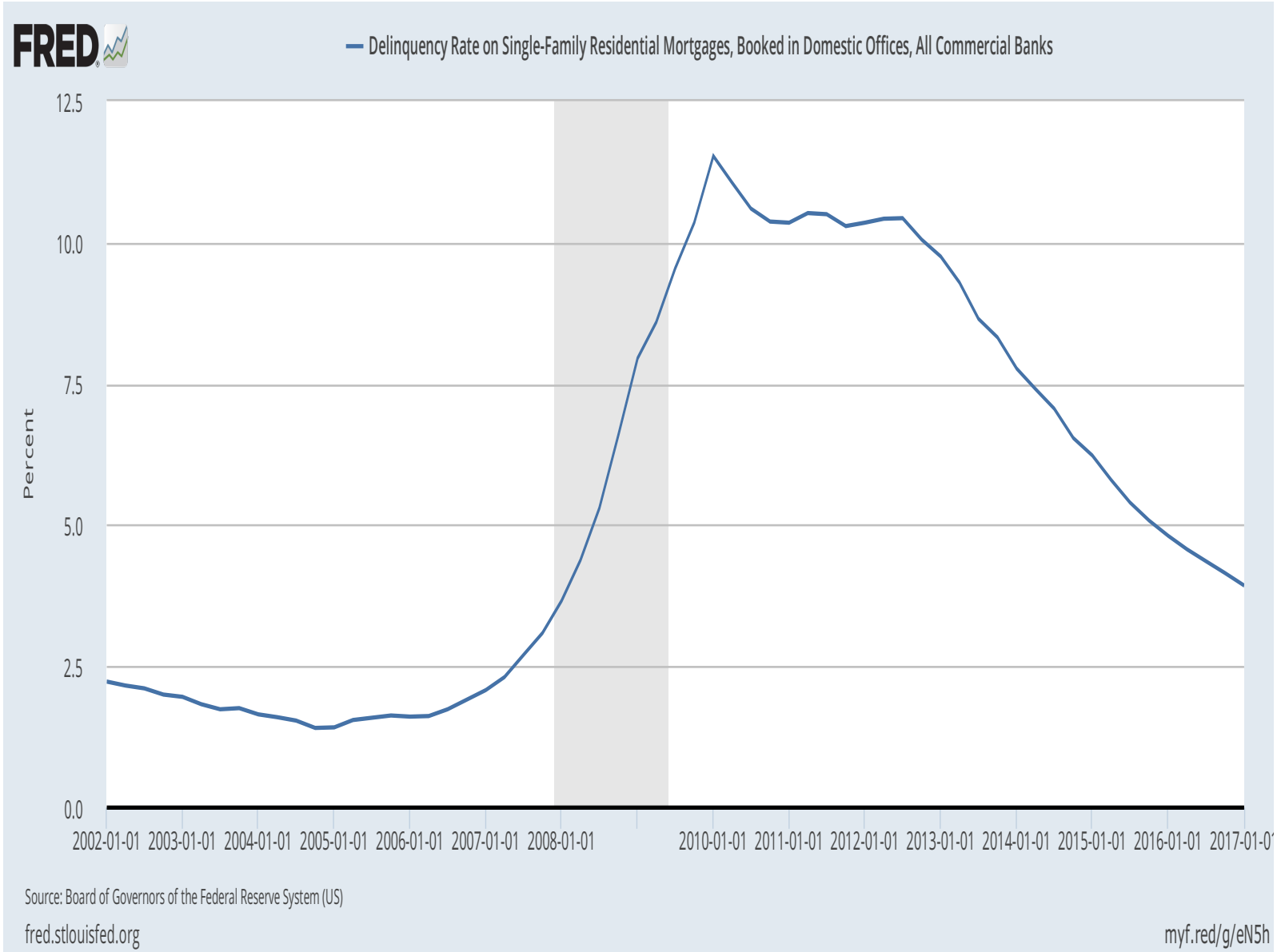
Assets		Liabilities + Equity	
Home	\$100,000	Mortgage	\$100,000
		Equity	\$0

If the value of the home goes up, homeowner can refinance – take out a loan to pay off the existing mortgage, and then has positive equity

But if value of home declines, homeowner has negative equity

No incentive to keep paying the mortgage at that point and mortgage can go into default

Mortgage Delinquency



Defaults

Mortgages going into default means that owner of mortgage (e.g., a bank) takes a loss

Financial system at large was broadly exposed to the housing market via mortgage backed securities (MBS)

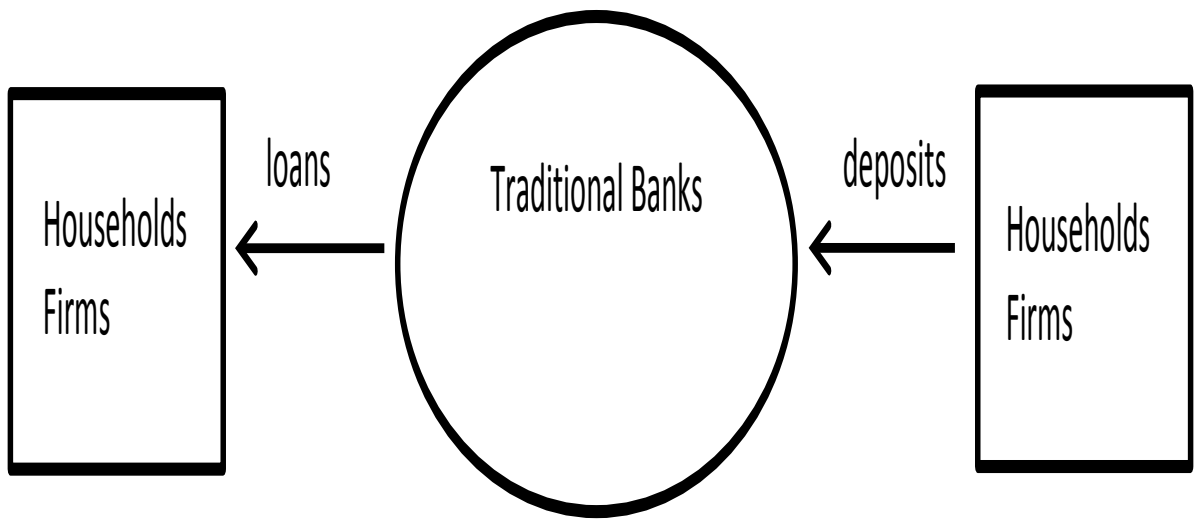
In the traditional banking system, the loss from a mortgage going into default would be felt by the bank that issued the loan

Not so in the modern banking system, where the loss was distributed to holders of MBSs

Traditional Banking

In traditional banking, the bank funds itself with deposits (short-term liabilities) and invests in longer-term, illiquid loans to households and businesses

Banks "borrow" (get liabilities) at a lower interest rate than they lend (make loans), thereby earning a profit



From Traditional Banking to Modern Banking

A variety of factors have led traditional banking (funding in the form of deposits, and then holding on to loans) to cease to be profitable

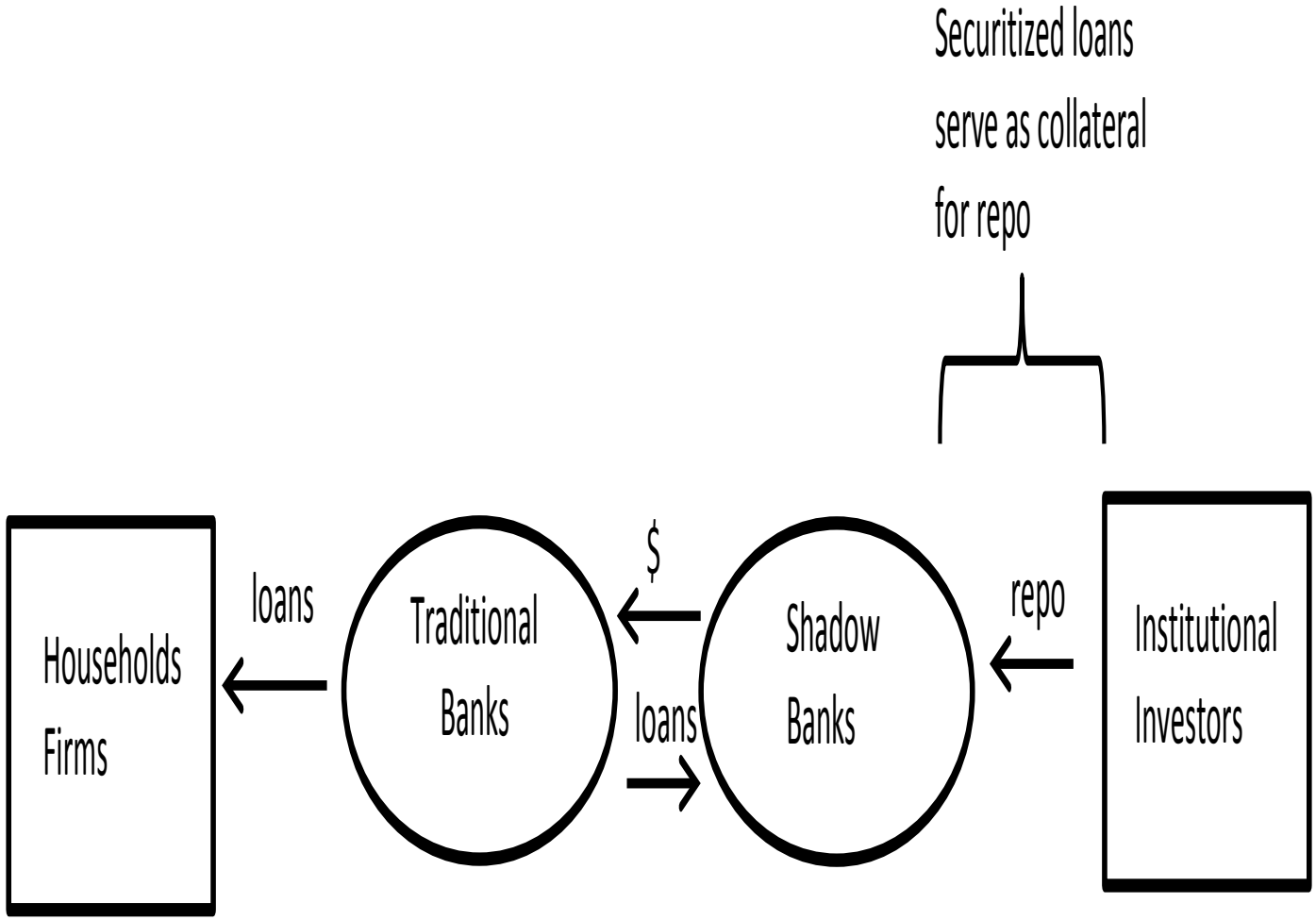
Furthermore, there are now very large institutional investors (e.g., pension funds, life insurance companies) that have a desire for deposit-like liabilities that are safe, liquid, and offer some return

This has given rise to securitization, which has been going on for decades but became well-known in the last two decades

In securitization, a financial entity buys loans from issuers (e.g., traditional banks) and bundles a bunch of loans into one fixed-income product

These securitized loans then serve as collateral for short-term deposit-like liabilities that institutional investors desire

Shadow Banking



Shadow Banking Continued

In modern banking, traditional banks (increasingly) rely upon the shadow banking system for funding (rather than deposits)

Shadow banks buy loans that earn interest (e.g., monthly mortgage payments). These purchases functionially fund the traditional banks

Shadow banks fund themselves from "deposits" from large institutional investors – e.g., repurchase agreements **(repos)**

Repos

Repurchase Agreement: you buy an asset for a given price on a given date, with an agreement to sell the asset back to the owner on a future specified date at an agreed upon price

When you sell it back for more than you buy, this difference is effectively interest

Think about a repo like a deposit, and the actual asset (frequently, securitized loans) serves as collateral and hence makes the deposit safe. If the issuer refuses or is unable to buy back, you get to keep the asset

Repos typically very short term (e.g., overnight), so quite liquid

Haircuts

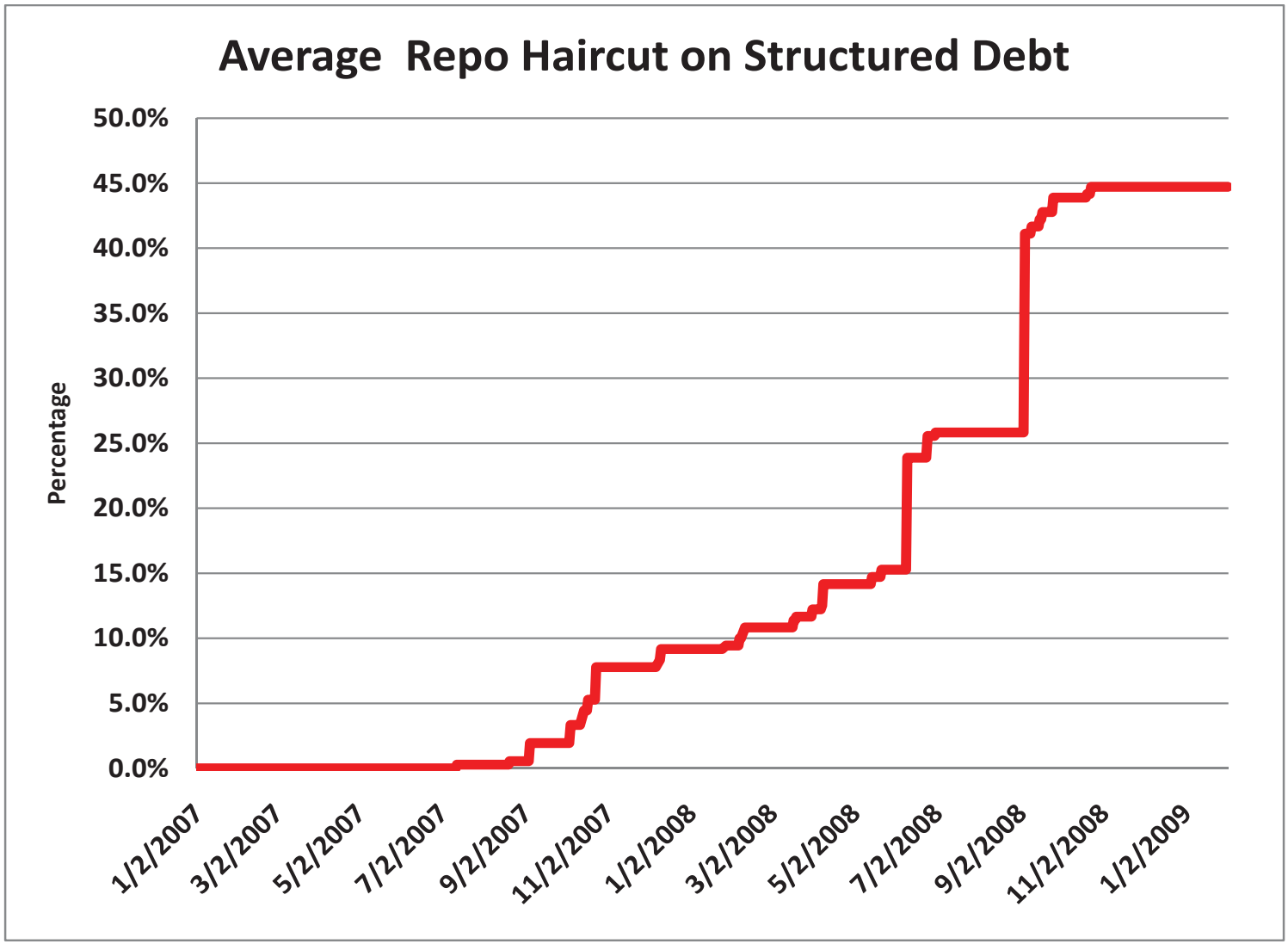
Haircut: the (percentage) difference in the amount of the repo and the value of collateral

For example: I "deposit" \$90 million in exchange for \$100 million in collateral. Haircut is 10 percent

Idea: haircut protects "depositor" in the event that repo issuer doesn't make good on the promise and the "depositor" is stuck with the collateral, which might lose value

Prior to crisis, haircuts were (essentially) zero

Haircuts rose markedly during crisis


Average Repo Haircut on Structured Debt
Percentage
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
1/2/2007
3/2/2007
5/2/2007
7/2/2007
9/2/2007
11/2/2007
1/2/2008
3/2/2008
5/2/2008
7/2/2008
9/2/2008
11/2/2008
1/2/2009

Shadow Bank Balance Sheet

Suppose a shadow bank (e.g., Bear Sterns) has the following balance sheet before the crisis with no haircut

Assets		Liabilities + Equity	
Mortgage Securities	\$120 million	Repos	\$100 million
Other assets	\$40 million	Borrowings	\$40 million
		Equity	\$20 million

Equity finances \$20 million of the mortgage securities, repos the other \$100 million

Shadow bank makes money by paying less for its liabilities (say 3 percent for repo) than it earns on its assets (say 6 percent on mortgage securities)

A Haircut is Like a Withdrawal

Suppose that the haircut goes from 0 to 40 percent. This means large institutional investor will only "deposit" \$60 million in exchange for \$100 million in securities

This is just like a withdrawal of \$40 million

Assets		Liabilities + Equity	
Mortgage Securities	\$120 million	Repos	\$60 million
Other assets	\$0	Borrowings	\$40 million
		Equity	\$20 million

Shadow bank must self off its other assets to be able to hold the \$120 million in mortgage securities

From Subprime to General Financial Distress

The subprime mortgage market was not large enough to cause a widespread crisis on its own – roughly $1.2 trillion out of $20 trillion in outstanding credit at the time

Subprime mortgages started deteriorating well before the height of the financial panic in Fall 2008

The issue is one of asymmetric information – the distribution of risks was not well known or understand, and the financial system was increasingly interconnected

Gorton likens this to an e-coli scare – there's not much e-coli, but since you don't know where it is, you don't buy any beef

Likewise, institutional investors didn't know what was good collateral or bad, started demanding very high haircuts

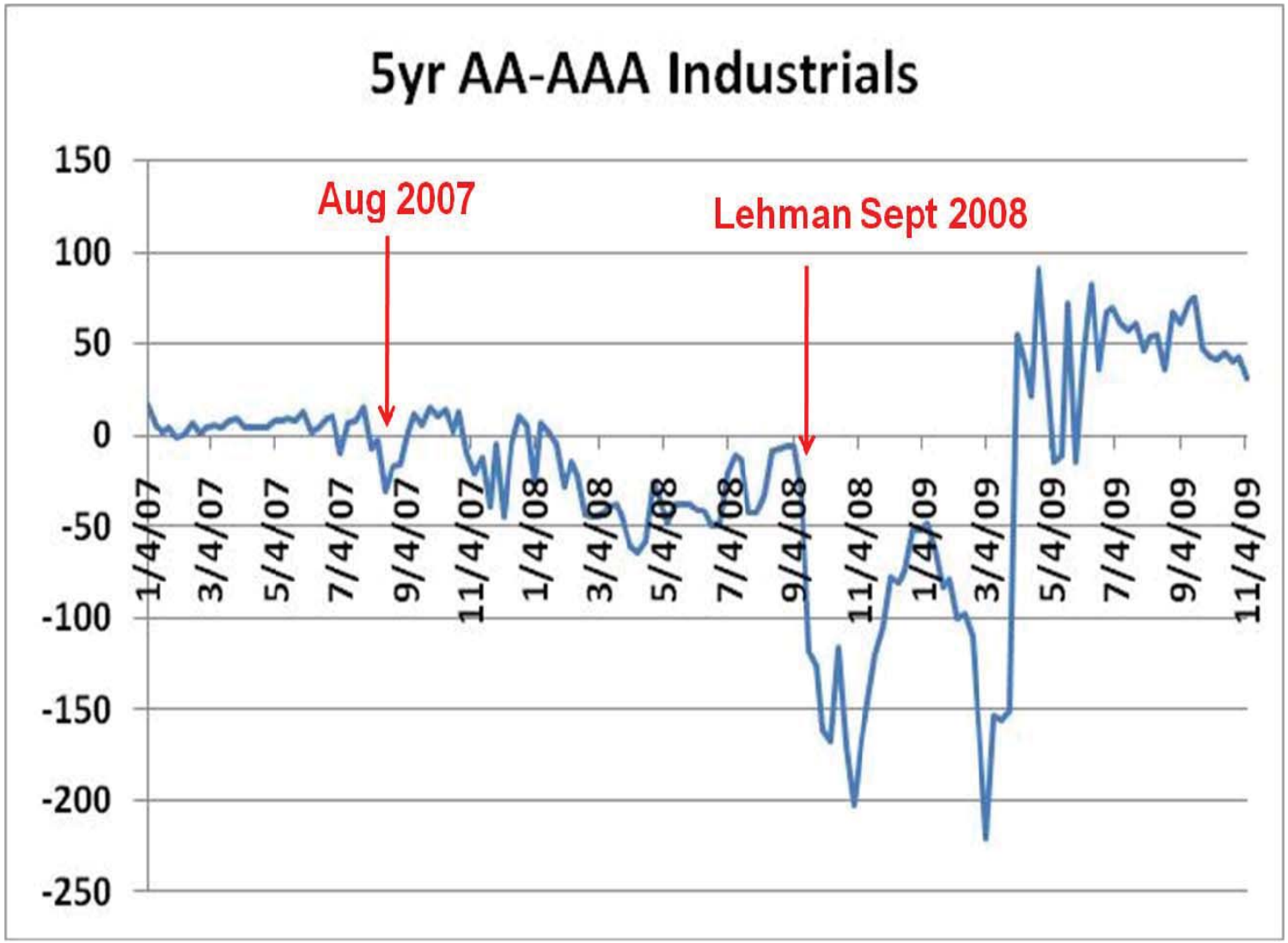
Fire Sales

Faced with large "withdrawals," shadow banks have to sell assets to raise funds to finance the collateral underlying the repos

Lots of institutions trying to sell at the same time with few buyers: big decline in price, which makes the entire enterprise of selling to raise funds less effective

Naturally, try to sell the "best" assets to fetch the highest price

But when everyone is doing this, you get perverse outcomes (next slide)


5yr AA-AAA Industrials
Aug 2007
Lehman Sept 2008
150
100
50
0
-50
-100
-150
-200
-250
1/4/07
3/4/07
5/4/07
7/4/07
9/4/07
11/4/07
1/4/08
3/4/08
5/4/08
7/4/08
9/4/08
11/4/08
1/4/09
3/4/09
5/4/09
7/4/09
9/4/09
11/4/09

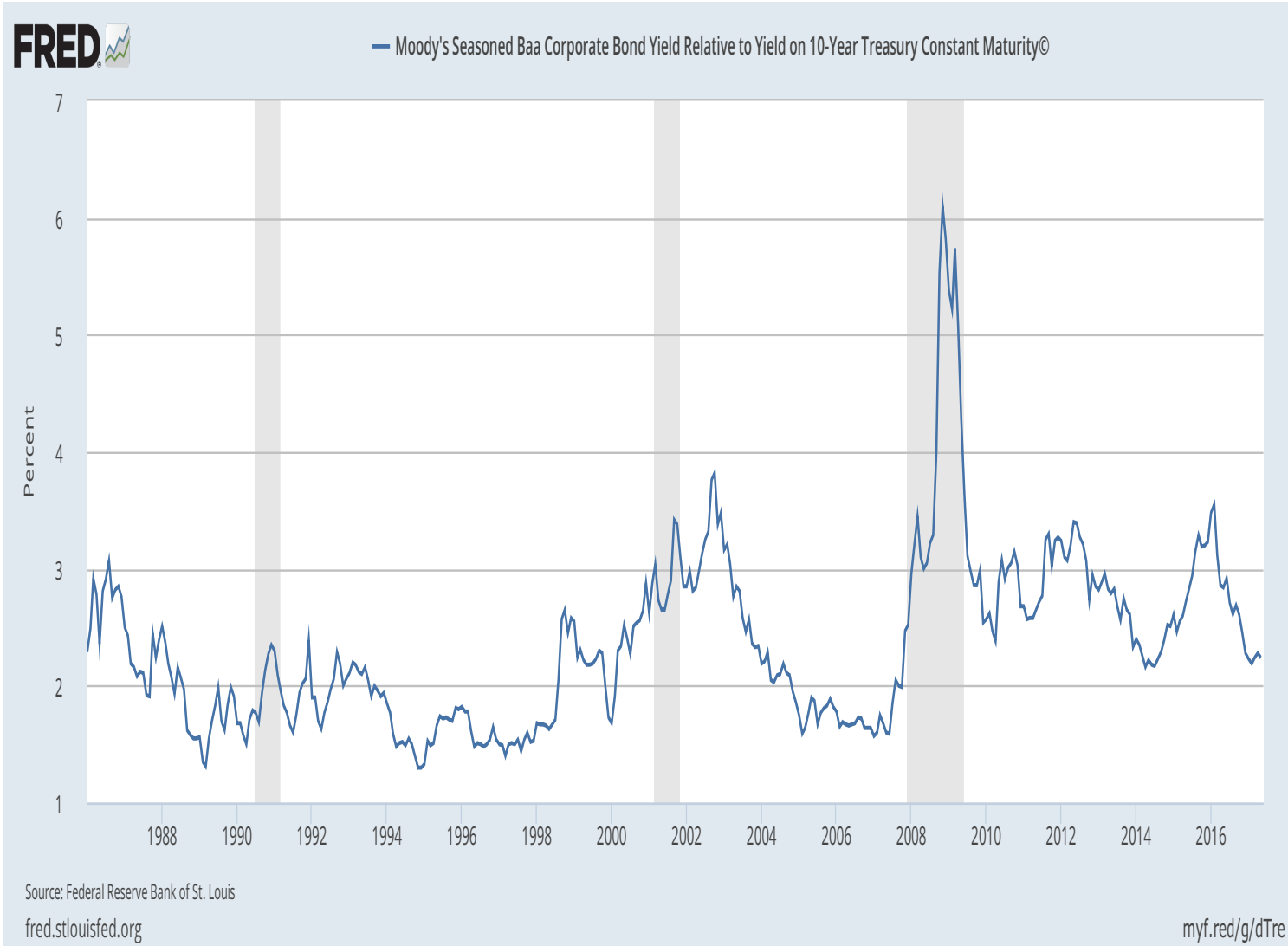
End Result

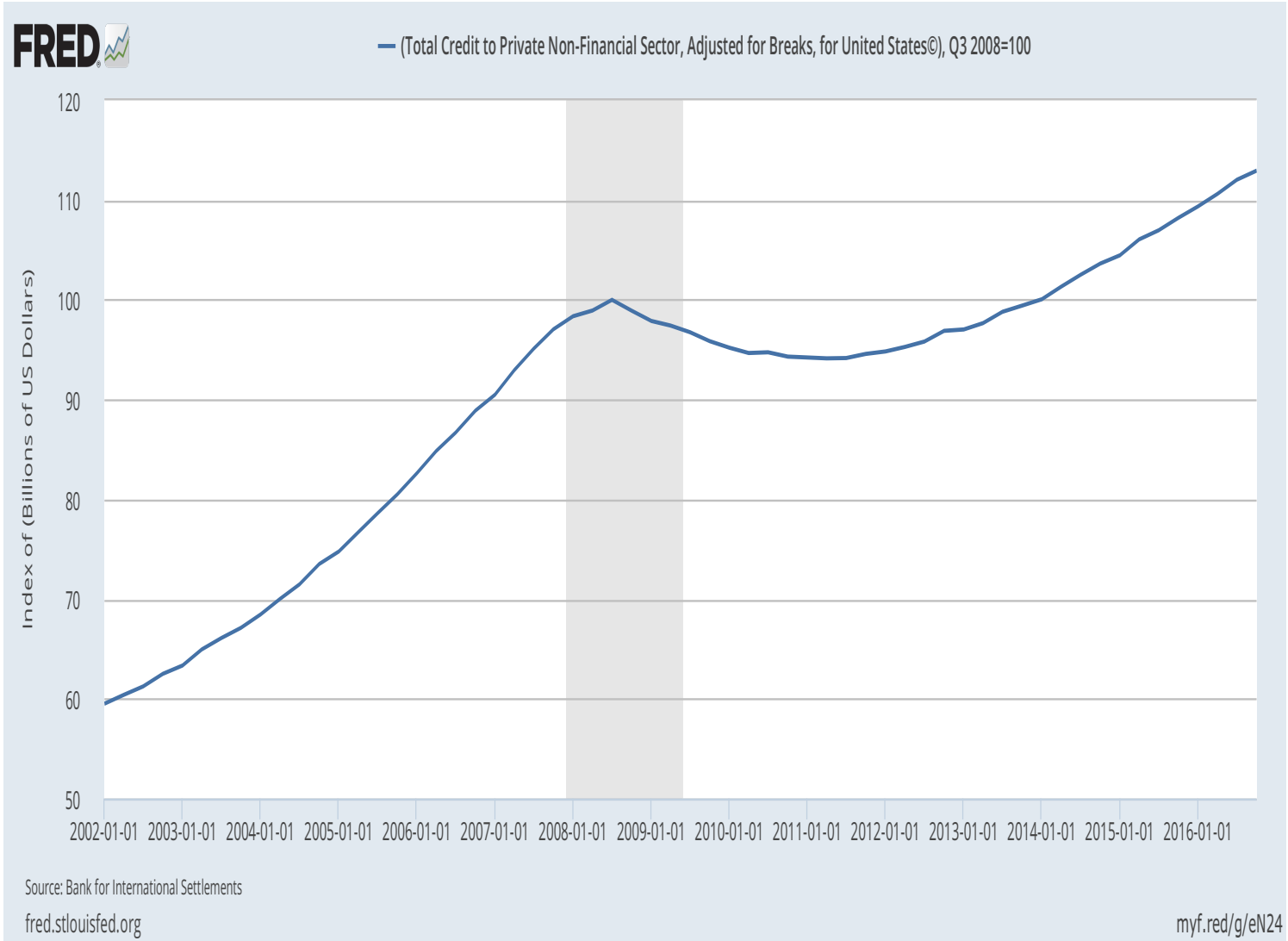
Massive decline in bond prices (other than government bonds) across the board, with huge increases in yields, due to fire sales

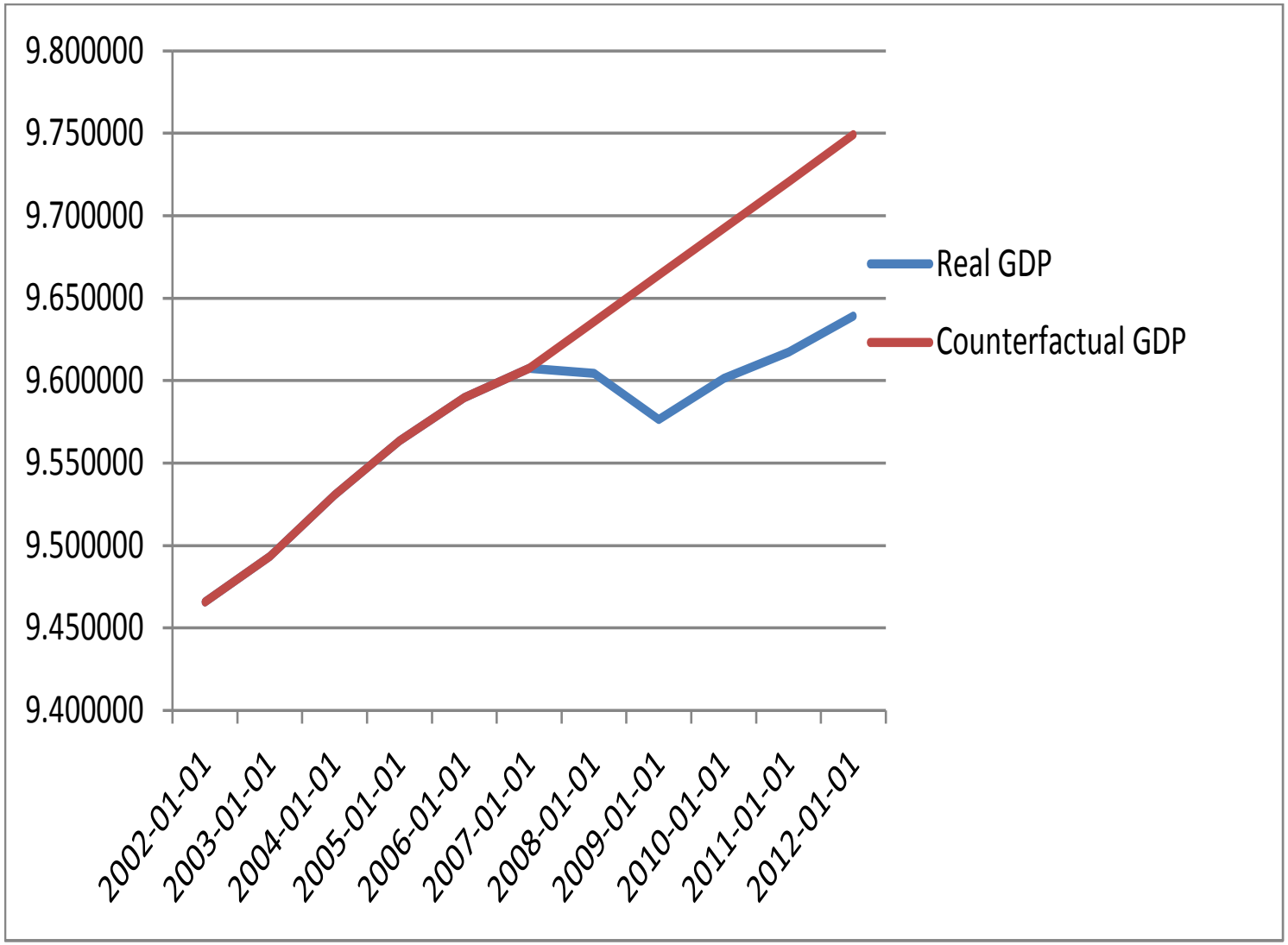
Value of collateral destroyed, low net worth, resulting high yields: credit markets stop functioning

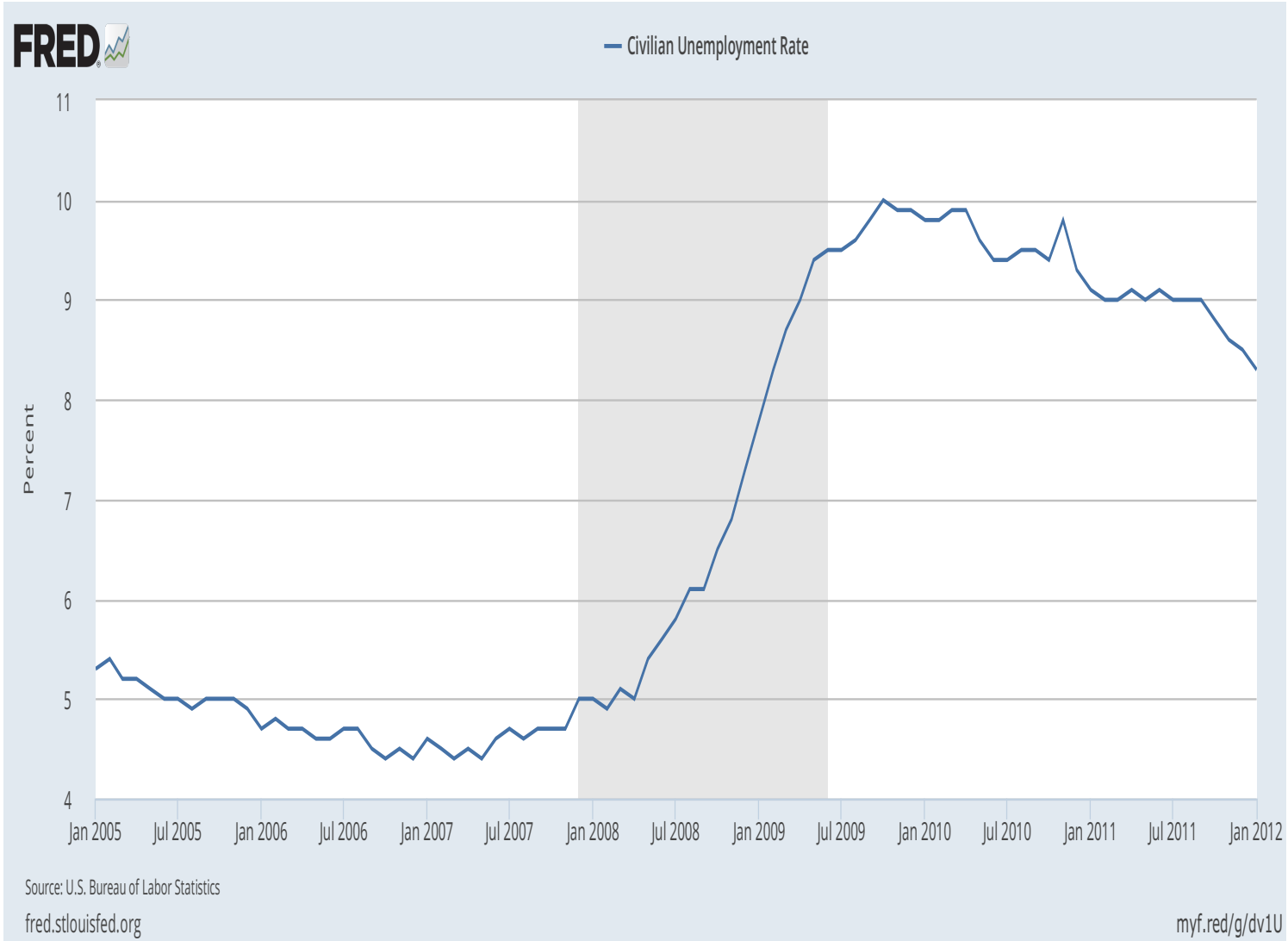
Credit completely dries up

Economic activity contracts


FRED
Moody's Seasoned Baa Corporate Bond Yield Relative to Yield on 10-Year Treasury Constant Maturity©
Percent
7
6
5
4
3
2
1
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Source: Federal Reserve Bank of St. Louis
fred.stlouisfed.org
myf.red/g/dTre


FRED
(Total Credit to Private Non-Financial Sector, Adjusted for Breaks, for United States©), Q3 2008=100
Index of (Billions of US Dollars)
120
110
100
90
80
70
60
50
2002-01-01
2003-01-01
2004-01-01
2005-01-01
2006-01-01
2007-01-01
2008-01-01
2009-01-01
2010-01-01
2011-01-01
2012-01-01
2013-01-01
2014-01-01
2015-01-01
2016-01-01
Source: Bank for International Settlements
fred.stlouisfed.org
myf.red/g/eN24


9.800000
9.750000
9.700000
9.650000
9.600000
9.550000
9.500000
9.450000
9.400000
2002-01-01
2003-01-01
2004-01-01
2005-01-01
2006-01-01
2007-01-01
2008-01-01
2009-01-01
2010-01-01
2011-01-01
2012-01-01
Real GDP
Counterfactual GDP


FRED
Civilian Unemployment Rate
Percent
11
10
9
8
7
6
5
4
Jan 2005
Jul 2005
Jan 2006
Jul 2006
Jan 2007
Jul 2007
Jan 2008
Jul 2008
Jan 2009
Jul 2009
Jan 2010
Jul 2010
Jan 2011
Jul 2011
Jan 2012
Source: U.S. Bureau of Labor Statistics
fred.stlouisfed.org
myf.red/g/dv1U

Banking Panic

What we had was a good, old-fashioned banking panic

Although different in specifics than previous panics (e.g., Great Depression)

- Not a run by people on banks, but by institutions on other institutions
- These institutions (the shadow banking system) were not regulated as banks
- There was nothing like FDIC deposit insurance like there was for regular banks
- And because they weren't technically banks, they couldn't borrow from the Fed

Back to Bernanke's Quote

Bernanke assured Friedman that "they" (the Fed) "wouldn't do it again'

The Fed either explicitly or implicity tried "whatever it takes" to provide liquidity to the financial system more broadly, not just traditional banks

The Fed relied on Section 13(3) of the Federal Reserve Act, which allows the Fed to "lend to any individual, partnership or corporation" in "unusual and exigent" circumstances

The Fed significantly increased the size of its balance sheet (the value of the assets it holds) and significantly increased the monetary base

To a much smaller degree, it increased the money supply (or, perhaps more accurately, kept the money supply from declining)

Notable Fed Interventions

December 2007: Term Auction Facility (TAF): basically a way to make anonymous discount lending/borrowing

March 2008: Term Securities Lending Facility (TSLF): expanded available collateral for Fed loans – e.g. taking "toxic" mortgage securities out of the marketplace and replacing them with government debt

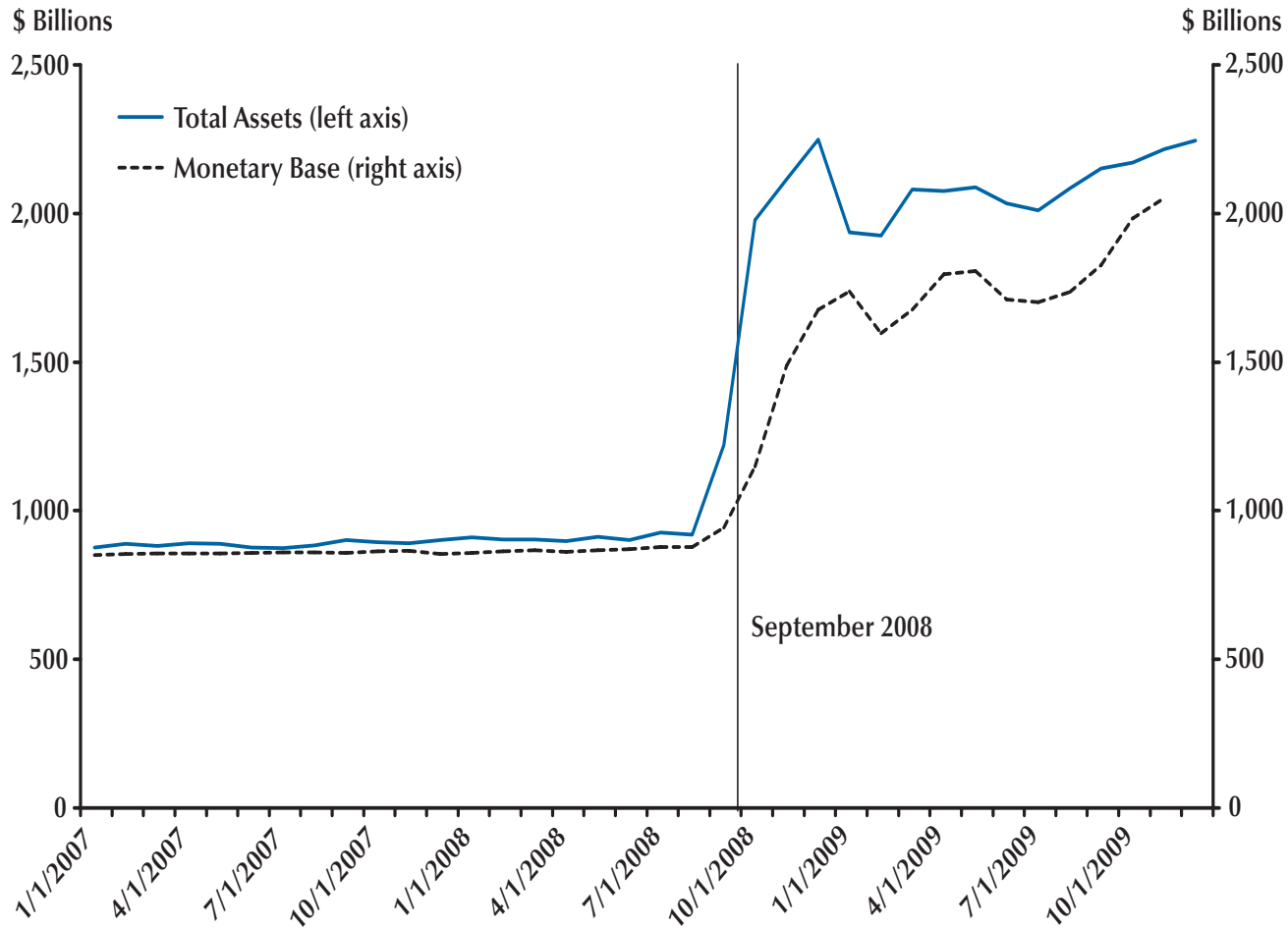
October 2008: Commercial Paper Funding Facility (CPFF): took commercial paper (short term unsecured corporate debt) as collateral

November 2008: Term Asset-Backed Securities Loan Facility (TALF): similar to TSLF, but took securitized consumer loans as collateral

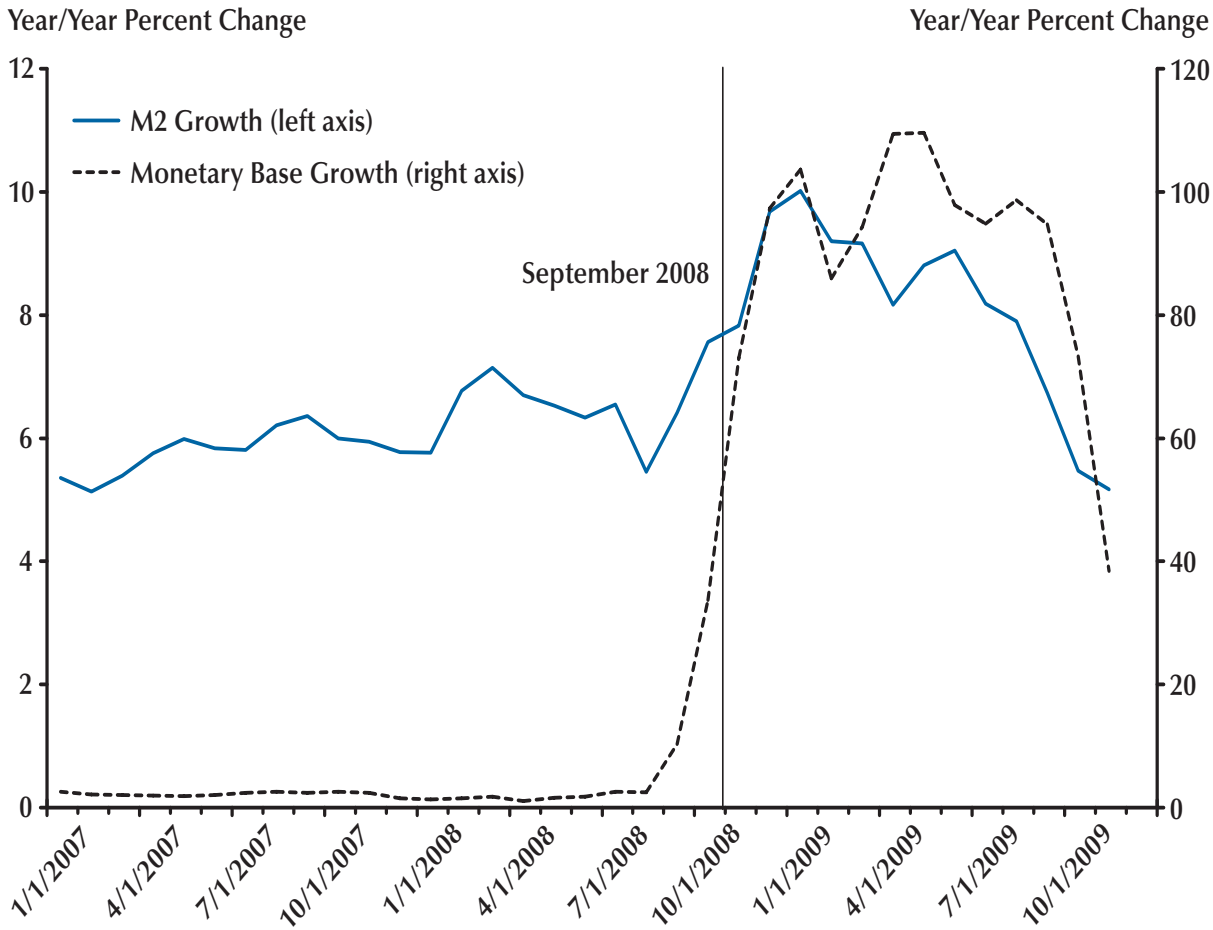
Dollar swap lines: a way to help foreign central banks provide liquidity to financial institutions which needed dollar funding

"Bailouts" of Bear Stearns, AIG, Fannie Mae and Freddie Mac, but not Lehman

Federal Reserve Assets and the Monetary Base (2007-09)



Monetary Base and M2 Growth (2007-09)



COVID-19

The COVID-19 recession was deep but short-lived. Some combination of a negative supply shock and negative demand

The Fed engaged in massive and unprecedented policy actions starting March 2020

The objective was:

1. Prevent a collapse of financial and credit markets from exacerbating the direct economic effects of the virus itself

2. Set the stage for the economy to be able to recover once the virus was past

Pandemic vs. Bank Run

In "Contagion: Bank Runs and COVID-19," Cecchetti and Schoenholtz argue that the information issues of a pandemic and a bank run are similar, and that therefore policy actions ought to be similar

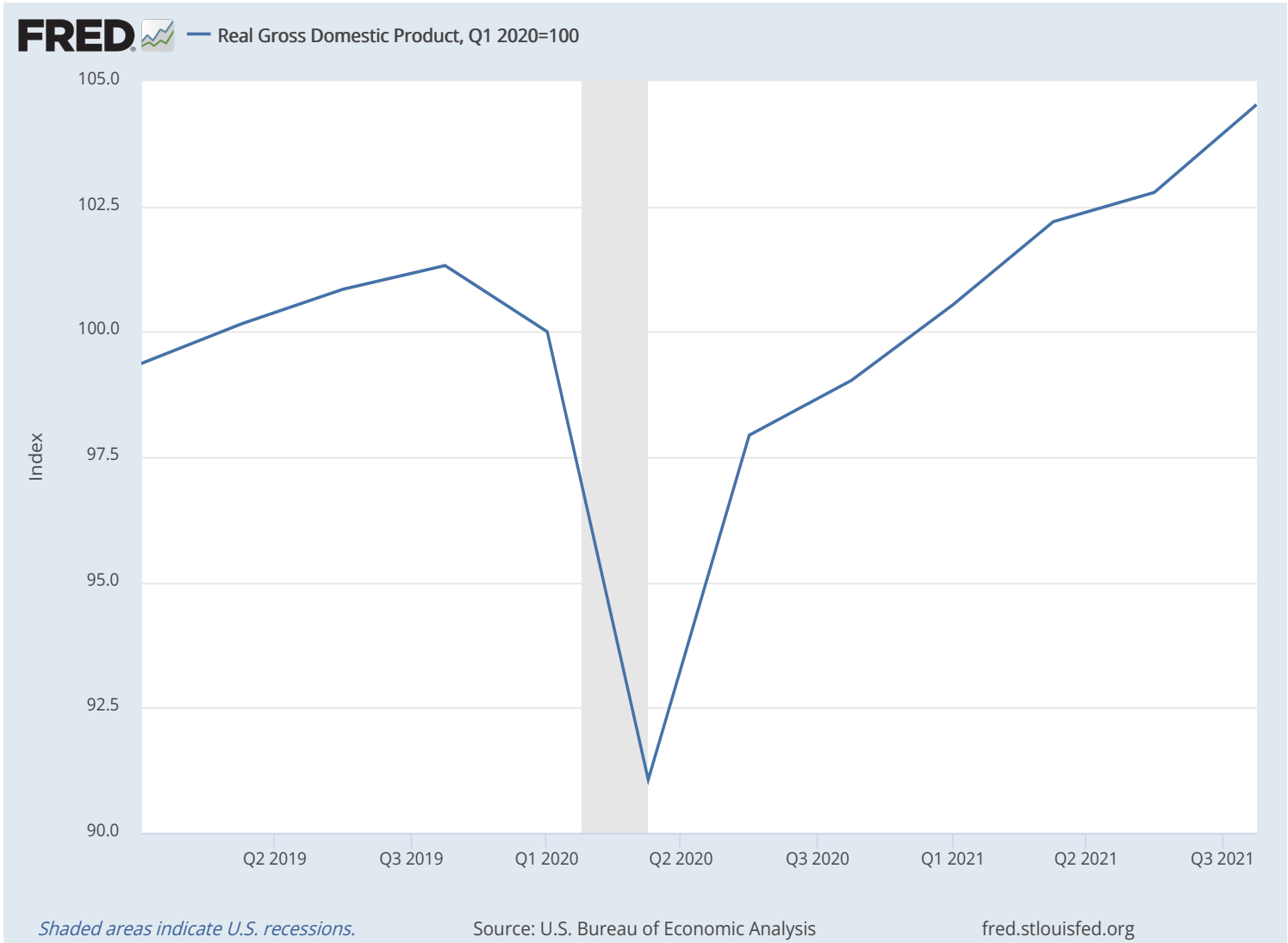
In a bank run, you know that some banks are in trouble, but can't determine which. So you "run" from all banks

In a pandemic, you know that some people are sick, but can't determine who. So you "run" from economic activity and social interaction

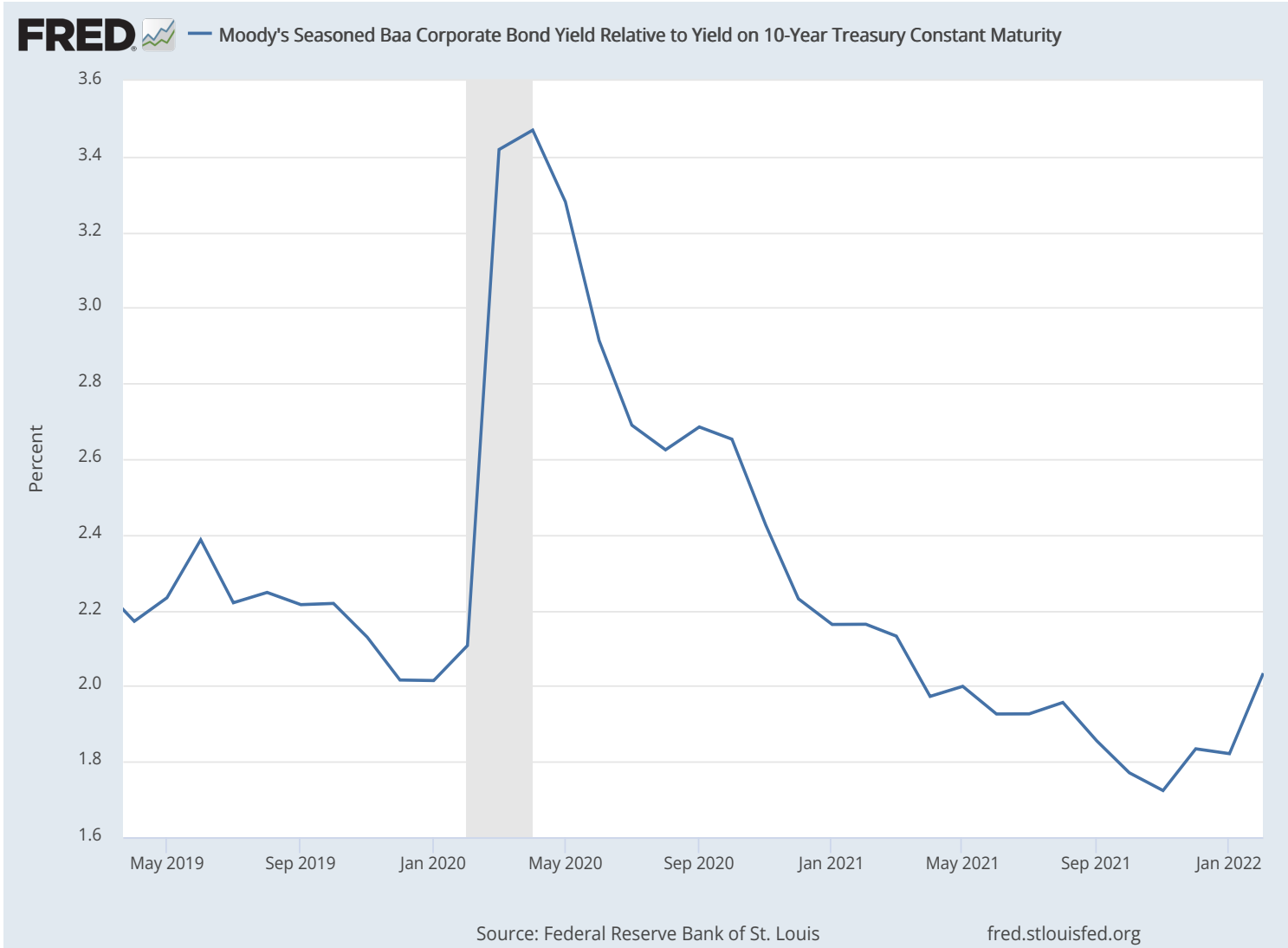
Policy lessons from bank runs: manage the information environment, do "stress tests," bank "holidays," "isolate" failing banks, help restore confidence of the public in the remainder

Similar for a national pandemic strategy – test and isolate, give public confidence that they can go about their economic lives

Real GDP


FRED
Real Gross Domestic Product, Q1 2020=100
105.0
102.5
100.0
97.5
95.0
92.5
90.0
Index
Q2 2019
Q3 2019
Q1 2020
Q2 2020
Q3 2020
Q1 2021
Q2 2021
Q3 2021
Shaded areas indicate U.S. recessions.
Source: U.S. Bureau of Economic Analysis
fred.stlouisfed.org

Credit Spreads



What Exactly Did the Fed Do? Part I

Aggressively lowered Fed Funds Rate

- 50 bps on March 3. 100 bps over weekend of March 14-15

Brought back QE/LSAPs

- March 15: $700 billion ($500 billion of Treasuries, $200 billion of MBS)
- March 23: QE *infinity*

Resuscitated Great Recession era facilities:

- Commercial Paper Funding Facility (March 17)
- Primary Dealer Credit Facility (March 17)
- Money Market Mutual Fund Liquidity Facility (March 17)
- Term Asset Backed Securities Loan Facility (TALF) (March 23)

What Exactly Did the Fed Do? Part II

The Fed ventured into new but somewhat familiar territory, starting March 23

- e.g. QE infinity
- Removing regulatory capital and reserve requirements

But it did more drastic things, including provision of credit to non-financial firms

- Primary and Secondary Market Corporate Credit Facilities (March 23)
- Main Street Lending (announced March 23, later given more details on April 9)
- Municipal Liquidity Facility (April 9)
- Paycheck Protection Program Liquidity Facility (April 9)

Taking on Private Credit Risk

By law, the Fed is only allowed to purchase securities backed by the government (e.g., Treasuries or agency-backed MBS), and can only lend to banks

But financial intermediation in the US has changed – serving as lender of last resort requires the Fed to in some cases by market-maker of last resort, and potentially buyer of last resort

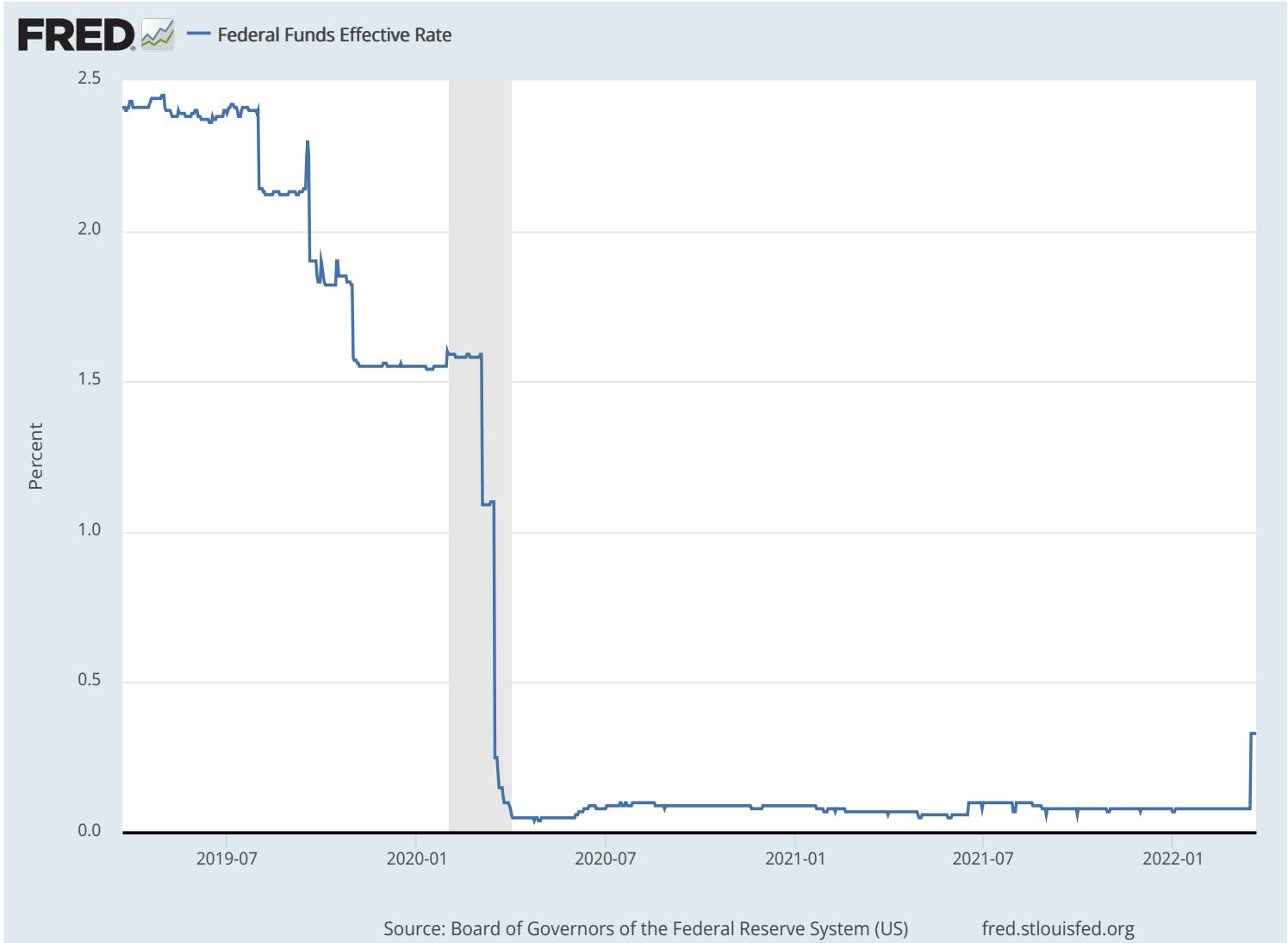
- Requires some work-arounds in the law: need Treasury permission/backing (invoking the modified clause 13(3)), and/or has to set up "special purpose vehicle" (SPV) to lend money to, where the SPV can then buy the assets

But practically doesn't seem to be a constraint on the Fed

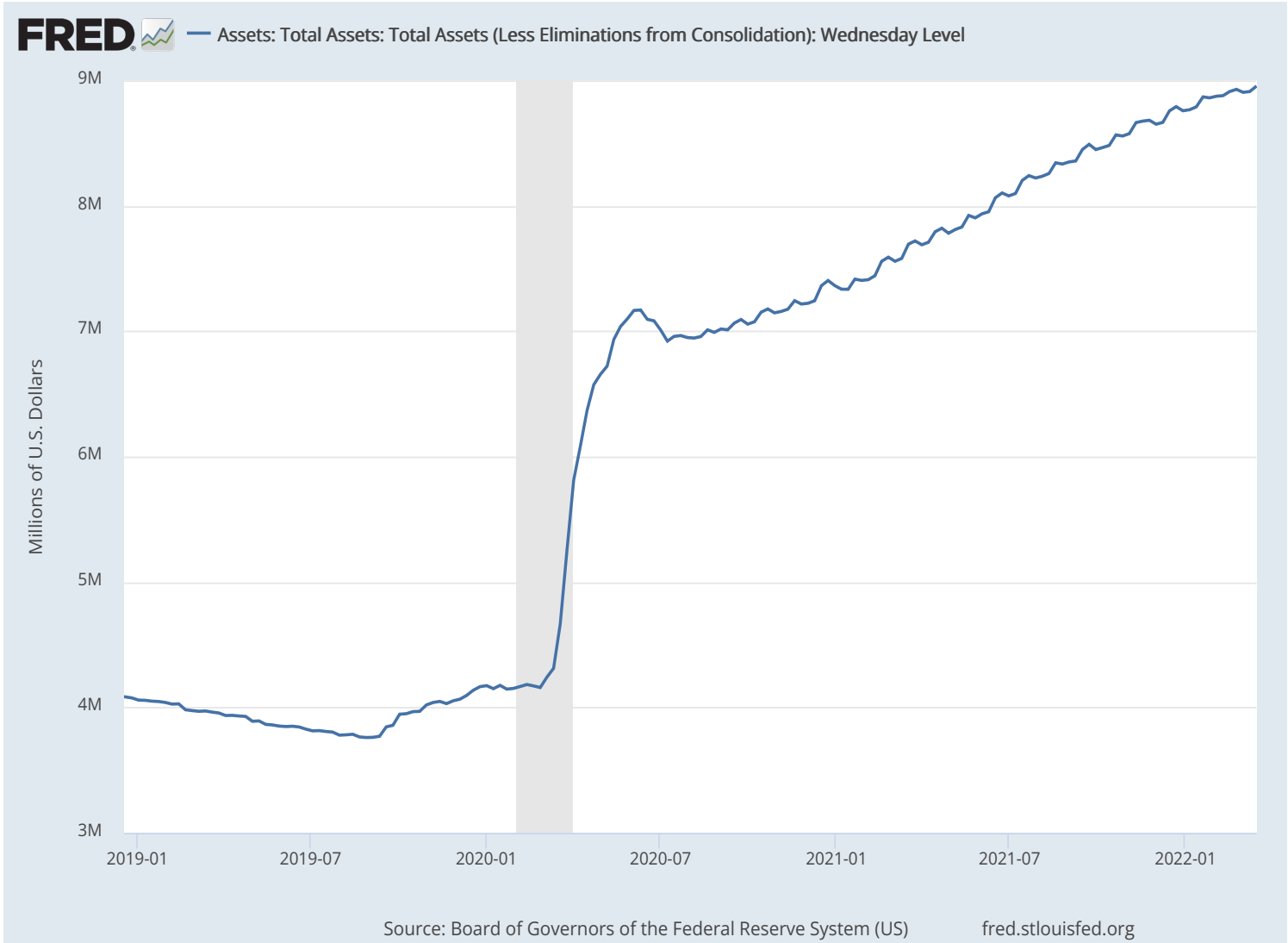
Buying non-financial assets with credit risk invariably involves distributional choices that perhaps ought to be left to elected authorities (Fed Goes to War: Part 3, Cecchetti and Schoenholtz)

Potentially jeopardizes independence

Fed Policy Rate



Fed Balance Sheet



Did it Work?

Judging from timing, evidently yes

The Fed announced its most drastic policy interventions on March 23 (announcement)

It was March 23 that financial markets turned around

- The stock market reversed course
- Credit spreads declined
- Market volatility declines

Note the interest rate cuts and announcement of large QE were a week earlier

So it seems that the Fed venturing into purchasing securities with credit risk and lending to non-financial firms did work and helped prevent financial panic

The Fed's Big Stick

What is remarkable about the March 23 announcements . . .

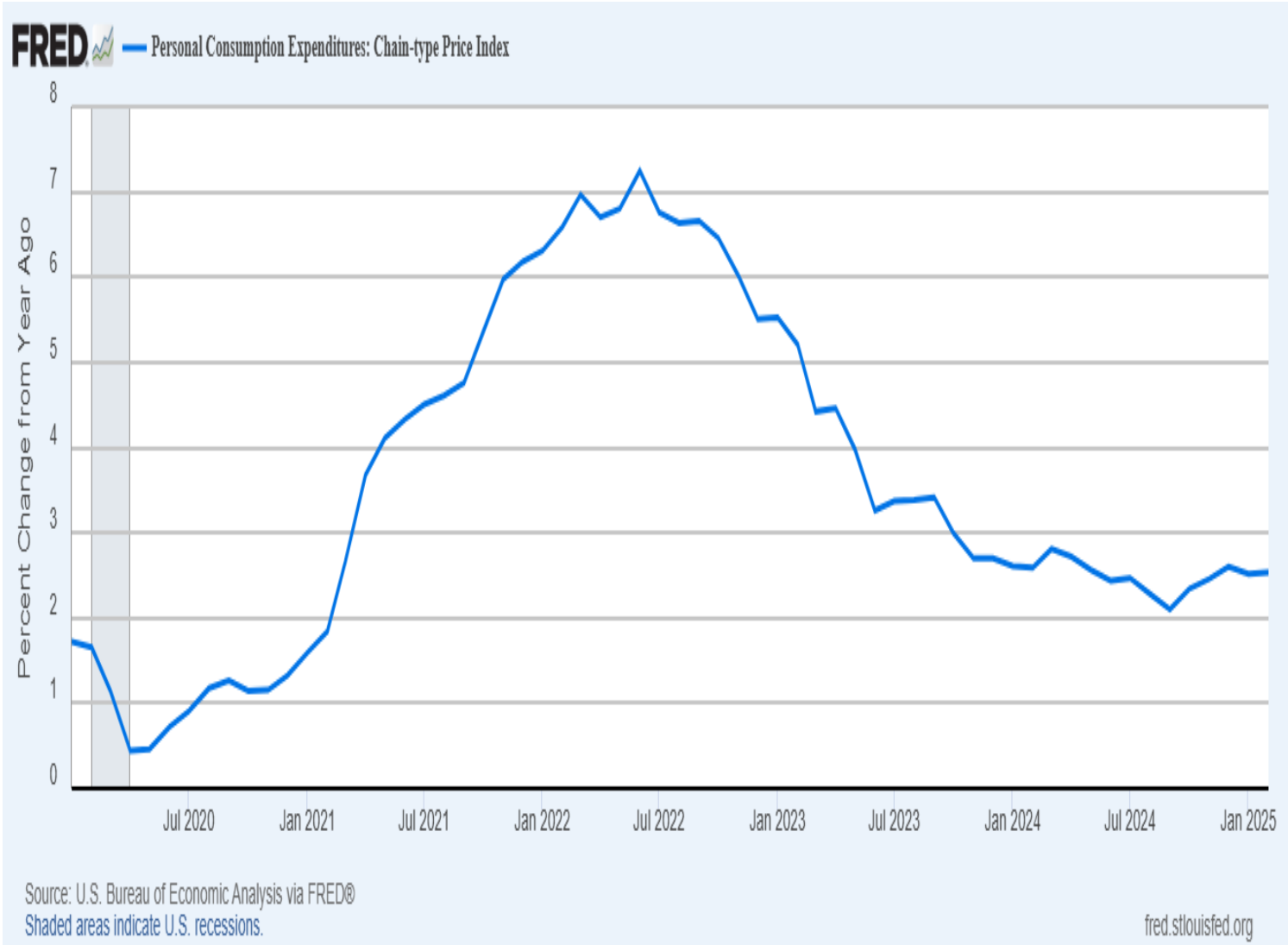
The Fed has basically did not buy any non-financial securities with credit risk and has made limited loans to non-financial companies

As emphasized in Fed Lets Its Big Stick Speak Powerfully (Cecchetti and Schoenholtz), the Fed's words seem to have mattered a great deal

Just the promise to lend to non-financial corporations had the effect of stabilizing the financial system

Similar to Mario Draghi's 2012 "whatever it takes" statement

But It Seemingly Worked Too Well



Big Issues at Present

Tariffs:

- In the AD-AS model, tariffs could increase demand (via $\uparrow \bar{NX}$) if not reciprocated
- But if reciprocated, unclear effect on $\bar{NX}$ and could and depress supply (via $\uparrow \rho$)
- Increase in ρ (inward shift of AS) presents a policy dilemma for the Fed
- "We may find ourselves in the challenging scenario in which our dual-mandate goals are in tension" - Jay Powell

Central bank independence:

- "there can be a SLOWING of the economy unless Mr. Too Late, a major loser, lowers interest rates, NOW" - Donald Trump on Jay Powell
- Could lead to $\uparrow \pi^e$: again a tradeoff for the central bank