

# Mobile Collateral versus Immobile Collateral

Gary Gorton, Yale and NBER

Tyler Muir, UCLA



# Introduction

- Lucas Critique: How can we do policy evaluation?
- The Liquidity Coverage Ratio.
- Financial history.



# Using Economic History to Evaluate Policy

- We use the experience of the U.S. National Banking Era, 1863-1914, to learn about the LCR.
- Under the National Banking Era regulations, banks' notes ("national bank notes") were required to be backed one-for-one with Treasuries.



# Agenda

- Examine the transformation of the financial system to a system of mobile collateral.
- Provide some new evidence on the scarcity of Treasuries now and prior to the crisis.
- Examine National Banking Era
  - Evidence of a convenience yield on Treasuries
  - Rise of a shadow banking system: demand deposits
  - Conceptual confusion
  - Banking panics
- Implications for the future

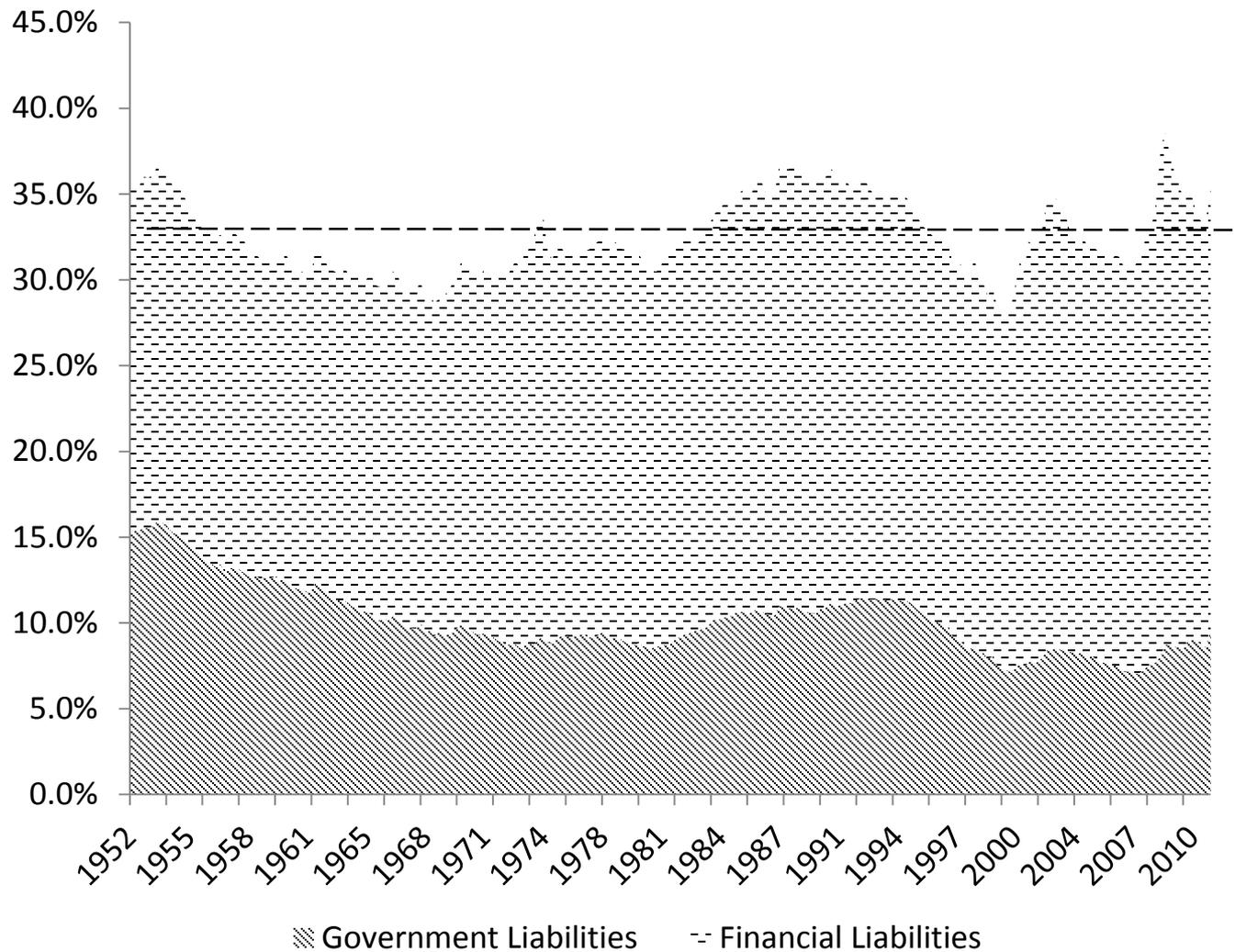


# The Transformation of the Financial System

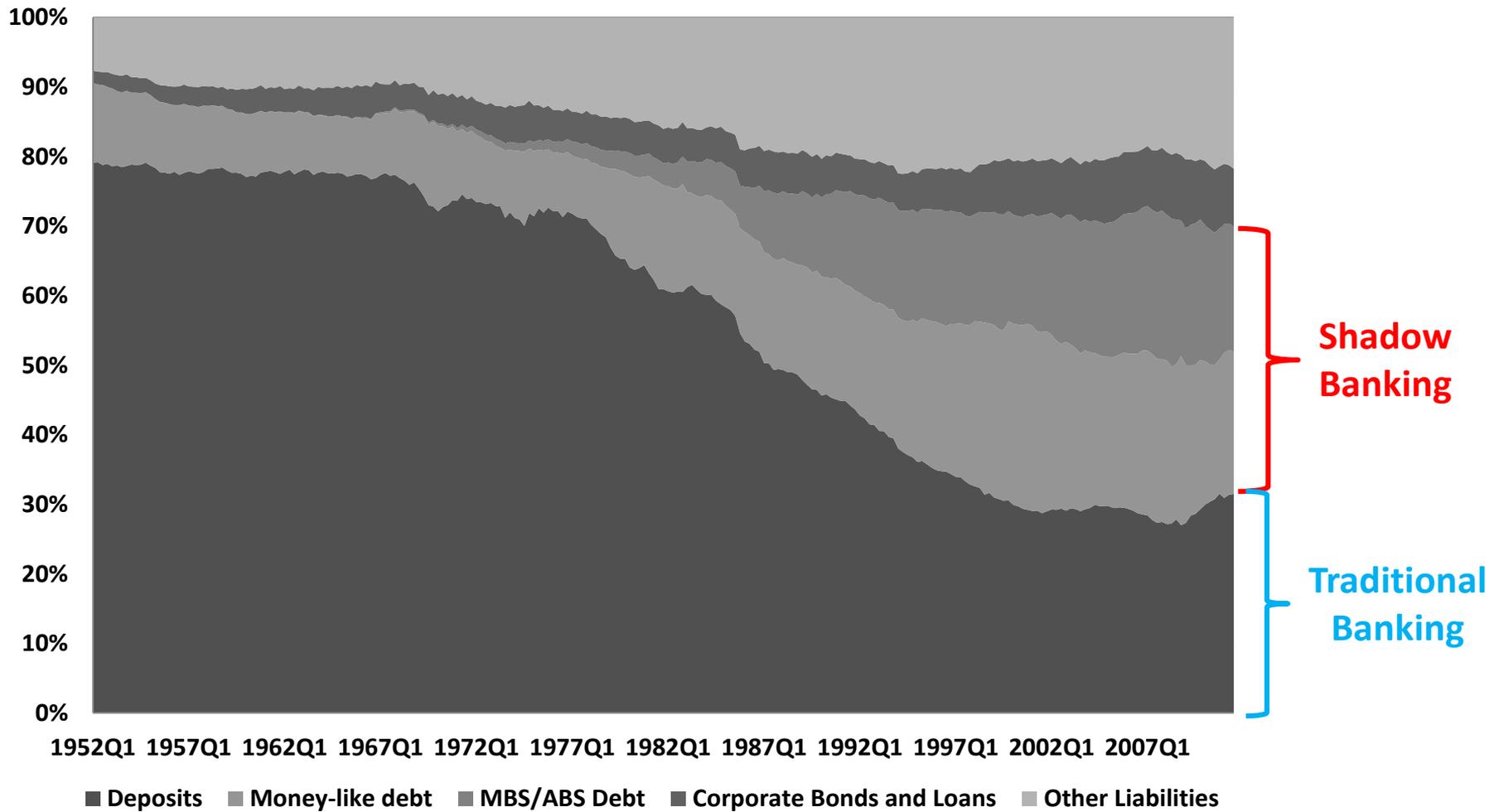
- Over the last 30 years prior to the crisis, the architecture of the U.S. financial system changed.
- **Immobile collateral** bank loans → became **mobile collateral** in the form of MBS and ABS—can be traded, posted in derivative positions, collateral for repo and ABCP, rehypothecated.



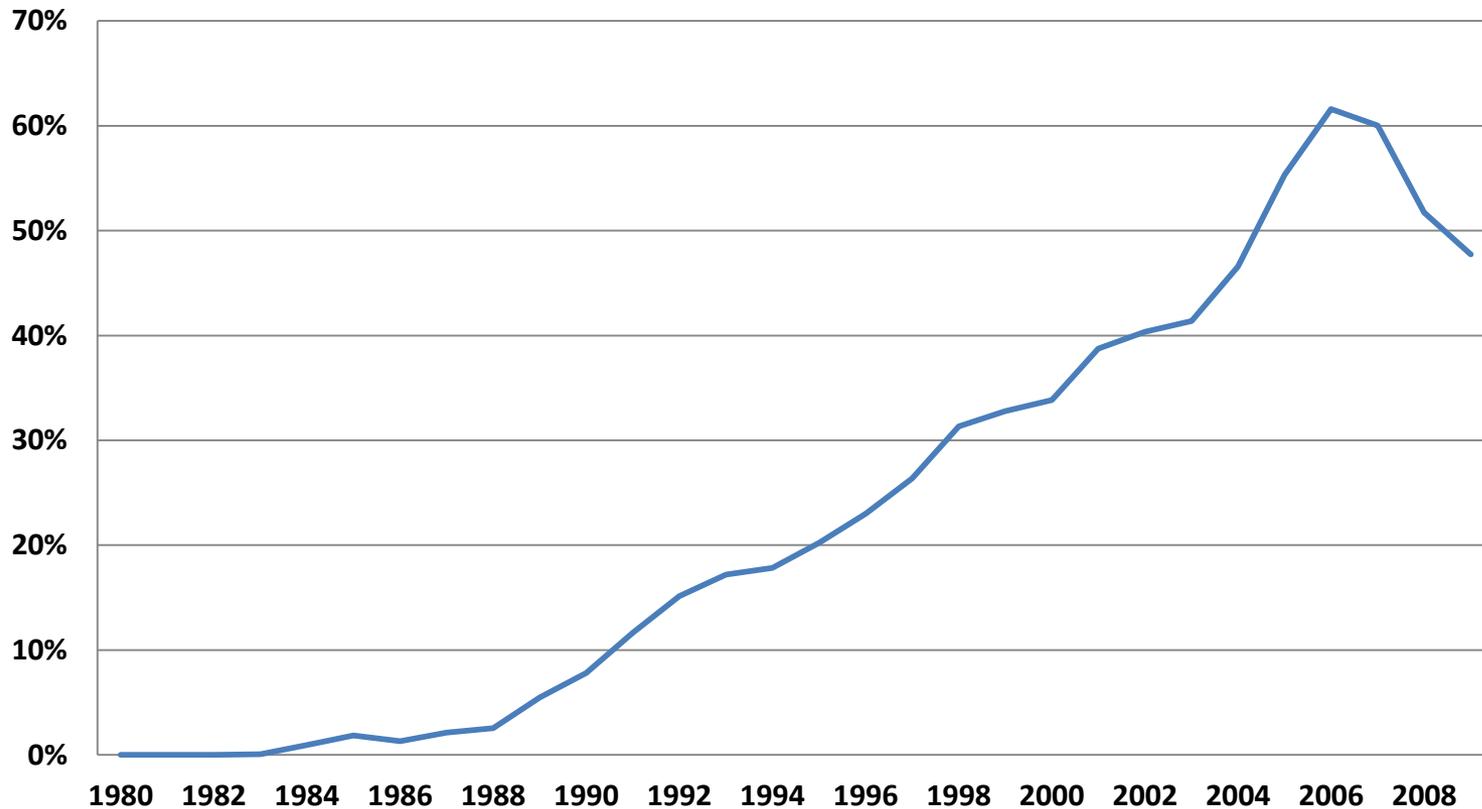
# The Safe-Asset Share (of Total Assets)



## Components of Privately-Produced Safe Debt as a Fraction of Total Privately-Produced Safe Debt (U.S.)



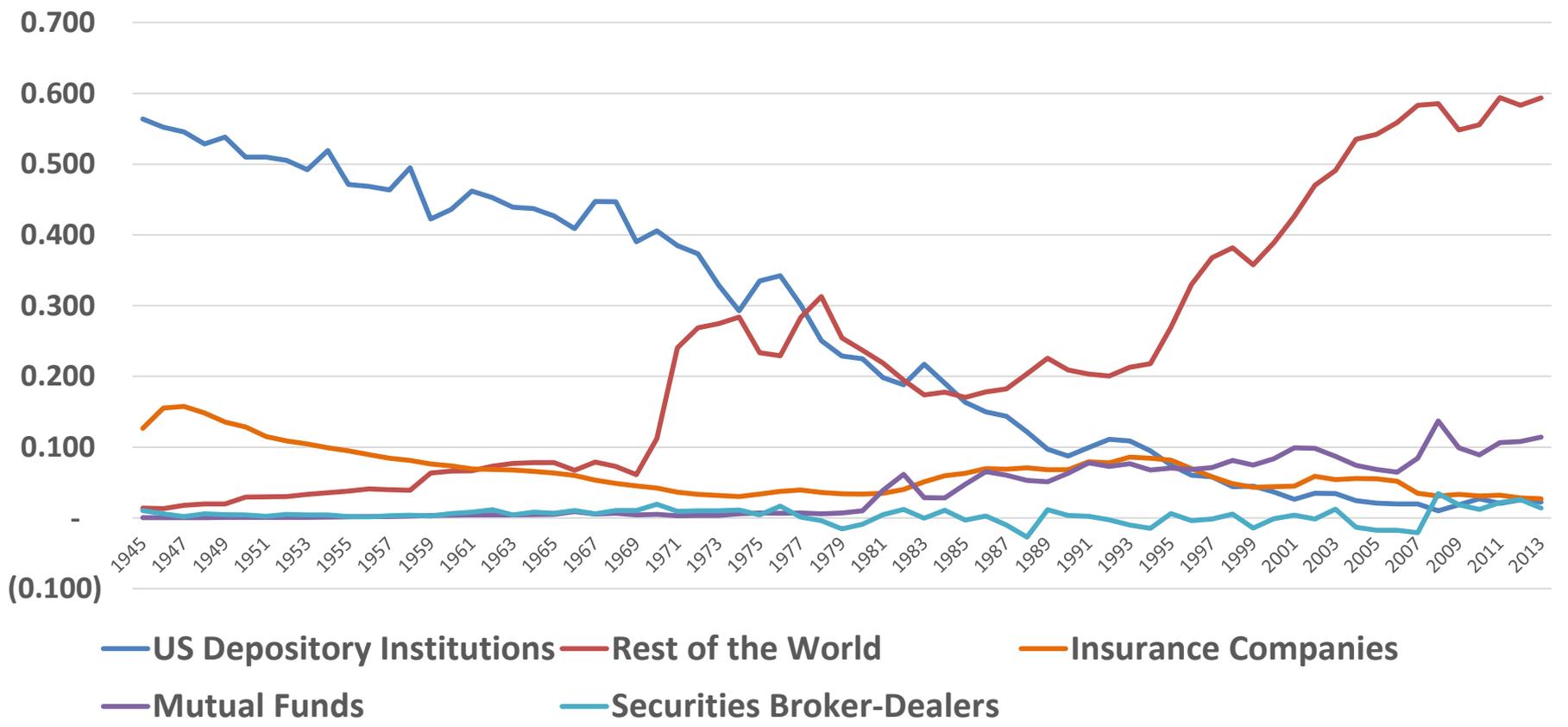
# Ratio of Total Private Securitization to Total Bank Loans



Source: Flow of Funds.

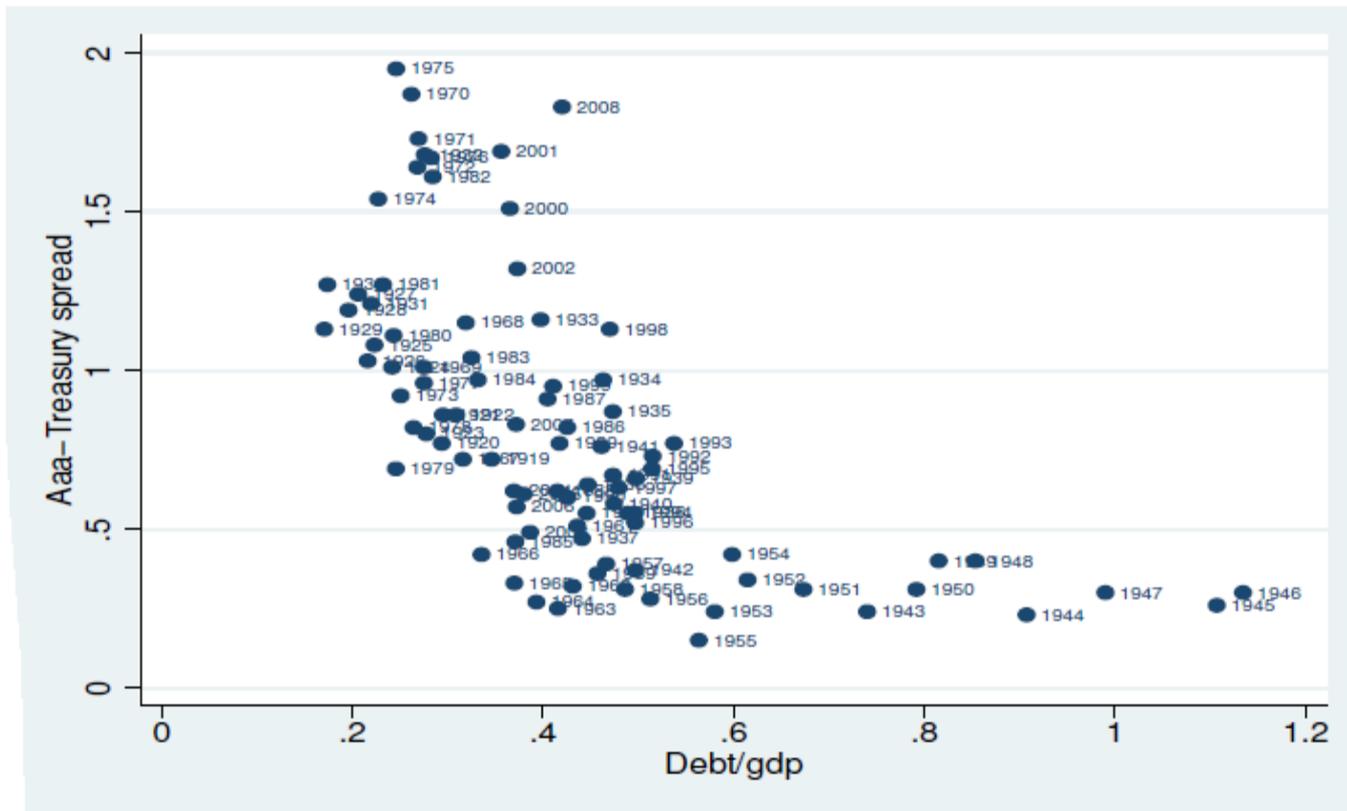


## Holders of Treasury Securities as a Fraction of Total Outstanding



# Treasuries have a Convenience Yield

Yield spread between Moody's Aaa bond yield and long term Treasury yield, versus Publicly held US Treasury Debt/US GDP. 1919-2008.



# Private Response to Scarcity of Treasuries

- Lei (2012): Examines *daily* issuance data on 20,000 MBS/ABS deals with 300,000 tranches from 1978-2011.
- Finds that MBS/ABS issuance occurs when convenience yield rises.
- Sunderam (2014) finds the same phenomenon with weekly data on ABCP.

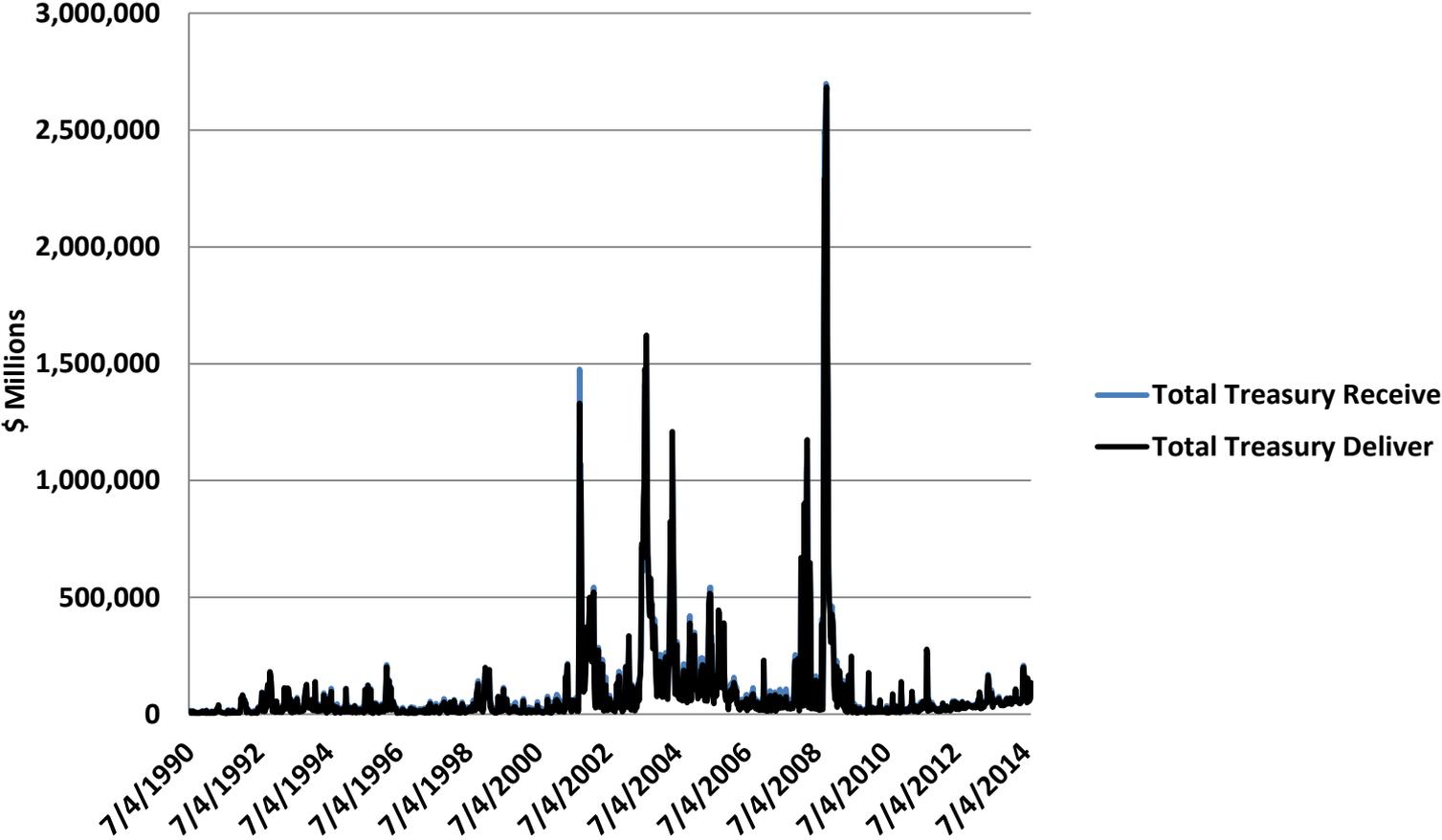


# More Evidence of Scarcity

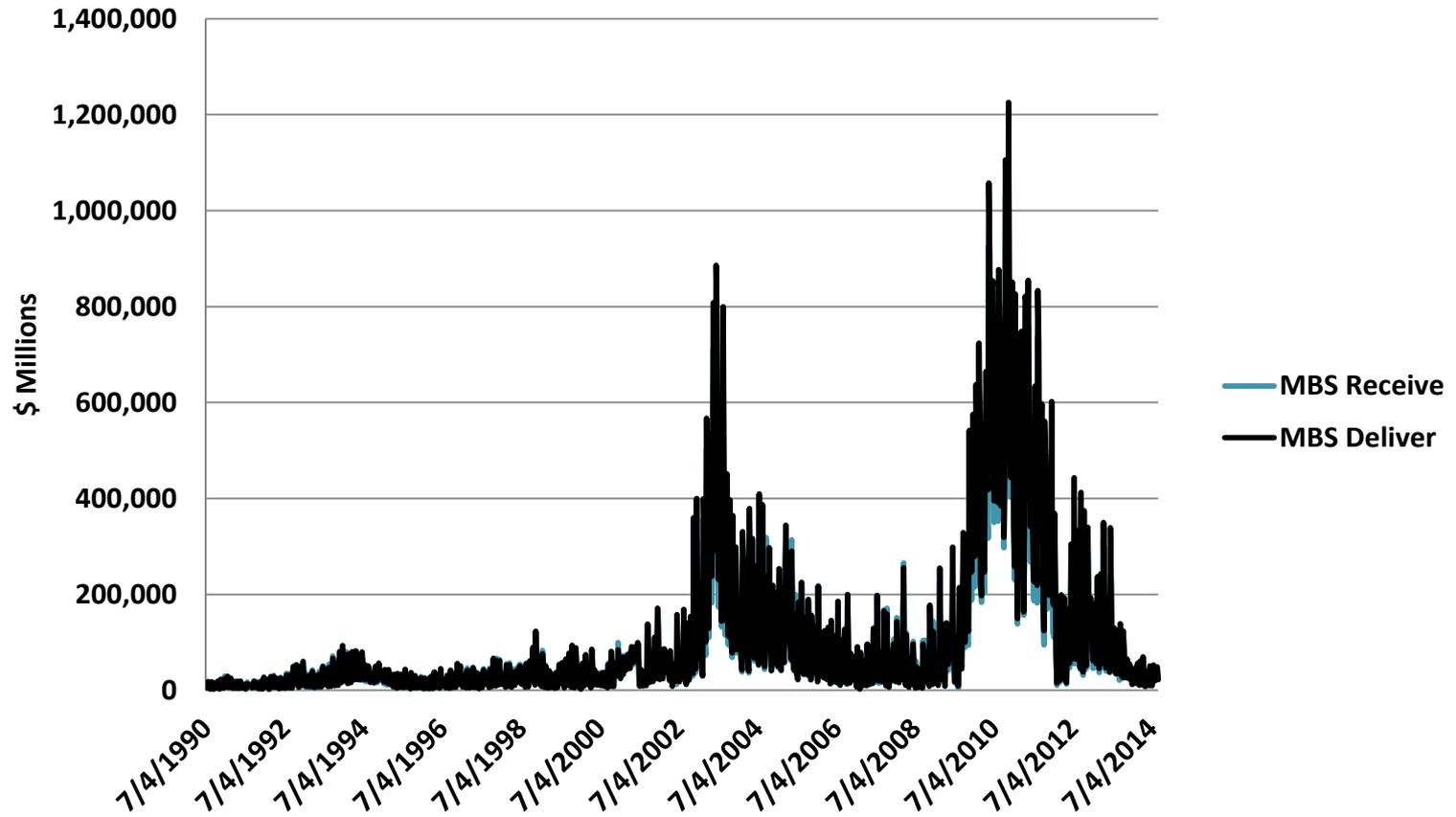
- Repo fails
  - Occur when one side of the contract “fails to deliver” or “fails to receive”
- Question: Are fails due to a shortage of safe debt?



# Primary Dealer Treasury Fails



## Primary Dealer MBS Fails



U.K. Man Arrested on Charges Tied to 'Flash Crash' | U.S. Stocks Fall on Mixed Earnings | Limited Fallout From Greek Bond Slump

- f 60
- t 191
- e
- s
- g
- AA
- ⋮

MARKETS

## Pressure in Repo Market Spreads

Stresses amplify price swings in government bonds

By **KATY BURNE**

April 2, 2015 6:23 p.m. ET

A shortage of high-quality bonds is disrupting the \$2.6 trillion U.S. market for short-term loans known as repurchase agreements, or “repos,” creating bottlenecks for a key source of liquidity in the financial system and sending ripples through short-term debt markets.

Stresses in the repo market are amplifying price swings in government bonds and related debt markets.



# Regressions

- Repo fails related to a rise in the scarcity premium or convenience yield (GC repo spread).
- When Treasuries are scarce, there are more repo fails.



# A Measure of Scarcity

- GC Repo minus Treasury (1 month)



# Regimes

- Find regimes using an econometric procedure of Bai (2010); finds breaks in panel data.

Panel A: Treasury and Agency Bonds

	Break Date	Lower Bound	Upper Bound
First Break	12-Sep-01	2-May-01	16-Jan-02
Second Break	24-Sep-08	11-Jun-08	31-Dec-08
Third Break	11-Feb-09	14-Jan-09	4-Mar-09



	$\Delta$ Fails Rec					
GC Repo-1m T-bill	6.963*** (5.57)	0.695 (0.41)	7.303*** (5.78)	0.640 (0.38)	7.509*** (5.91)	0.620 (0.36)
L1.GC Repo-1m T-bill			2.609* (2.07)	0.818 (0.48)	2.951* (2.31)	0.648 (0.38)
L2.GC Repo-1m T-bill					2.495* (1.96)	0.316 (0.19)
GC Repo-1m T-bill x Break 1		13.35*** (5.14)		13.96*** (5.26)		13.35*** (5.03)
L1.GC Repo-1m T-bill x Break 1				2.492 (0.95)		1.894 (0.71)
L2.GC Repo-1m T-bill x Break 1						-2.164 (-0.82)
GC Repo-1m T-bill x Break 2		39.57*** (7.36)		45.66*** (8.46)		44.08*** (8.20)
L1.GC Repo-1m T-bill x Break 2				33.27*** (6.55)		37.98*** (7.46)
L2.GC Repo-1m T-bill x Break 2						32.26*** (6.43)
GC Repo-1m T-bill x Break 3		-1.485 (-0.13)		-1.878 (-0.16)		-1.185 (-0.10)
L1.GC Repo-1m T-bill x Break 3				4.103 (0.36)		4.818 (0.41)
L2.GC Repo-1m T-bill x Break 3						3.120 (0.27)



AIG Plans to Name Brian Duperreault as Next CEO



China Bonds Send Fresh Stress Signal



The One Bond Market Where Yields are Still at Record Lows



Stocks Retreat From Highs on Disappointing Earnings

Mansion  
AUSTRALIA

Mansion

[CLICK HERE](#)

## MARKETS

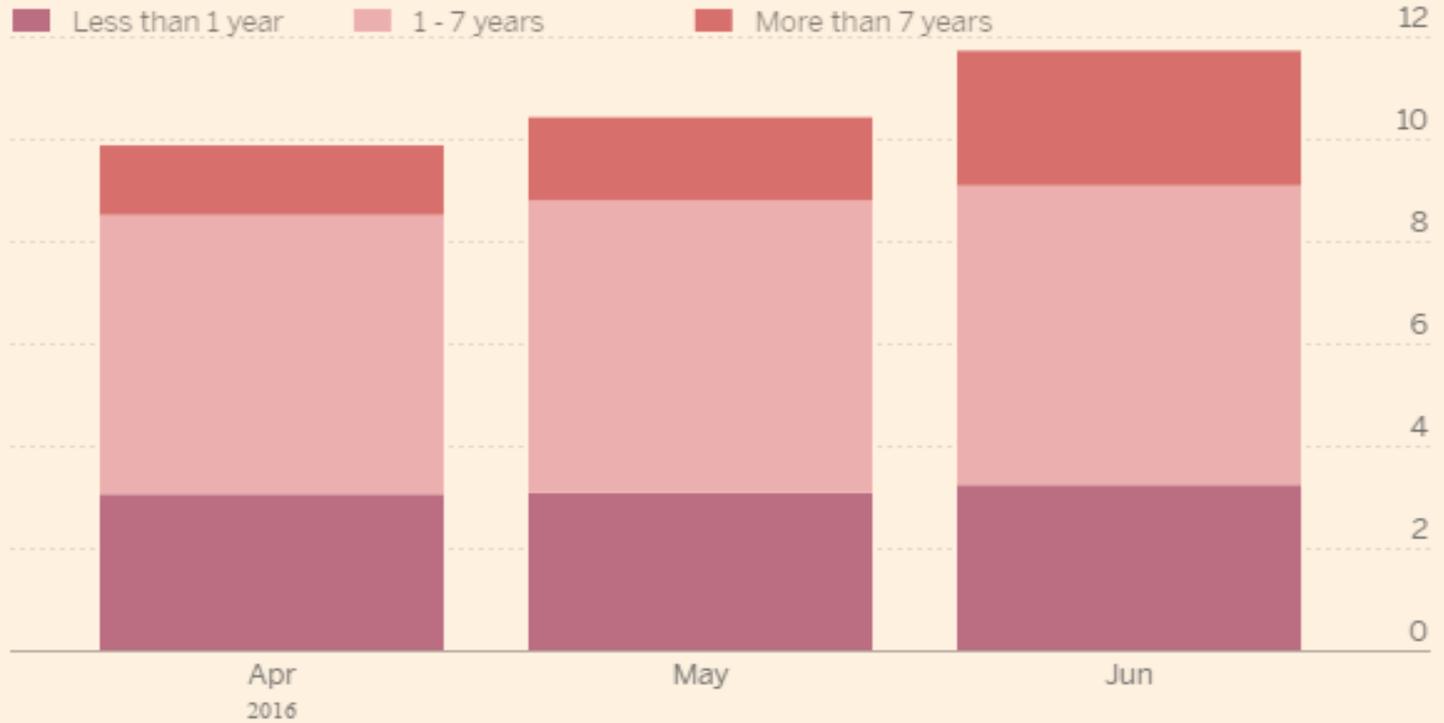
# Who's Sucking Up All the World's Safest Bonds?

Tightening regulation is causing a dearth of safe assets, with clearinghouses at the center of the issue



## Global negative yielding sovereign debt rises to \$11.7tn

\$tn, sorted by maturity



End of April, May | June 27

Source: Fitch Ratings, Adam Samson / FT

FT



# Bank Runs

- This new money—repo, ABCP-- was vulnerable to bank runs, just as in most of U.S. history.





Yale SCHOOL OF MANAGEMENT

# The National Banking Era

- National Banking Act passed in 1863 to finance Civil War.
  - Set up a new system of National Banks
  - These banks could issue bank-specific national bank notes by depositing US Treasuries with the Treasury Dept.
  - Expected to end banking panics.





# The Under-Issuance Puzzle

- Too little money was issued, the “under-issuance puzzle” - - a puzzle for over a century!

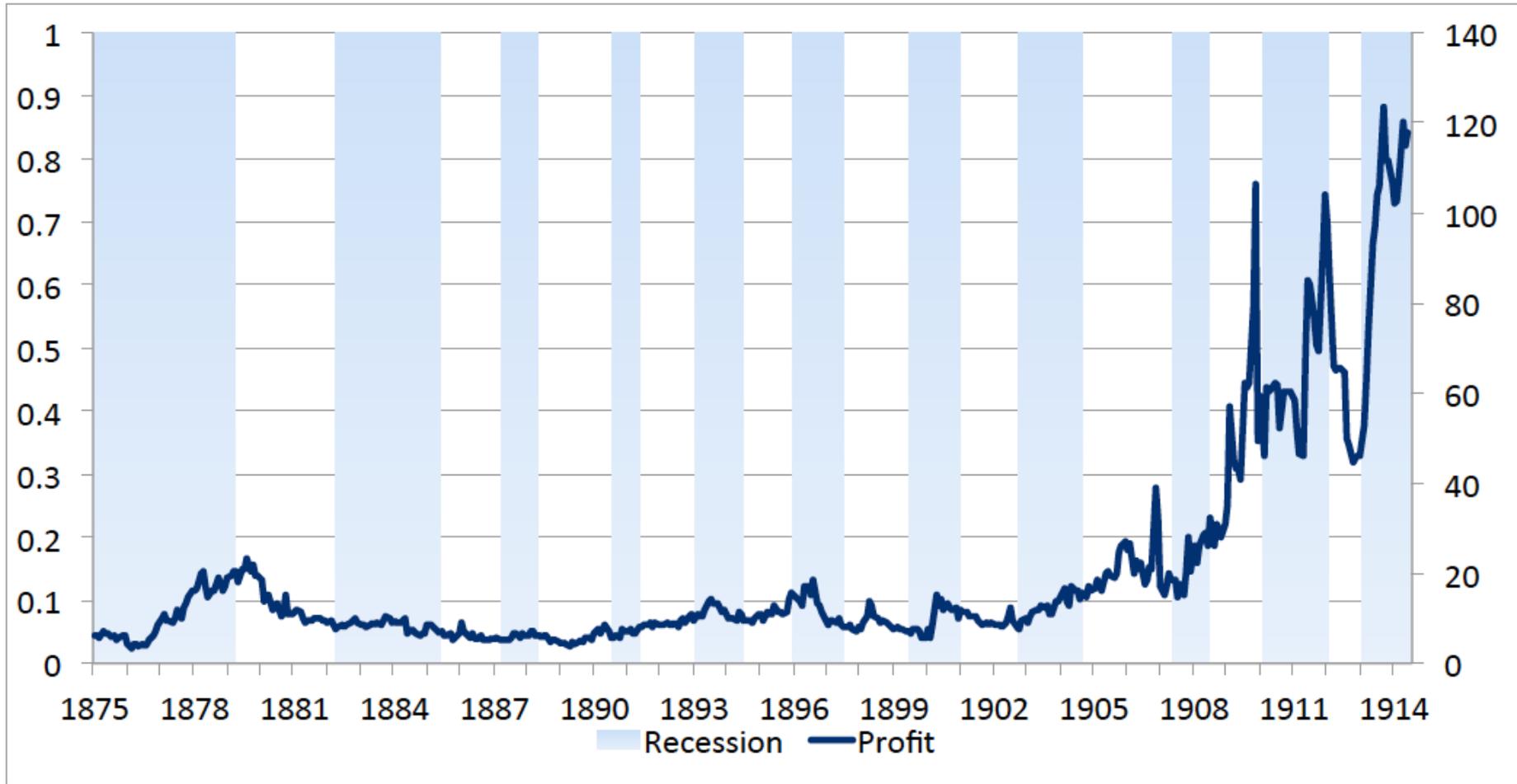


# Riskless Arbitrage?

- It was profitable to buy Treasuries, deposit them, and issue bank notes.
- $r \approx \frac{(0.04)(1.10) - (0.017)(0.9)}{1.10 - 0.9} \approx 14.4\%$ 
  - Bond price=\$1.10 with yield of 4%
  - 0.017 is issuance cost
  - 0.9 is the fraction of the bond that can be issued as notes
  - Denominator is leverage that can be obtained.



# Profit Series (shaded areas = recessions)



## But . . .

- There was no arbitrage opportunity. “Profit” due to:
  - a convenience yield on Treasuries
  - and costly bank capital.
- Treasuries were scarce. Costly to borrow, hard to find.
  - “The rate is 1.5 to 2 percent for borrowing bonds”
  - “The real trouble is to find the bonds”



# “Arb Profits” Reflect Convenience Yield?

- Measures/Proxies for convenience yield:
  - Follow Krish and V-J: outstanding Treasuries to GDP
  - Also look at “available Treasuries”
  - Muni spreads
- No proxies for bank capital (though likely more costly in recessions).



# “Arb Profits” Reflect Convenience Yield?

Panel B:  $y = \ln(\text{profit})$

	(1)	(2)	(3)	(4)	GLS (5)
$\ln(\text{Debt}/\text{GDP})$	-1.78 [-2.35]				
$\ln(\text{Avail}/\text{GDP})$		-1.18 [-4.85]		-1.03 [-6.81]	-0.81 [-5.49]
Muni spread			1.81 [3.83]	0.44 [4.49]	0.38 [2.05]
$\text{Adj}R^2$	0.36	0.67	0.48	0.74	0.54
$N$	34	34	137	34	34



# Results

- “Arb profits” at least partly explained by the scarcity of Treasuries (and costs of bank capital).
  - Banks had other uses for Treasuries
  - Insurance companies also demanded Treasuries
  - Arb profits also related to recession when cost of bank capital likely higher



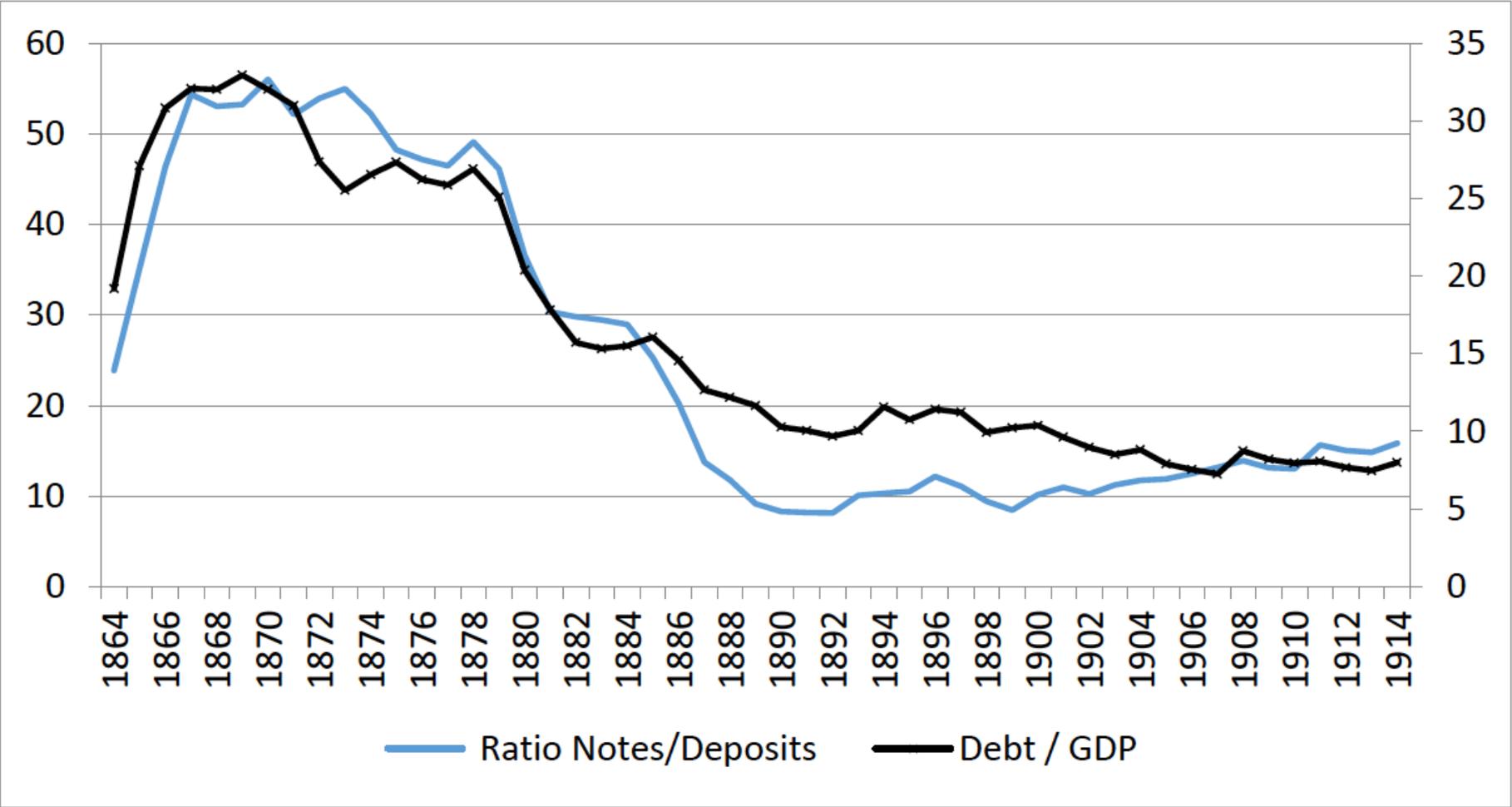
# Meanwhile --

- - - - the shadow banking system grew---
- Scarcity of Treasuries / limited note issuance encouraged demand deposits to grow.



# Ratio of Notes to Deposits and Treasury Debt to GDP

Correlation = 0.96



# Deposit Growth

- U.S. deposit growth 70% faster than in 14 developed countries.



# Demand Deposits not Understood

- Bray Hammond (1957), in his Pulitzer Prize-winning book Banks and Politics in America, wrote: “. . . the importance of deposits was not realized by most American economists . . . till after 1900” (p. 80).
- Russell C. Leffingwell, the Assistant Secretary of the Treasury wrote as late as 1919: “All of these people who believe in the quantity theory of money . . . choose to call bank deposits money, but bank deposits are not money.”



# Conclusions

- Design of Nat'l Banking System led to the rise of demand deposits—"shadow banking."
- Crises were not averted. Five major banking panics (1873, 1884, 1893, 1896, 1907).
- Same problems now:
  - Shortage of safe debt
  - Unintended consequences
  - Conceptual issues



“Those who ignore history are entitled to repeat it.”

