The Great Recession: Earthquake for Macroeconomics

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Based on publication of same title, *Macroeconomic Review*, Monetary Authority of Singapore, pp. 87-96, April 2016

Objective

- Discuss the Great Recession, 2007-?
- What caused it, why did it last so long?
- Why did so few people (including macroeconomists) predict it?
- What impact is it having on Macroeconomics as a discipline?
- Macroeconomics
  - The branch of economics concerned with understanding the behavior of the economy as a whole.
  - Principle focus: periodic ups and downs in aggregate economic activity.

Great Recession

- Big, by post World War II standards.

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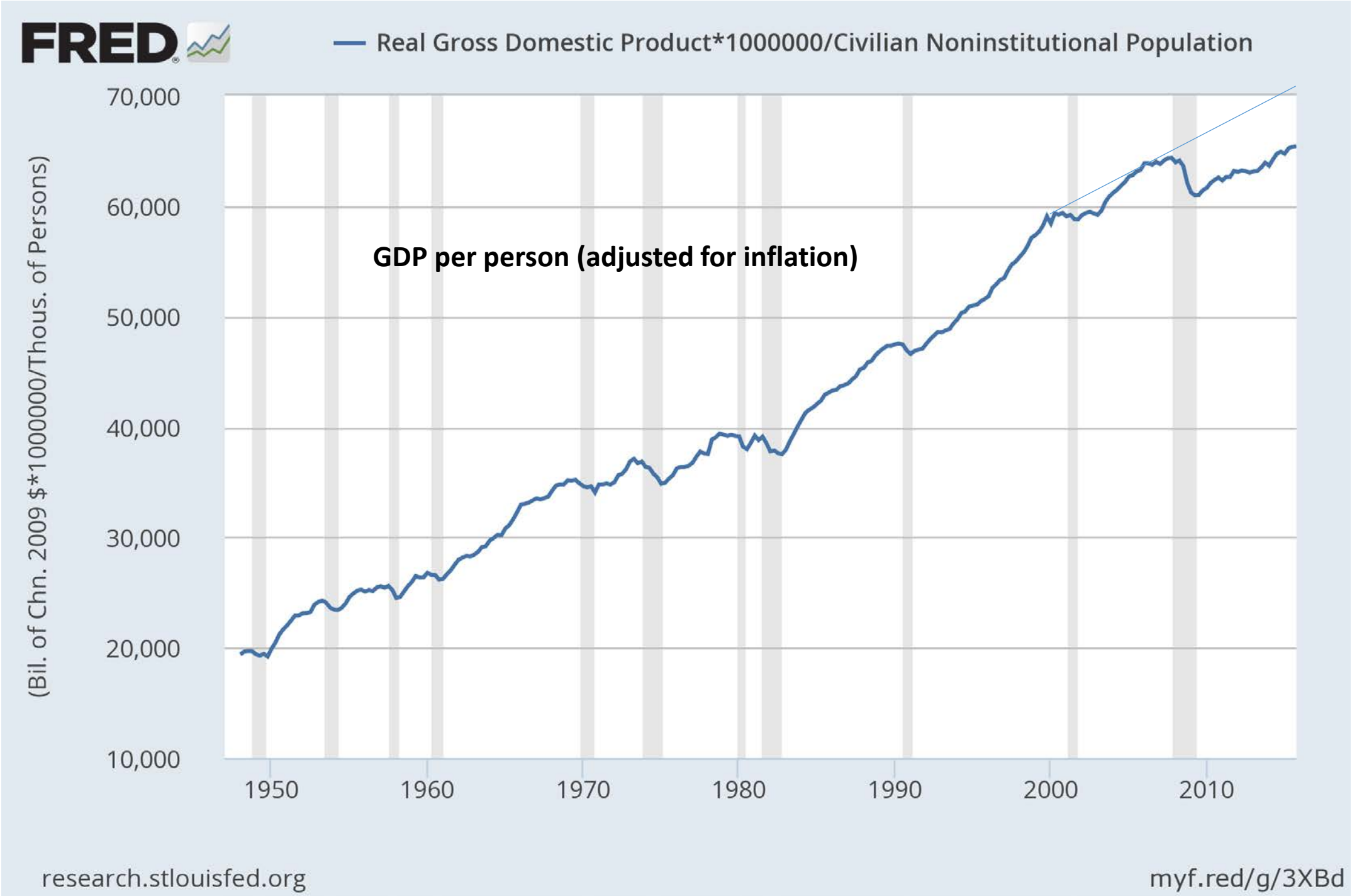
Smaller than Great Depression.


FRED
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(Bil. of Chn. 2009 $*1000000/Thous. of Persons)
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60,000
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1960
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GDP per person (adjusted for inflation)
research.stlouisfed.org
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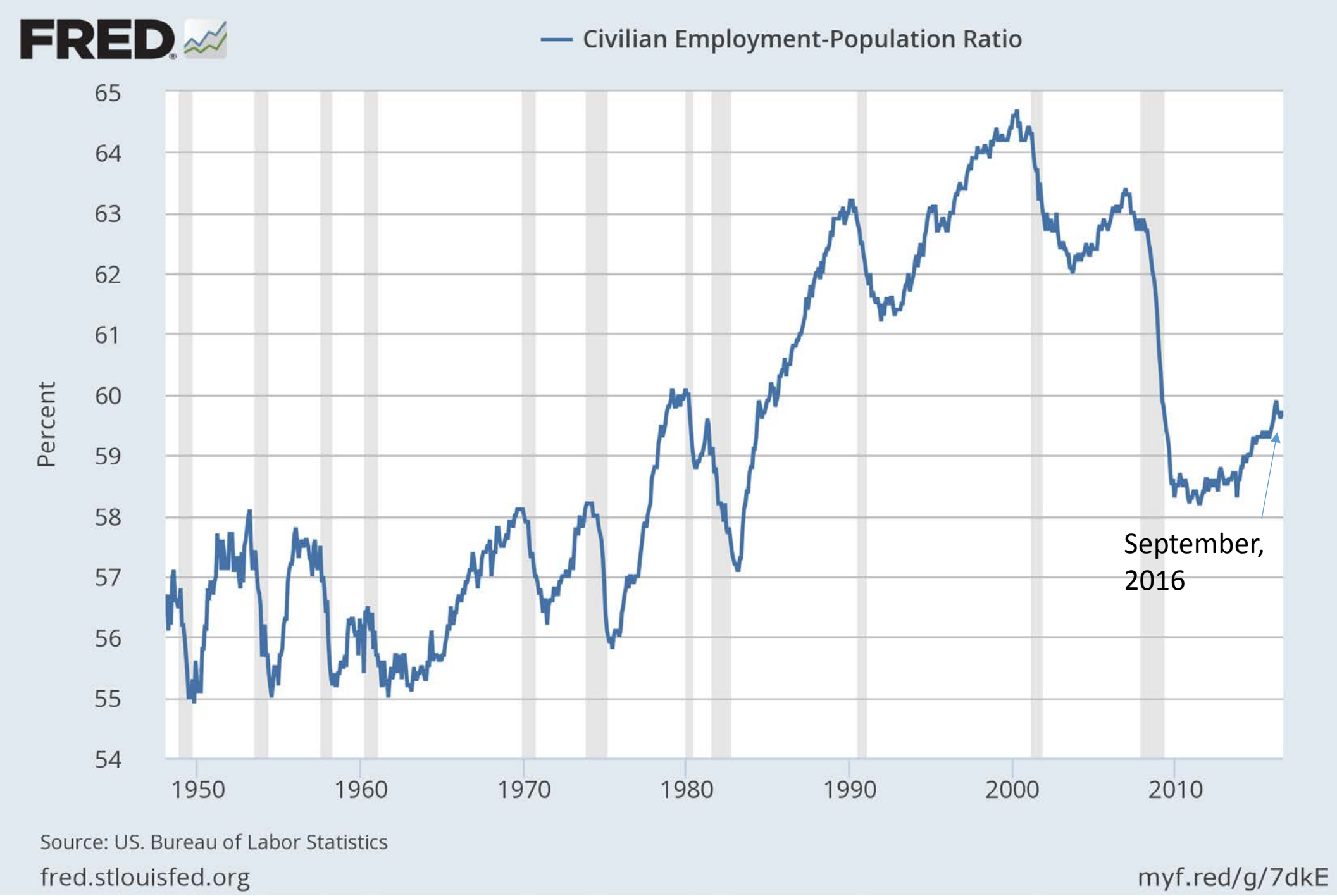
More Evidence that We're Still at Best Only Barely out of the Woods: Labor Market


FRED
Civilian Employment-Population Ratio
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September, 2016
Source: US. Bureau of Labor Statistics
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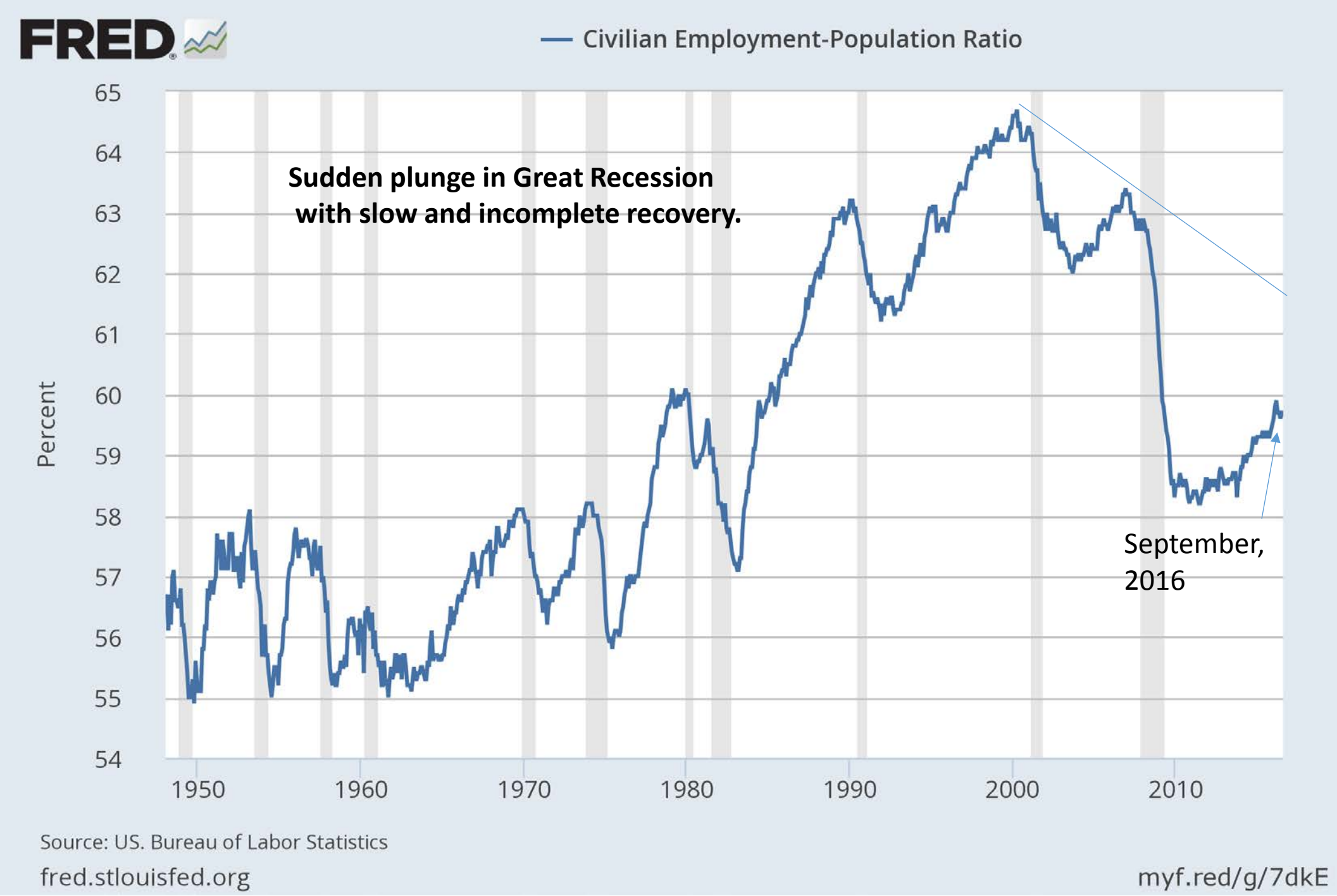
FRED
Civilian Employment-Population Ratio
Sudden plunge in Great Recession
with slow and incomplete recovery.
September,
2016
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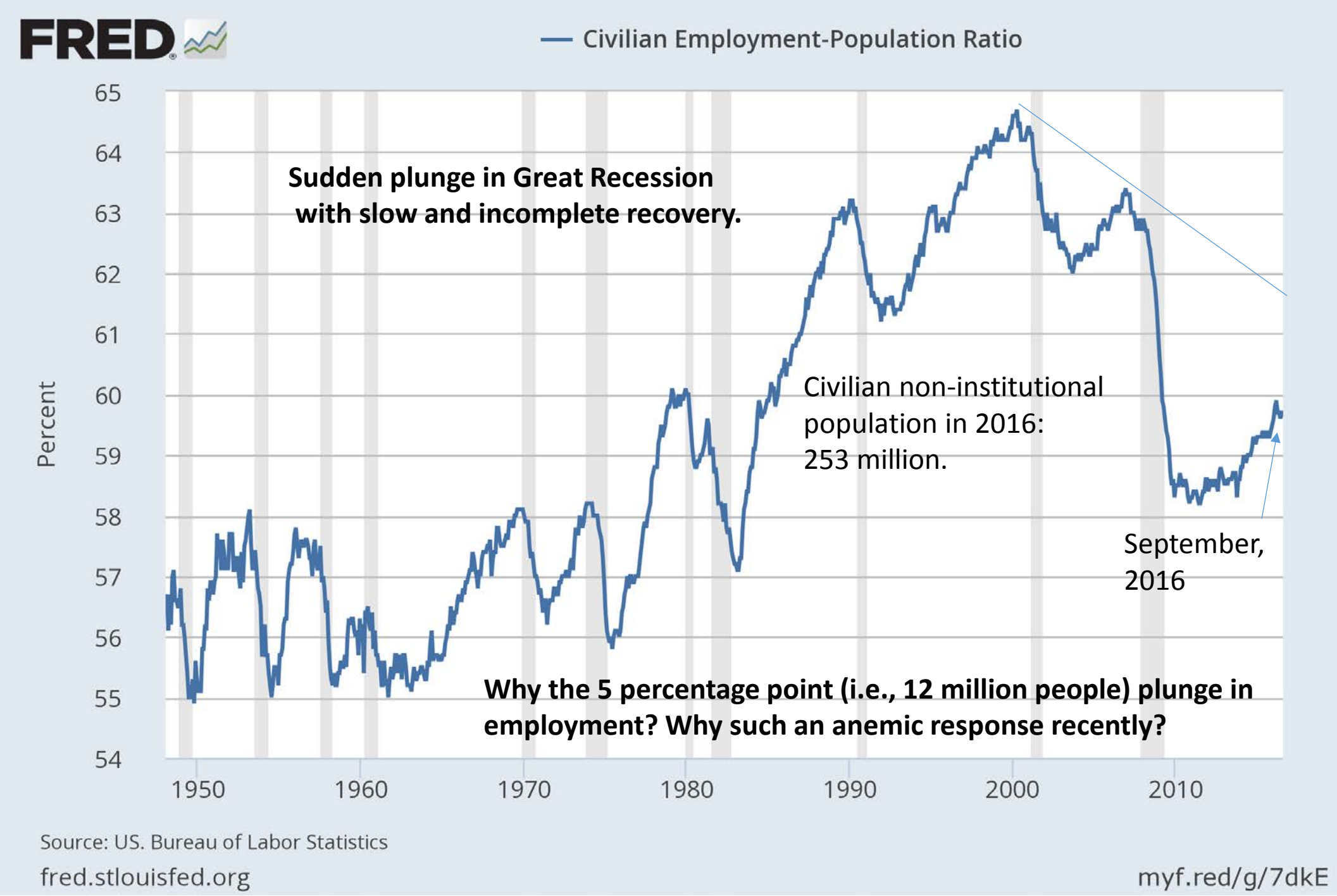
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1950
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2010
Sudden plunge in Great Recession
with slow and incomplete recovery.
Civilian non-institutional
population in 2016:
253 million.
September,
2016
Why the 5 percentage point (i.e., 12 million people) plunge in
employment? Why such an anemic response recently?
Source: US. Bureau of Labor Statistics
fred.stlouisfed.org
myf.red/g/7dkE

Questions

- What was the trigger for the Great Recession?
- What was it about the economy that the trigger had such a big effect?
- Why has it lasted so long?
- A variety of hypotheses were advanced.
  - Now a consensus seems to be taking shape.
- But first,
  - discuss some ideas that were advanced initially, but seem less appealing now.

Initial Responses

- Initially, there was much puzzlement, even *fear*.
  - 2009 Documentary, *Frontline: Inside the Meltdown*
  - Right after Lehman brothers collapse, Bernanke and Paulsen met with top Congressional leadership to talk about what to do.
  - Paulsen: “Unless you act, the financial system of this country and the world will melt down in a matter of days.”
  - Bernanke: “If we don’t do this [i.e., pass a proposed emergency bill] tomorrow, we won’t have an economy on Monday.”
  - Senator Dodd later recalled, “There was literally a pause in that room where the oxygen left.”
- A couple of initial answers:
  - Firms have lots of job openings, it’s just that workers don’t have the right qualifications. **Skills mismatch hypothesis.**
  - Firms hesitate to hire more workers because they are uncertain about future taxes and regulations. **Uncertainty hypothesis**.

President of Federal Reserve Bank of Minneapolis, on ‘Mismatch Hypothesis’ (8/17/2010)

- “Firms have jobs, but can’t find appropriate workers. The workers want to work, but can’t find appropriate jobs.”

- “Whatever the source [of this mismatch] it is hard to see how the Fed can do much to cure this problem.”

- “Most of the existing unemployment represents mismatch that is not readily amenable to monetary policy.”

Source: https://www.minneapolisfed.org/news-and-events/presidents-speeches/inside-the-fomc#_ftnref2

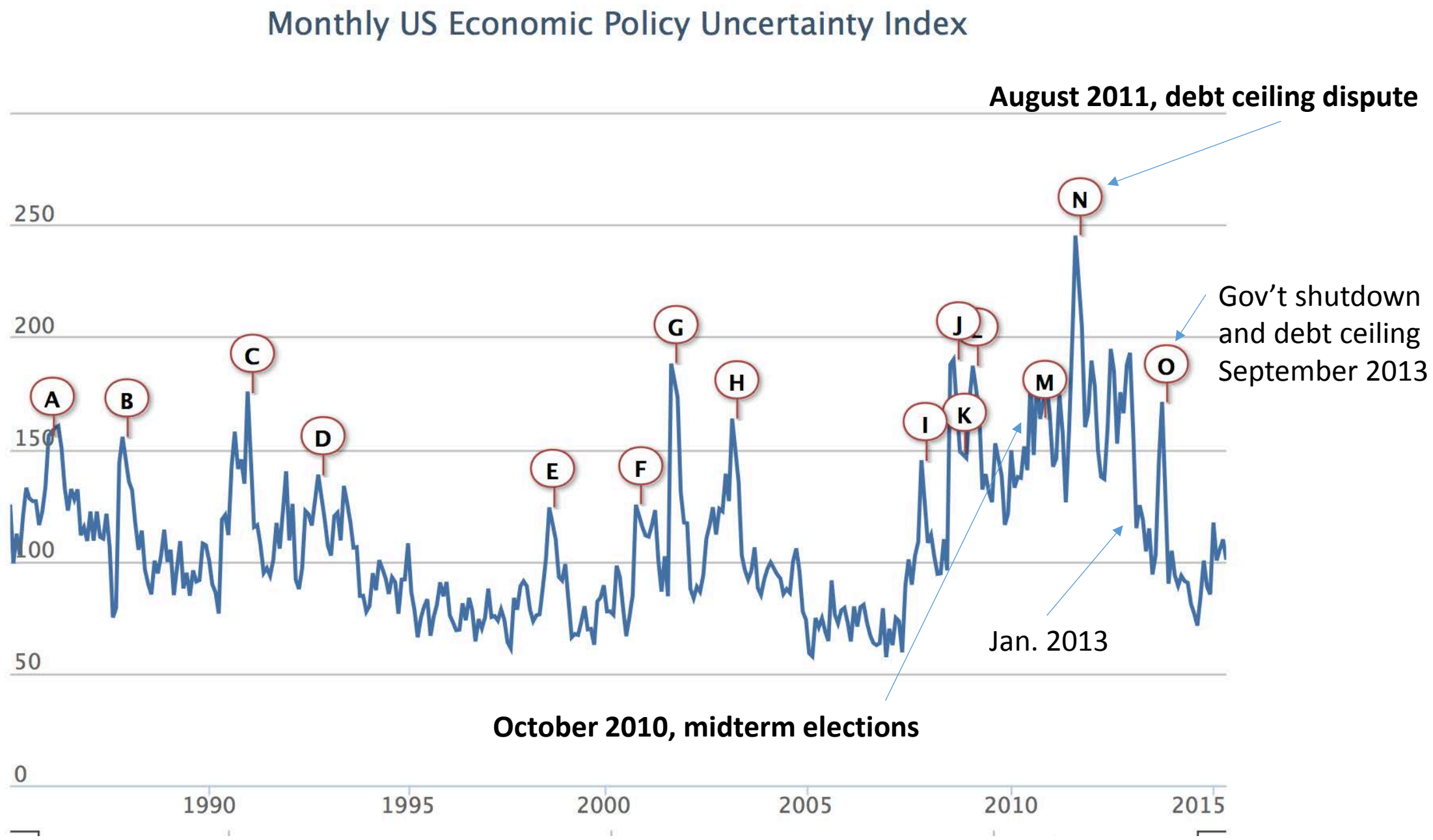
Mismatch Hypothesis Does Not Hold up in Data

- Under mismatch hypothesis, the workers with the right stuff should have been:
  - Experienced lower unemployment,
  - Working longer hours,
  - Had higher wages.
- Instead,
  - demand for workers was down across all skill levels and occupations.
  - When interviewed, firms reported that their biggest problem was ‘lack of demand’, not ‘quality of labor’.
- Source: Heidi Shierholz: http://www.epi.org/publication/shortage-skilled-workers/

Another Hypothesis: Uncertainty Hypothesis

- Policy uncertainty and too much regulation*.
- Baker, Bloom and Davis construct a measure of economic policy uncertainty.
  - Their indicator came down to pre-recession levels by early 2013
  - No big pickup in employment after that, suggesting that was not a major factor holding firms back.

*See: http://www.minneapolisfed.org/research/wp/wp694.pdf



Source: http://www.policyuncertainty.com/

Summary so far

- The Great Recession is indeed *Great*

- Mismatch, government policy uncertainty and red tape.
  - seem unlikely either as a major cause or source of propagation of the Great Recession.
  - In surveys of small business, answer to question, 'What is your top problem?'
    - Not, 'too much government red tape'
    - Not, 'regulation'
    - Poor sales.

- Bottom line: Great Recession characterized by an across-the-board decline in output, as if demand for all goods went down.
  - Low output and low inflation.
  - But, what was the source of the weak demand???

Big Questions Remain

- Why did people and firms cut back on spending?
  - Why the ‘poor sales’?
- Why has the Great Recession lasted so long?
- Why did few people (including macroeconomists) predict it?
- What impact is it having on Macroeconomics as a discipline?

Sketch of Emerging Conventional Wisdom

- Trigger: housing prices flattened out and then actually fell starting in 2006.
  - Policy makers had anticipated a ‘housing price correction’.
  - But, did not think the effects would be a big deal.

- What made house price correction into a big deal?
  - Hit American economy when it was vulnerable to bank runs.
  - Banks experiencing runs, had to ‘fire sale’ assets.
    - So, housing prices and other asset prices fell.

- A cut back in spending followed;
  - Big part of US banking system collapsed, and people/firms dependent on banks for financing had to cut back.
  - People felt ‘poor’ as their houses (and other assets) fell in value, so they cut back.

This is what a bank run looked like historically

This type of bank run prevented by deposit insurance.

So, how could a bank run have occurred given we have deposit insurance?

- There was never a run on a ***commercial bank***.

- The runs occurred in the ***Shadow Banking System***.

- As the name suggests, the shadow banking system is living in the shadows.

  - Data on financial firms is a byproduct of regulation.
  - Shadow banks lightly regulated and so not much was known about them.
  - Little was known about them by politicians, journalists, academics and even policymakers.

Banking Crisis, the ‘The Panic of 2007’ (Gorton)

- Bank:
  - Bank takes a $1 deposit and promises to repay $1 in one period.
  - It buys an asset (loan), which repays $1 in *two* periods.
  - *Maturity mismatch*.
- The bank obviously cannot in fact repay in one period.
  - Bank hopes depositor ‘rolls over’ the loan after one period.
  - Alternatively, bank must find another depositor.
  - Or, if it cannot find another depositor, then it must sell enough assets.
  - No problem, ***so far***.

No Crisis Case

- Depositors of one bank alone want money back

Assets	Liabilities
120	‘Deposits’: 100
	Bank net worth: 20

- Here, there is no problem.
  - If depositors want 100 back, bank can sell 100 assets.

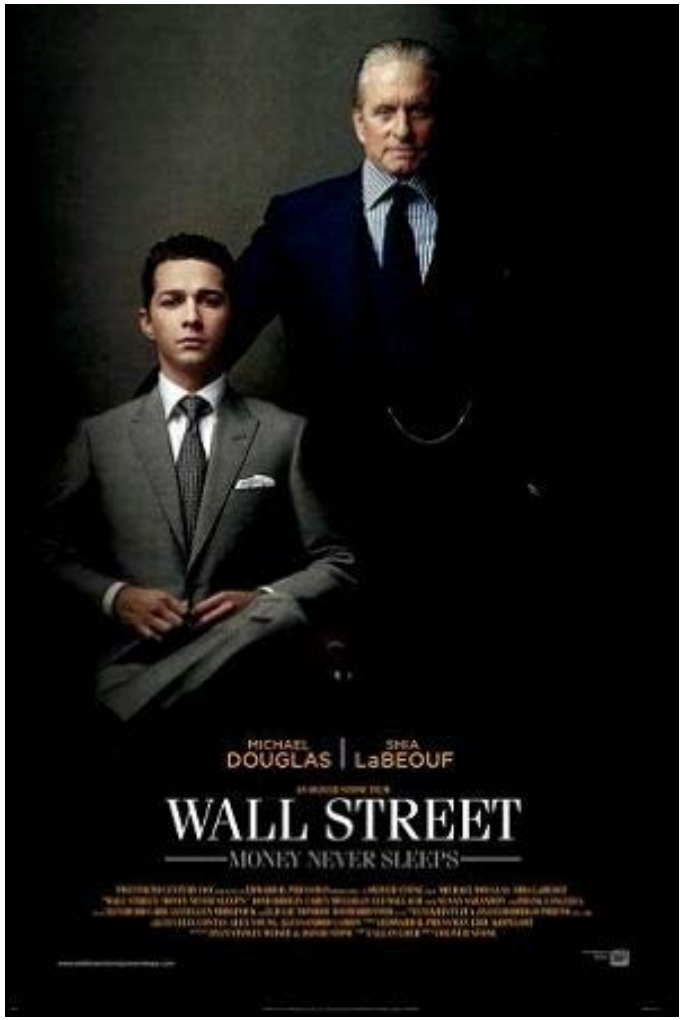
Crisis Case

- But, suppose depositors of *all* banks in the industry (say, mortgage backed securities) want money back

Assets	Liabilities
120 (**90**)	‘Deposits’: 100
	Bank net worth: 100 (**-10**)

- Now, must sell quickly to people unfamiliar with the assets, at fire sale prices, 90.
- Banks wiped out, rational for individual depositor to pull out.
  - No point keeping deposits in a destroyed bank.
  - So, run is an equilibrium.
- Captured formally in a dynamic macro model by Gertler-Kiyotaki (AER2014)

The Drama of a Modern Bank Run Brought to Life in Some Great Movies!



How and why did the shadow banking system come into existence?

- Shadow banks were a way to avoid regulation while maintaining some protection from the Fed.

- Federal reserve policymakers sort of knew about the existence of the shadow banks, but they looked the other way.

  - This was in part because of the prevailing mood of the time, that regulation stifles creativity.

  - Fed Chairman Greenspan famously believed in the power of financial markets to regulate themselves. Later, he recanted (see http://www.nytimes.com/2008/10/24/business/economy/24panel.html)

  - The preference of the shadow banking system for mortgage securities dovetailed with political priorities that favored getting low income households into housing (Rajan).

Example of a Shadow Bank: A Structured Investment Vehicle (SIV)

- Suppose a commercial bank makes a mortgage loan of $100 to someone. This is called a loan origination.

- Long ago, the mortgage would have stayed on the commercial bank's books.

- Before the crisis they would sell a whole portfolio of mortgages to an SIV.

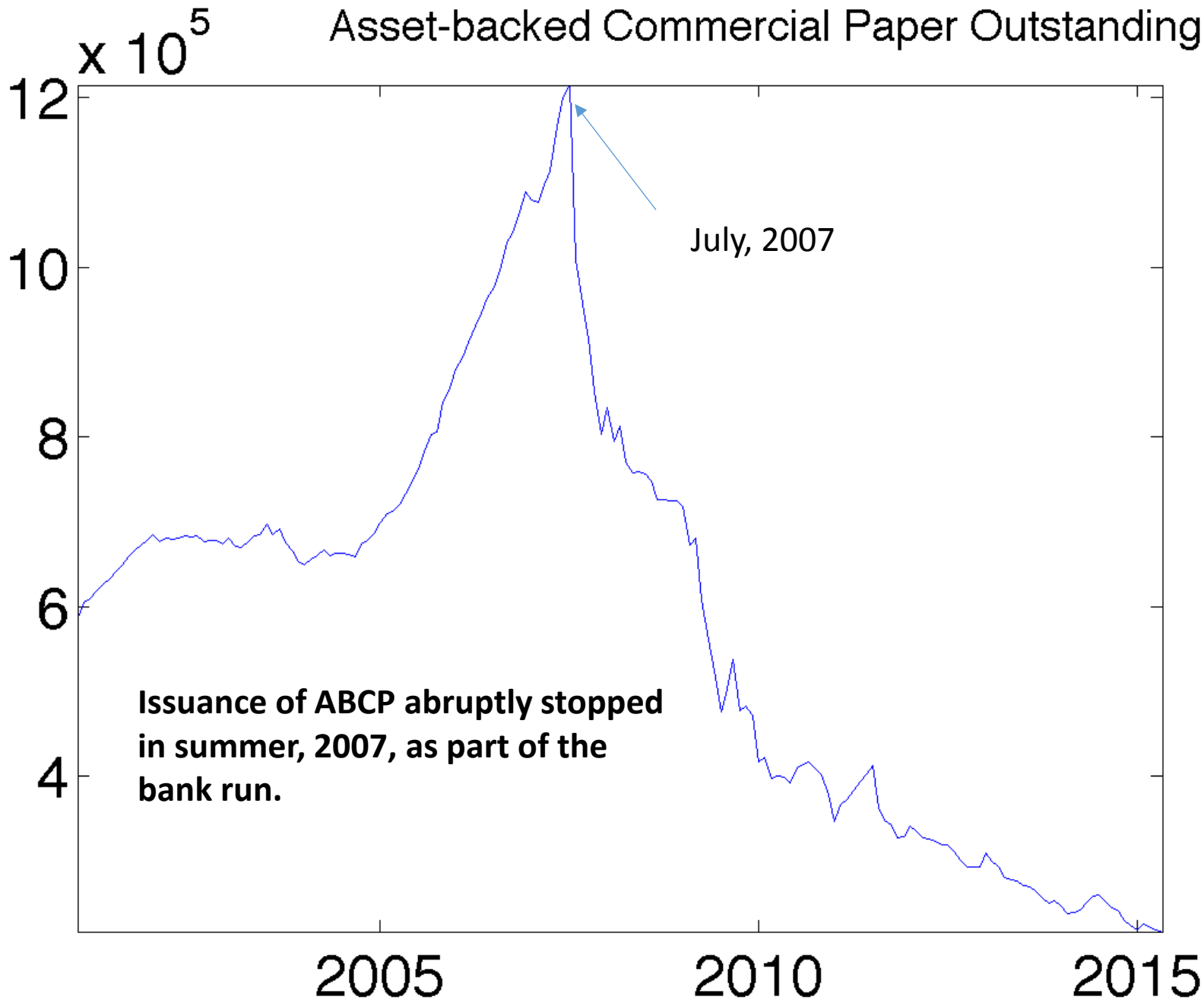
  - The SIV would pay for the mortgages by issuing short-term securities, which people bought thinking they were risk free.
  - Asset-backed securities (ABS), asset-backed commercial paper (ABCP).
  - SIV's made huge profits because they had an implicit promise from originating bank to buy back the mortgages in case they went bad.
  - The promise was credible because the originating bank had the Fed standing behind it in case of trouble.

The Panic of 2007 (Gorton)

- Housing prices began to soften and then fall in 2006.
  - There was a real concern that so-called subprime mortgages would go bad.
  - Policymakers were relatively unconcerned because subprimes totalled only $1 trillion.
  - What no one appreciated was the size of the shadow banking system and its vulnerability to runs.
  - Holders of asset-backed commercial paper (ABCP) became skittish.
    - Much easier to withdraw funds than to carefully determine the safety of the ABCP.

Assets	Liabilities
120 (**90**)	'Deposits': 100
	Bank net worth: 100 (**-10**)

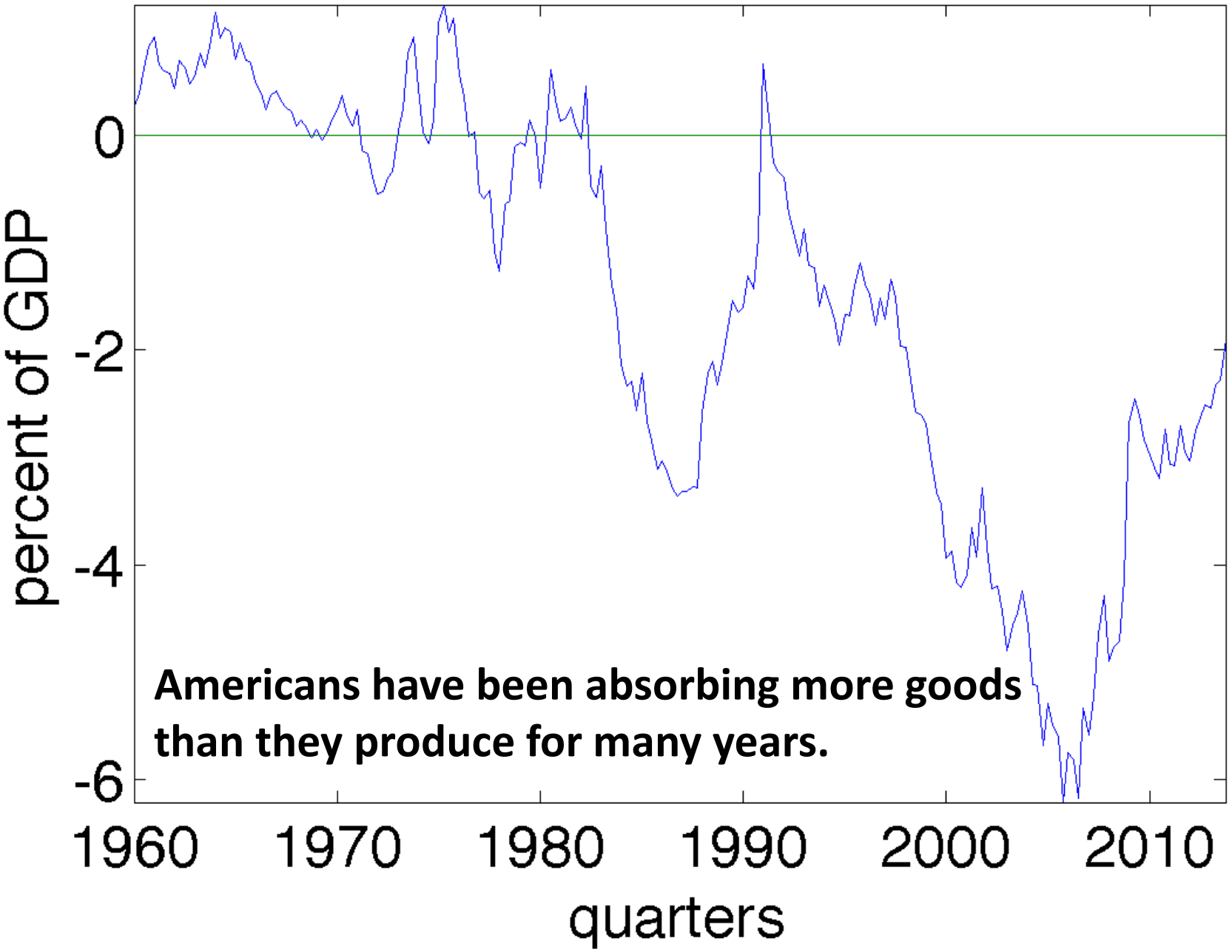
- In 2010 Congressional testimony, Bernanke said run started in Germany.
  - July 30, 2007 a German SIV, *Rhineland*, was having difficulty rolling over its debt.


Asset-backed Commercial Paper Outstanding
x 10^5
12
10
8
6
4
2005
2010
2015
July, 2007
Issuance of ABCP abruptly stopped in summer, 2007, as part of the bank run.

Where did all the money come from?

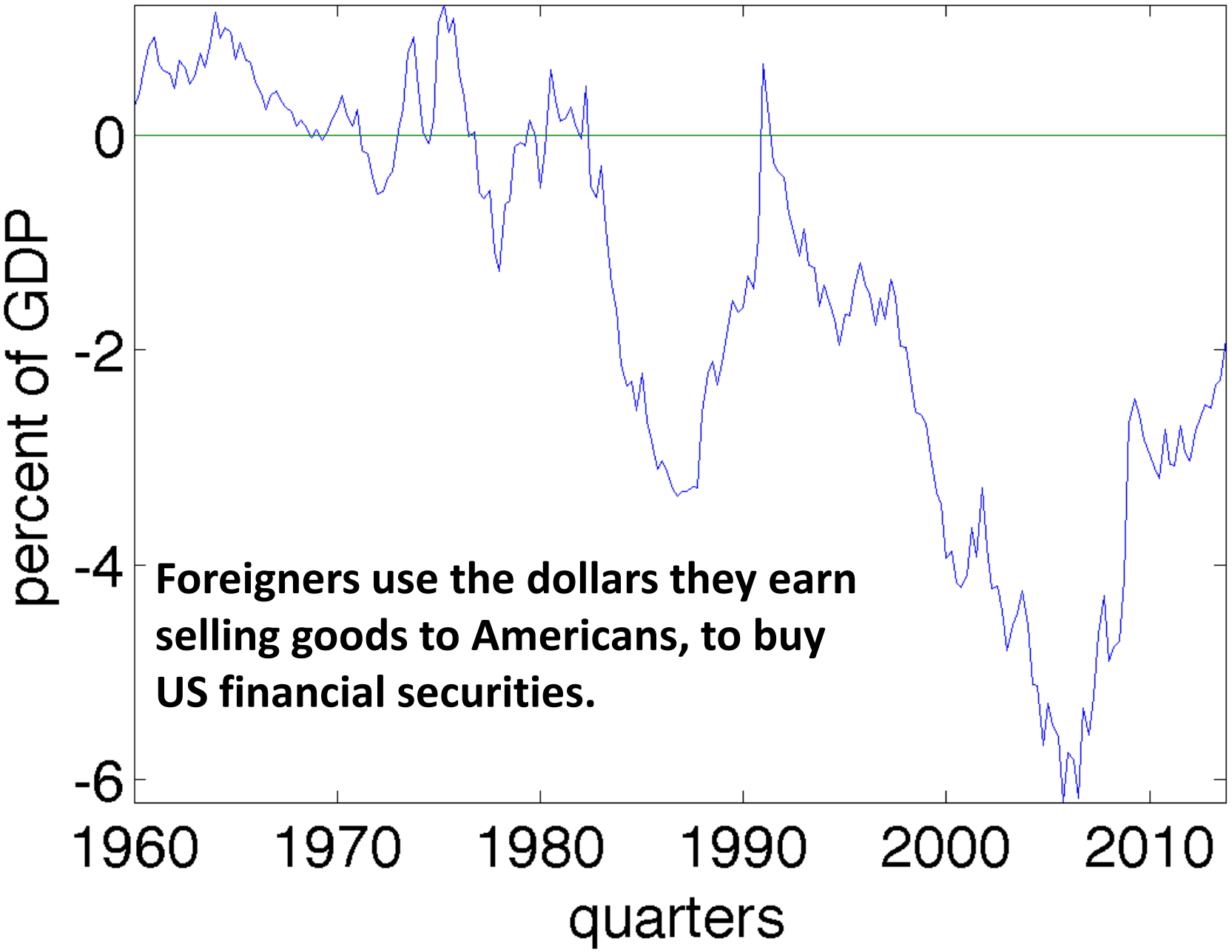
- The shadow banking system expanded a lot more than anyone knew at the time.
  - It was getting a lot of money from somebody.
  - From who? Certainly not only from Americans.
  - Answer: Global Savings Glut (Bernanke).
- Why was so much going into mortgages?
  - Suggested answer: Banking Glut (Hyun Shin).

Current Account Balance for the United States



Americans have been absorbing more goods than they produce for many years.

Current Account Balance for the United States



Foreigners use the dollars they earn selling goods to Americans, to buy US financial securities.

US Current Account Deficit

- Americans import goods and export financial claims.

- Which countries is America exporting financial claims to?

Growing US current account deficit primarily against Asia and Oil Exporters.

TABLE 2.	CURRENT ACCOUNT BALANCES ($bn)		
	1995	2002	2005[2]
United States	-114	-475	-759

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Asia	72	244	341
Japan	111	113	153
China	2	35	116

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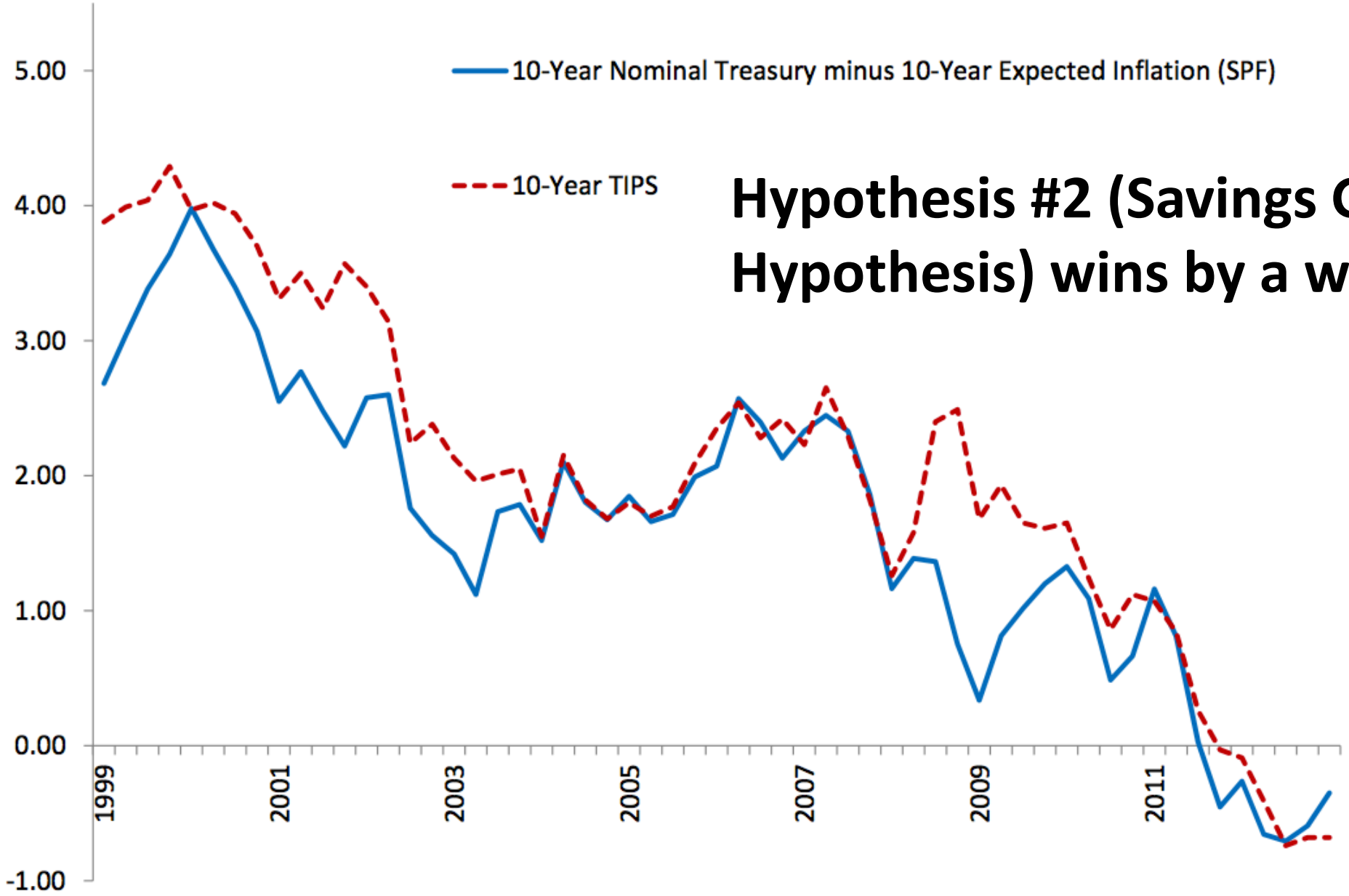
Major Oil Exporters[1]	8	92	398

Source: IMF

Why the big imbalances?

- Hypothesis #1: Americans are greedy and lazy.
  - They consume more than they produce, send IOU's to foreigners.
  - Current account drives the financial account.
- Hypothesis #2 (Savings Glut): Foreigners are hungry for US financial assets.
  - Financial account drives the current account.
- Simple Mundell-Fleming reasoning behind hypothesis #2.
  - Foreigners love US assets, so they buy them in large numbers.
  - Causes dollar over-valuation, driving US trade balance into deficit.
  - US interest rates drop as asset prices bid up by foreigners.
- Hypothesis #1 implies US interest rates rise as greedy Americans try to induce people to lend to them.



Hypothesis #2 (Savings Glut Hypothesis) wins by a wide margin.

Source: Justiniano, Primiceri and Tambalotti (2015), "The Effects of the Saving and Banking Glut on the US Economy".

Why did so much money go into mortgages?

- One answer suggested by Hyun Shin and others.

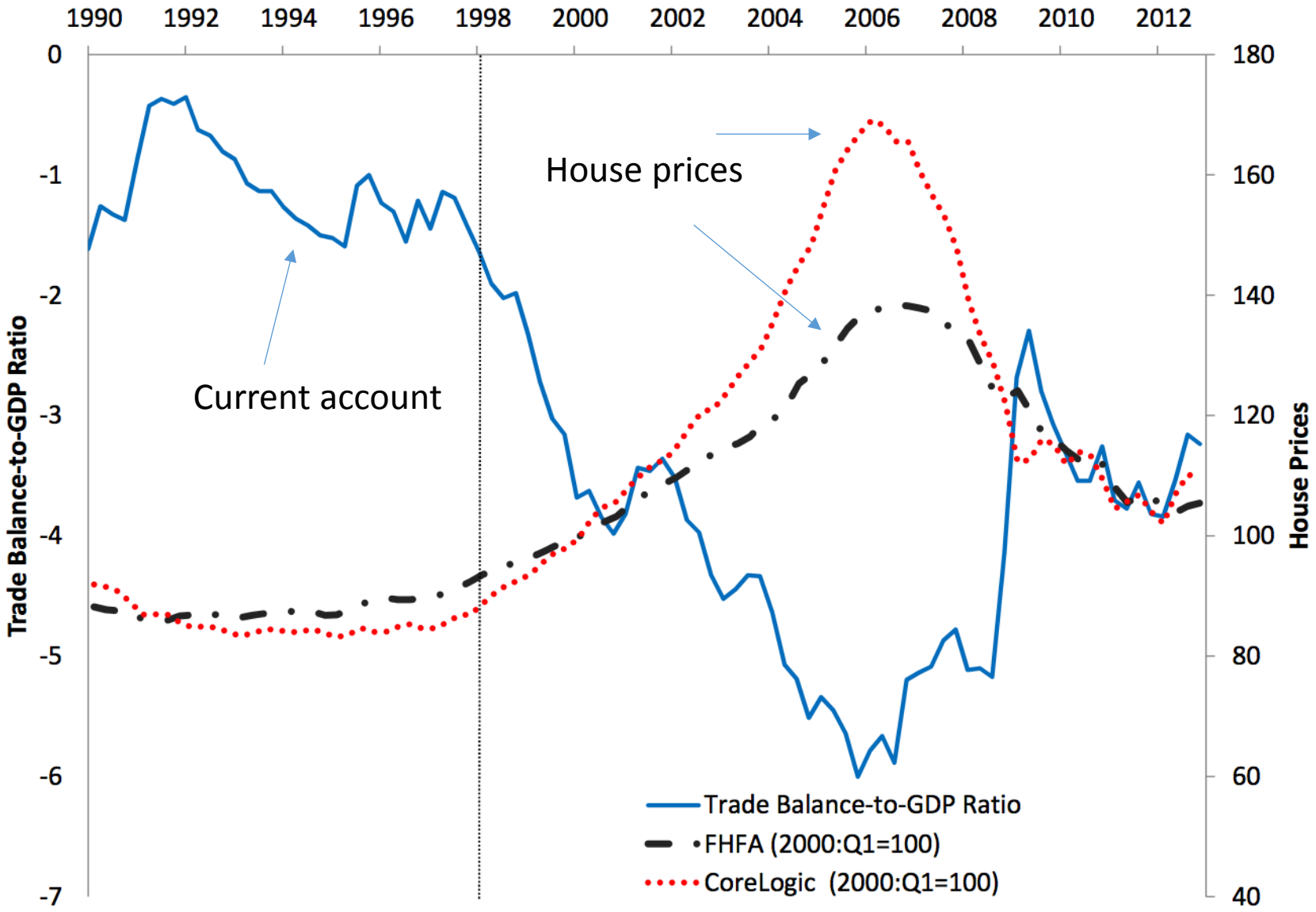
- Recall that the Euro Area current account is roughly balanced.
  - On net, financial flows between the US and EA balanced.

- But, the gross flows between US and EA are huge and of a particular type.

  - In particular, European banks have been buying mortgages in US financial markets and financing them by issuing ABCP in the US markets.

  - Recall Rhineland.

Consistent with idea that housing purchases being funded by Inflow of foreign capital corresponding to current account deficit.

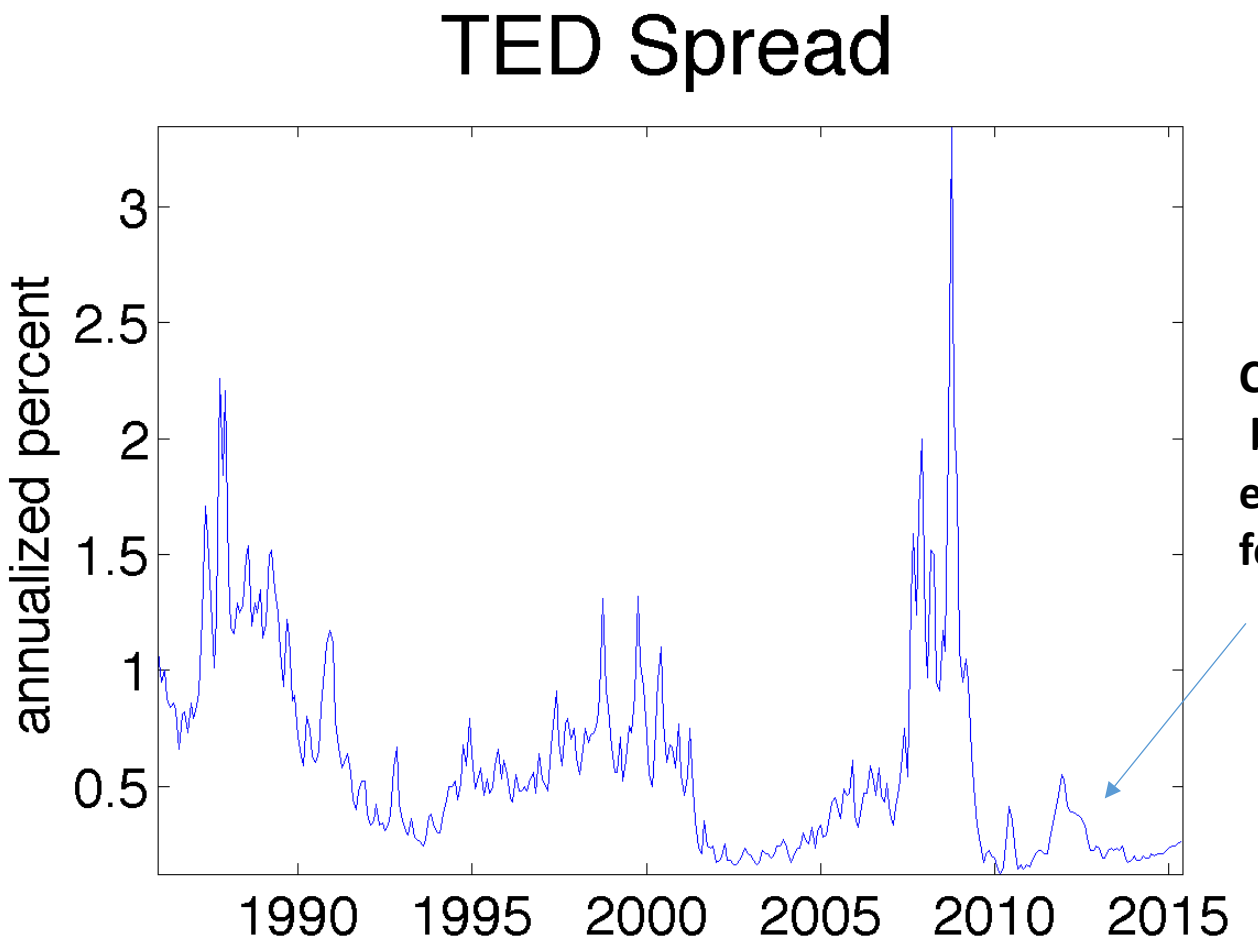


Source: Justiniano, Primiceri and Tambalotti (*JIE*2014), "The Effects of the Saving and Banking Glut on the US Economy".

Summary of Analysis so Far

- Foreigners got excited about US financial assets.
    - Financial capital pours into the economy.
    - Big current account deficit.
    - Regulatory controls break down, for reasons discussed above.
    - Shadow Banking System balloons, economy vulnerable to run.
- Housing bubble comes to (inevitable) end.
    - Hits economy that is vulnerable to run.
    - Collapse.
- Analysis bears some similarity to analyses of emerging market crises in 1990s and earlier, except:
    - No sudden stop induced by capital flow reversal, no currency crisis.
    - No US government debt crisis (arguably, the crisis is that there is *too little* US government debt to satisfy world demand).

Banking crisis is not the whole story.



Crisis appears to be over by summer, 2009, but economy remains weak for years.

Rest of the story

- Weak consumption by homeowners that felt poor as a result of drop in house values.
  - Increased saving.

- Investment lower because
  - Tightening lending standards made borrowing higher.
  - Weak economy, made return on investment projects seem less attractive.

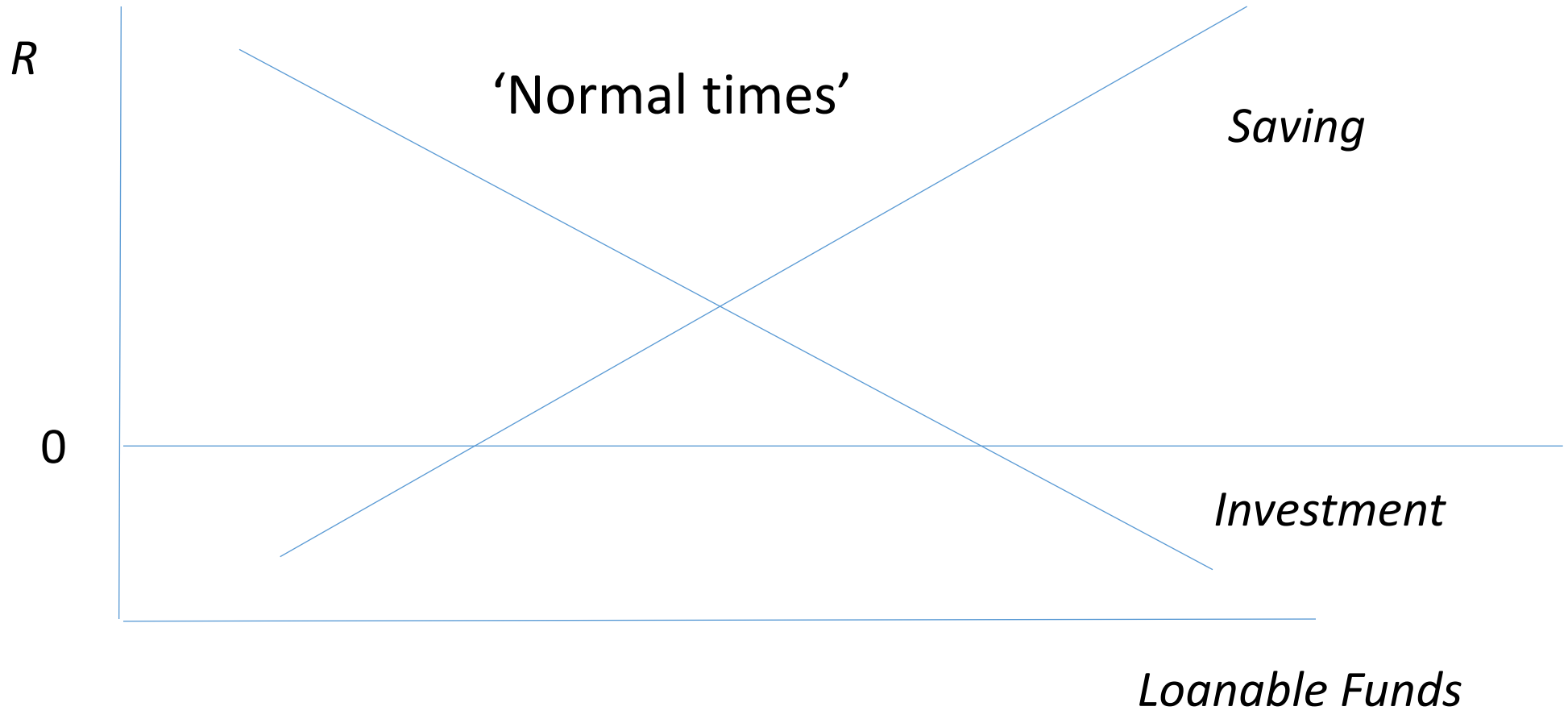
Lower Bound on Nominal Rate of Interest

- Just because some groups of people cut back on spending does not mean you have to have a Great Recession.
  - In a well-functioning market economy, interest rate should drop to encourage someone else to spend.
- If someone else does not expand spending, a recession will occur.

$$GDP = C + I + G + NX$$

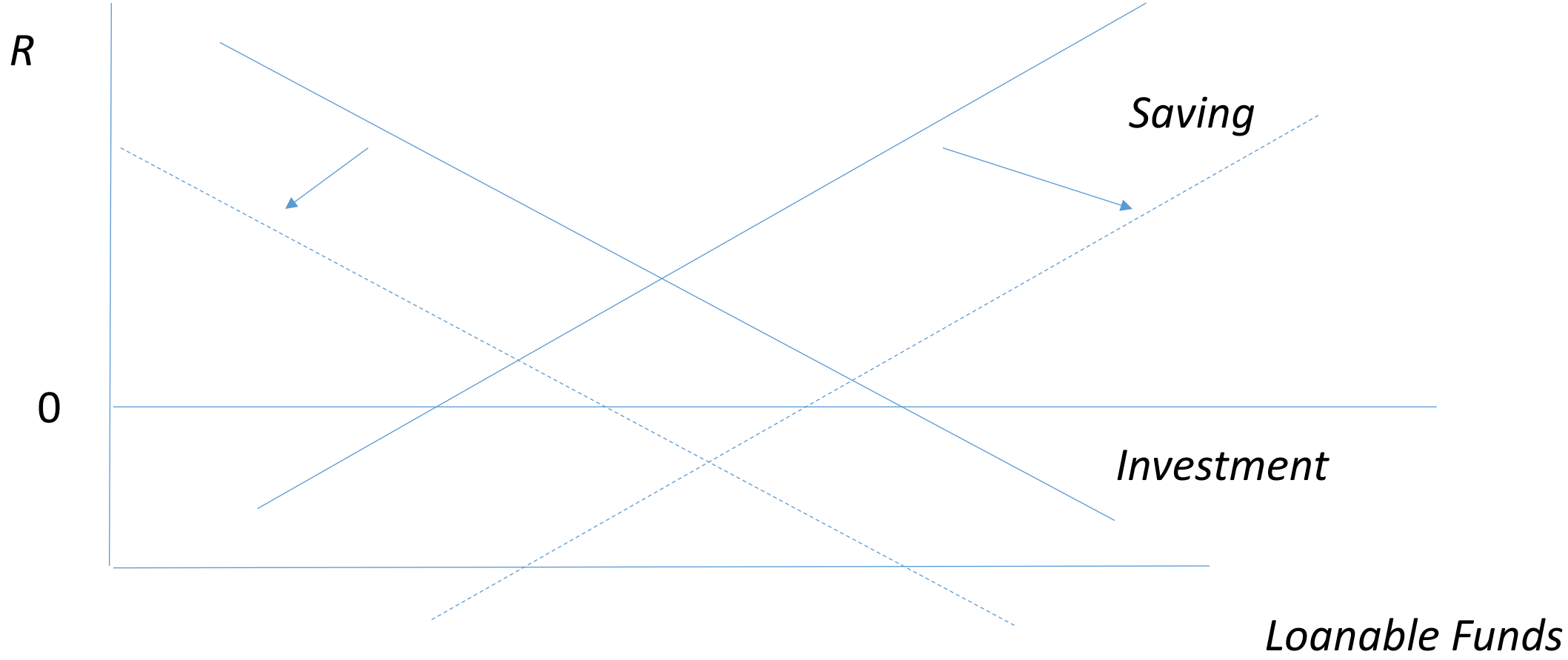
- The fact that the interest rate hit a lower bound, prevented the operation of this healing force.

The Zero Lower Bound Idea



The Zero Lower Bound Idea

Crisis: loan market clearing requires (impossible) negative interest rate.
Clearing brought about by fall in GDP, which reduces saving for consumption-smoothing reasons.



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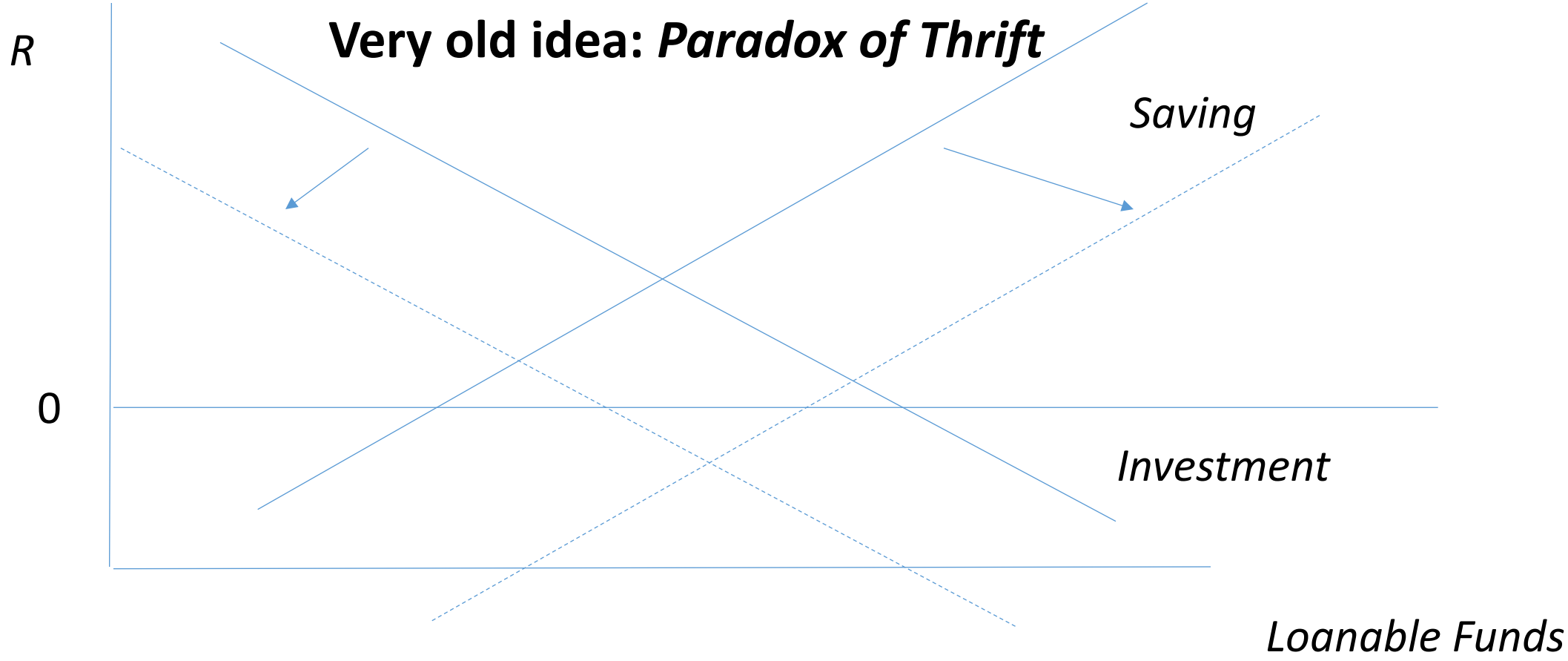


Why did so few (including macroeconomists) predict the Great Recession?

- No one was paying attention to the shadow banking system.
- Most people thought intermediation went through the commercial banks regulated by the Fed, or through ordinary bond and equity markets.
- This ‘normal’ financial system seemed perfectly safe.
- In the Panic of 2007, most people had never heard of the markets that were involved.
  - Even someone as astute as Ben Bernanke acknowledges that he vastly underestimated the size and systemic risks posed by the shadow banking system.

Implications for Macroeconomics

- The Great Recession was a consequence of a massive demand shock.
  - Nothing happened to the supply side of the economy.
  - Shock to investment (residential and non-residential) and consumption.
  - We need a framework in which demand shocks have real effects.

- Because of this, the (New) Keynesian model has come roaring back in popularity
  - With sticky prices, demand shocks can have a big effect, particularly if the interest rate lower bound becomes binding.

- But, the New Keynesian model needs fleshing out.
  - Fortunately, it is an excellent platform to build on.

What’s to be done?

- The labor market side of the NK model needs improvement.
- But, that’s another story….
- Suffice it to say, huge progress has occured on the labor market.
  - Christiano-Eichenbaum-Trabandt (*Econometrica*, 2016)

Financial Side of the NK Model

- A number of challenges present themselves.
- Need a model of the banking system that incorporates the shadow banking system and bank runs (see, e.g., Gertler-Kiyotaki-Prestipino 2015).
- Use the model to contemplate macro prudential policy.
  - Quantify trade-offs between riskiness and efficiency of the banking system.
- The Fed and Treasury undertook various policies that seemed to produce good results (at least, we didn't have a second Great Depression!)
  - The Fed replaced part of the private intermediation system by acquiring massive amounts of private assets.
  - Much progress has been made in developing models that can be used to think about this (Gertler-Kiyotaki, Christiano-Ikeda, 2013, 2014).

Macro is Being Transformed

- Integrating finance and labor market frictions into dynamic models requires whole new kinds of training.

  - Finance - must master the various types of agency problems in intermediation
    - Adverse selection, hidden effort, asymmetric information and costly verification, running away.

  - Labor markets – the labor literature is huge and exploding as we speak.
    - Bargaining, dynamic models of insurance….hard stuff. Lots to be found in the labor literature.

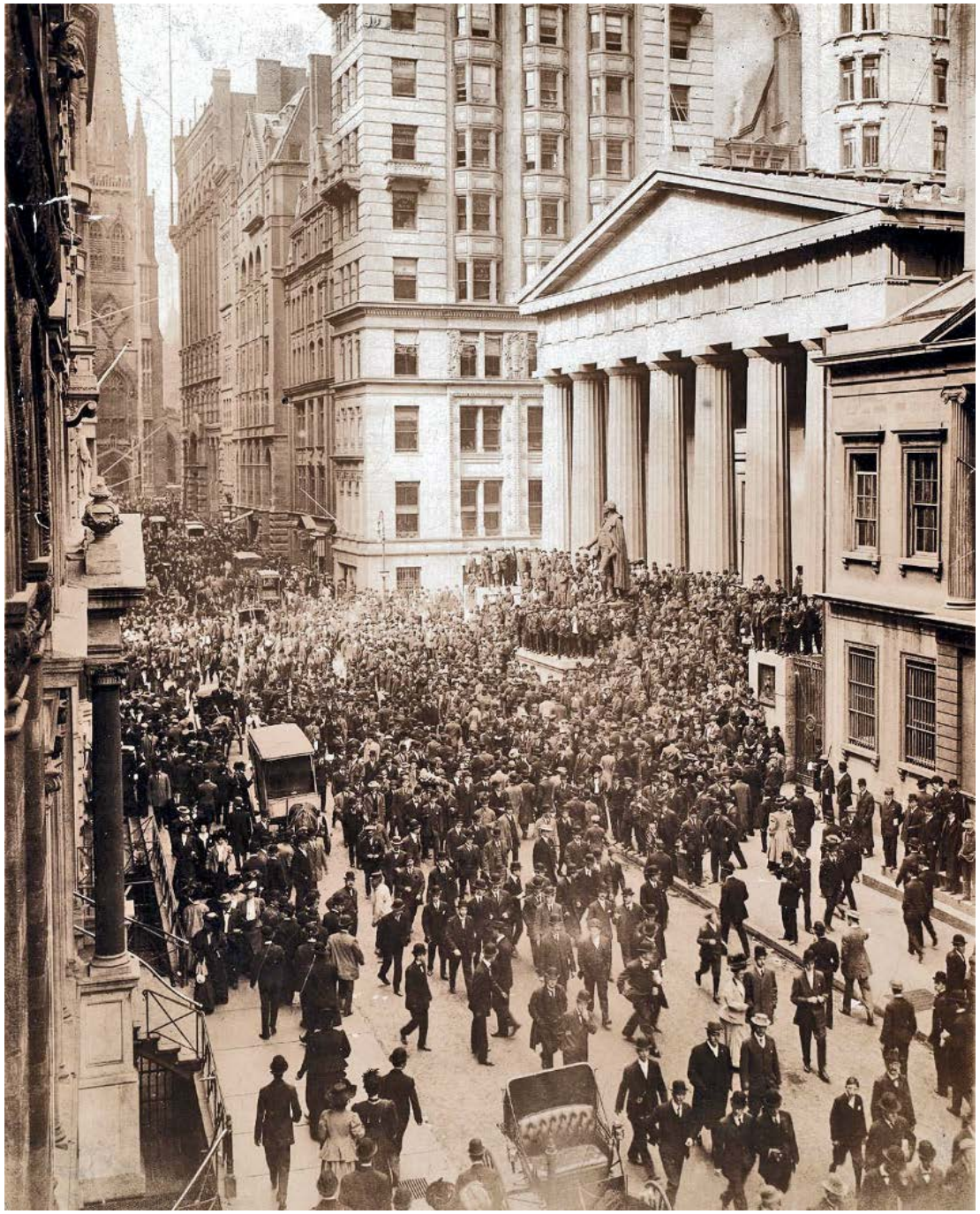
- What I see in macro seminars and conferences in recent years is completely different from what I saw before the crisis.
  - The difference is so big, it feels as though we've all been struck by an earthquake.
  - Hence, the title for my presentation.

The big picture…

- Arguably, macroeconomics was born in the 1930s, in the horror of the Great Depression.
  - That is when the national income and product accounts (NIPA) were developed.
- Keynesian economics was organized around the NIPA accounts.
  - It's a vision under which market economies work pretty well much of the time.
  - But, sometimes they can lapse into dysfunction (*banking crisis*), when government intervention may be helpful.
- The history since the 1930s, particularly with the rational expectations revolution, is one of constantly improving the foundations of the framework initially sketched by Keynes.
  - The Great Recession has triggered an enormous growth spurt.

This is what a bank run looked like historically.

This time, bank runs were invisible to most people (Gorton).



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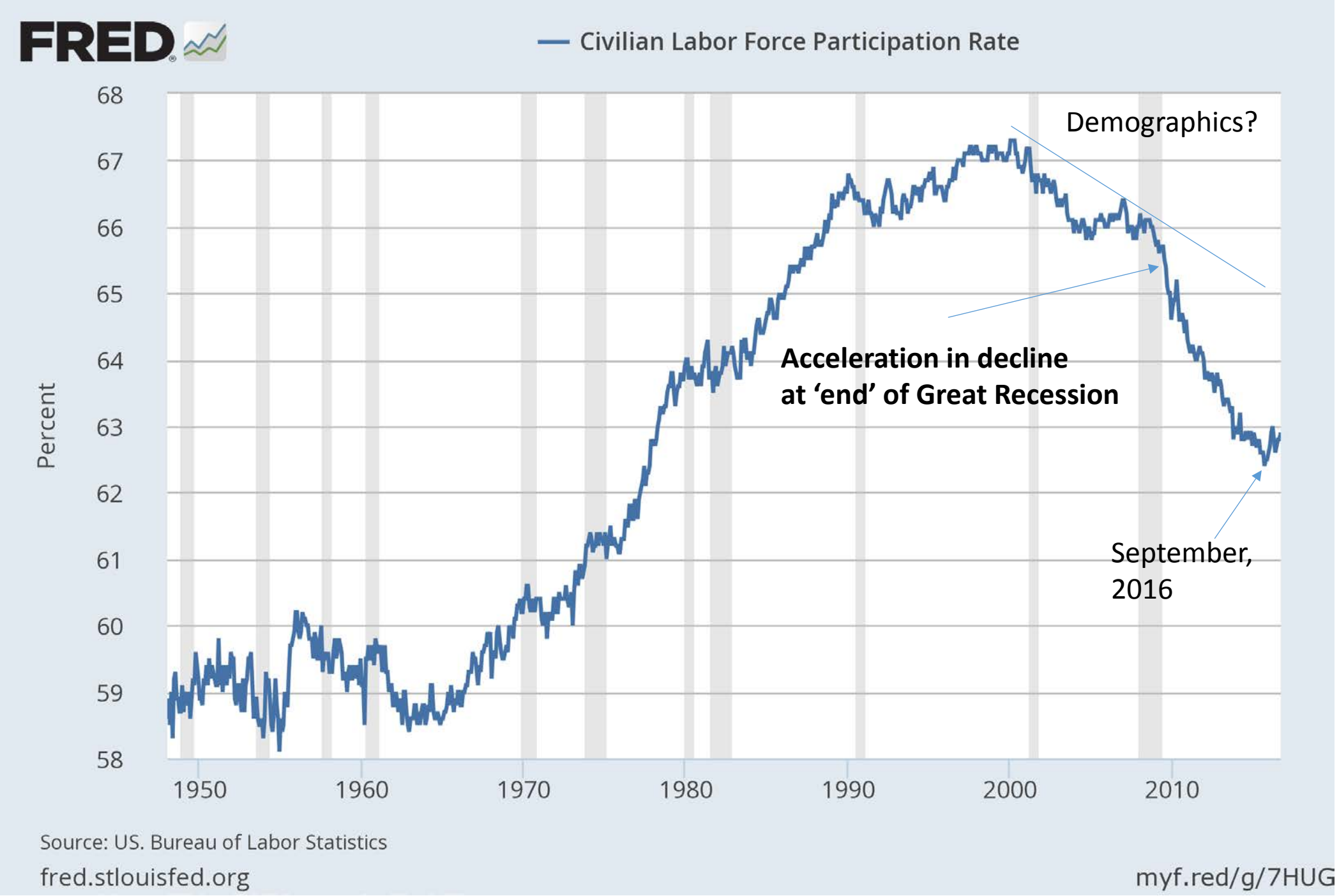
FRED
Civilian Labor Force Participation Rate
Percent
68
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1950
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2010
Demographics?
Acceleration in decline
at 'end' of Great Recession
September,
2016
Source: US. Bureau of Labor Statistics
fred.stlouisfed.org
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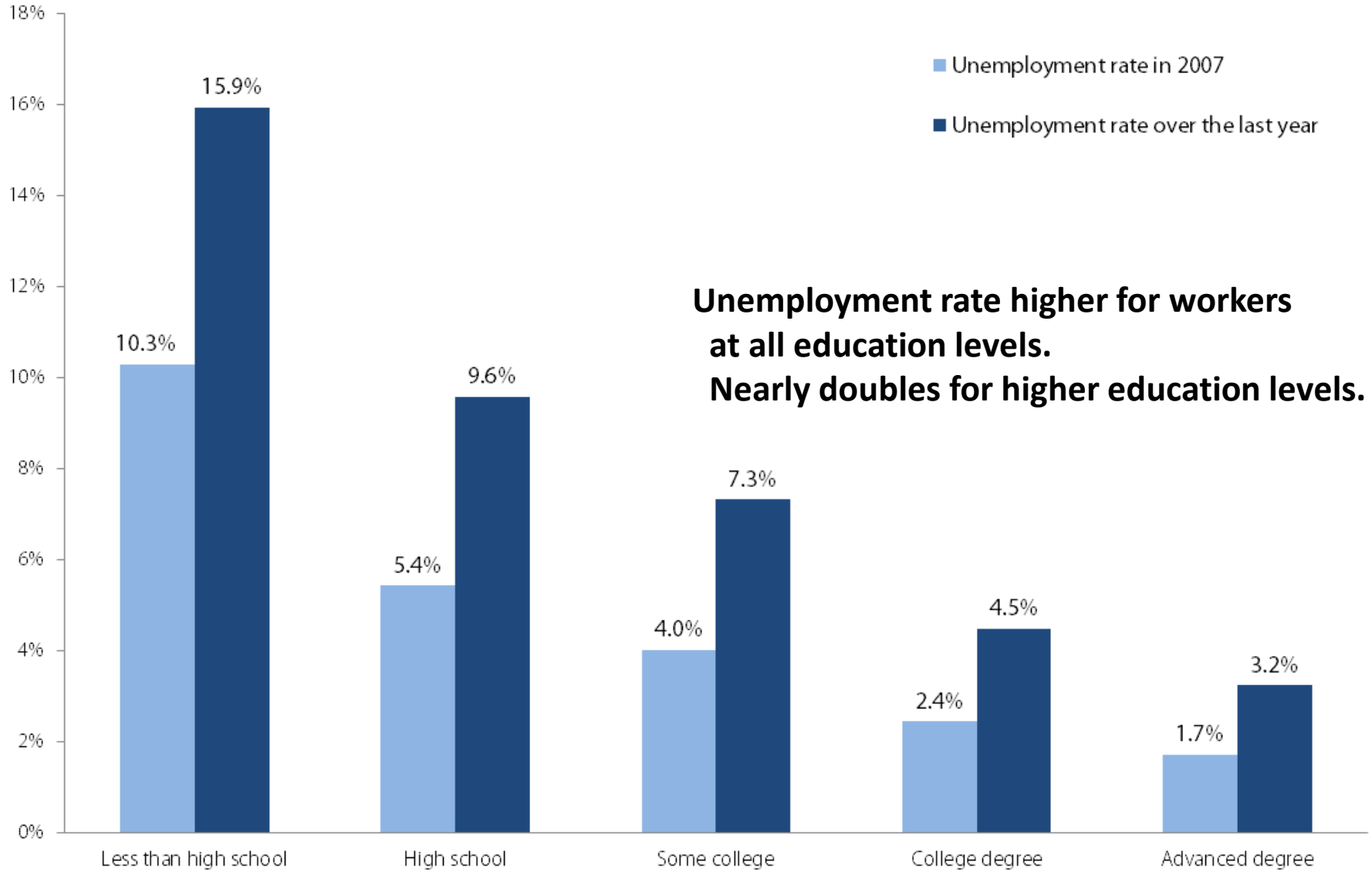
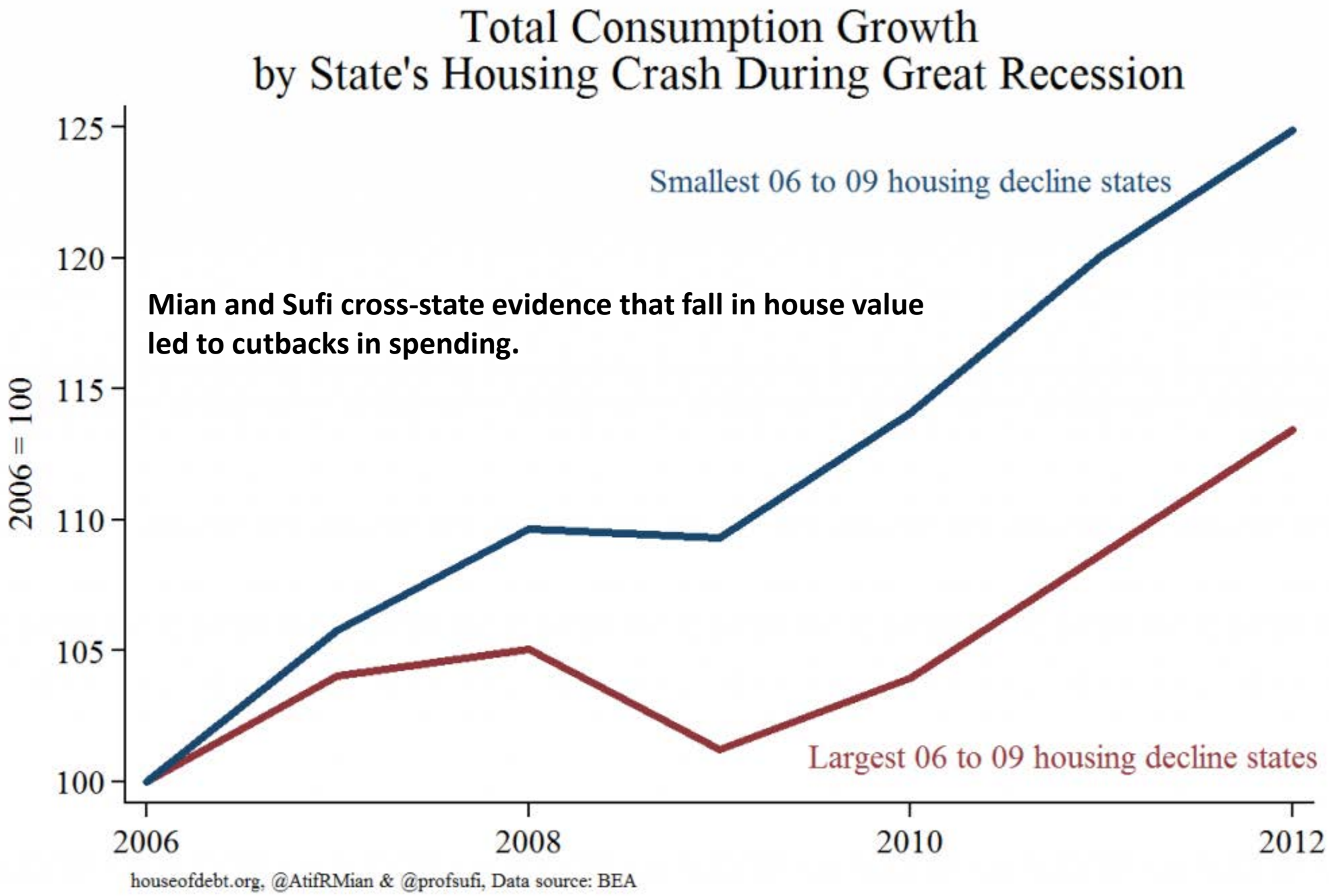
Figure 1: High unemployment at *all* levels of education relative to 2007



Unemployment rate higher for workers at all education levels.
Nearly doubles for higher education levels.

Note: Due to the fact that the data are not seasonally adjusted, 12 month averages are used. The last 12 months consist of data from August 2012 to July 2013.
Source: Author's analyisis of Current Population Survey microdata



Mian and Sufi cross-state evidence that fall in house value led to cutbacks in spending.

Source: Mian and Sufi, http://houseofdebt.org/2014/08/08/more-evidence-supporting-the-house-of-debt.html