Mobile Collateral versus Immobile Collateral

Gary Gorton, Yale and NBER

Tyler Muir, Yale

The Transformation of the Financial System

- Over the last 30 years prior to the crisis, the architecture of the 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 Financial Crisis Regulatory Aftermath

- New money vulnerable to runs.
- Since the financial crisis, "reform" has aimed to return to the system of *immobile collateral*.
  - Must post collateral to CCPs, but CCPs do not post back.
  - On-balance sheet derivatives require collateral, and it cannot be rehypothecated.
  - The LCR requires essentially that all repo be backed dollar for dollar with Treasuries—a kind of narrow banking. One kind of money backs another kind of money.

Policy Evaluation

- How can we understand the possible effects of the LCR?
  - Lucas Critique → need a GE model
  - Without such a model, what should policy makers do?

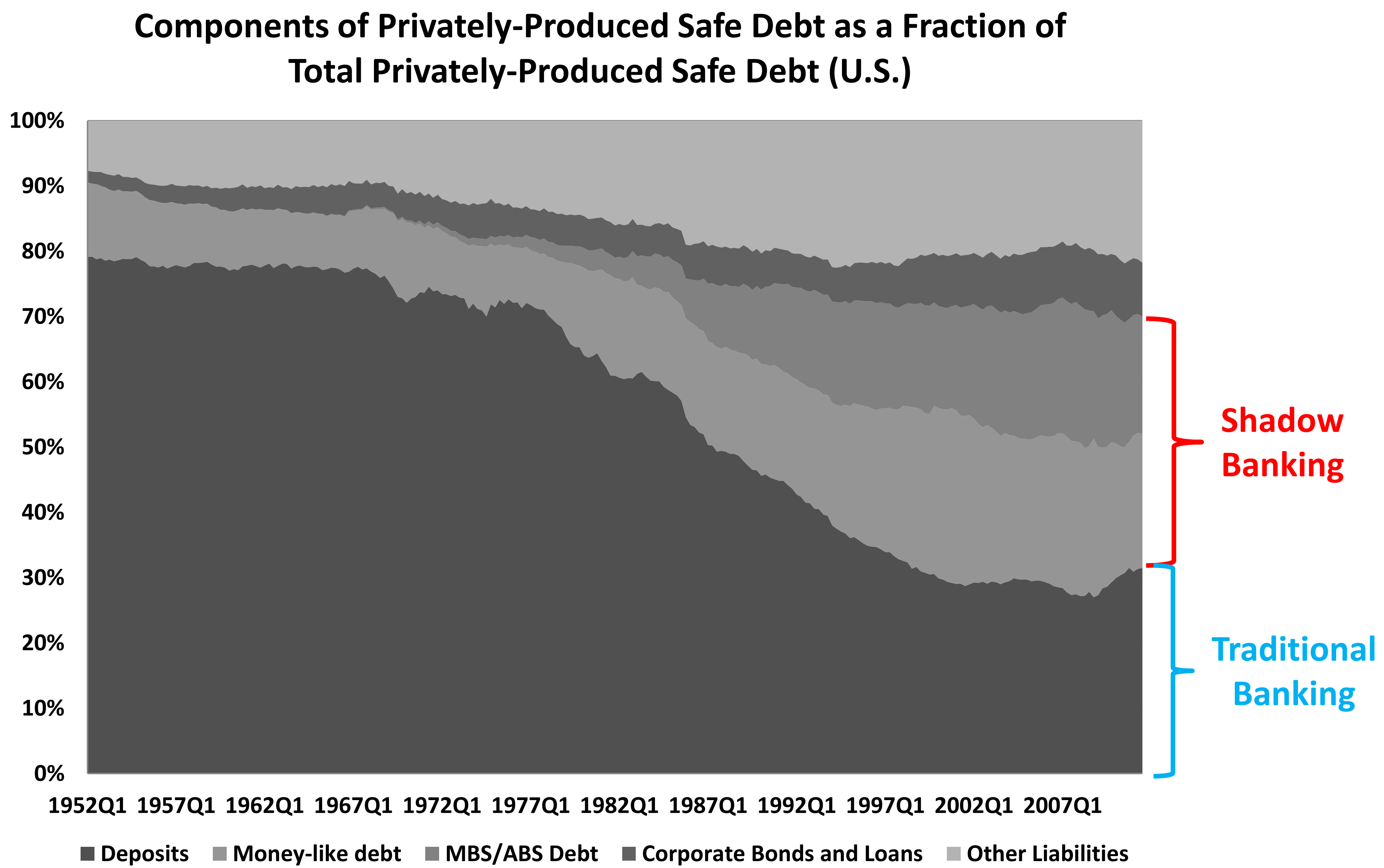
- We tried this system before: the U.S. National Banking Era. Intended to end banking panics.

- Private bank notes had to be backed by Treasuries—didn't go well.


United States of America
12574
THE
FIRST
NATIONAL BANK
OF
FORT MYERS
FIVE DOLLARS
9035
12574
9035

Agenda

- Examine the transformation 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



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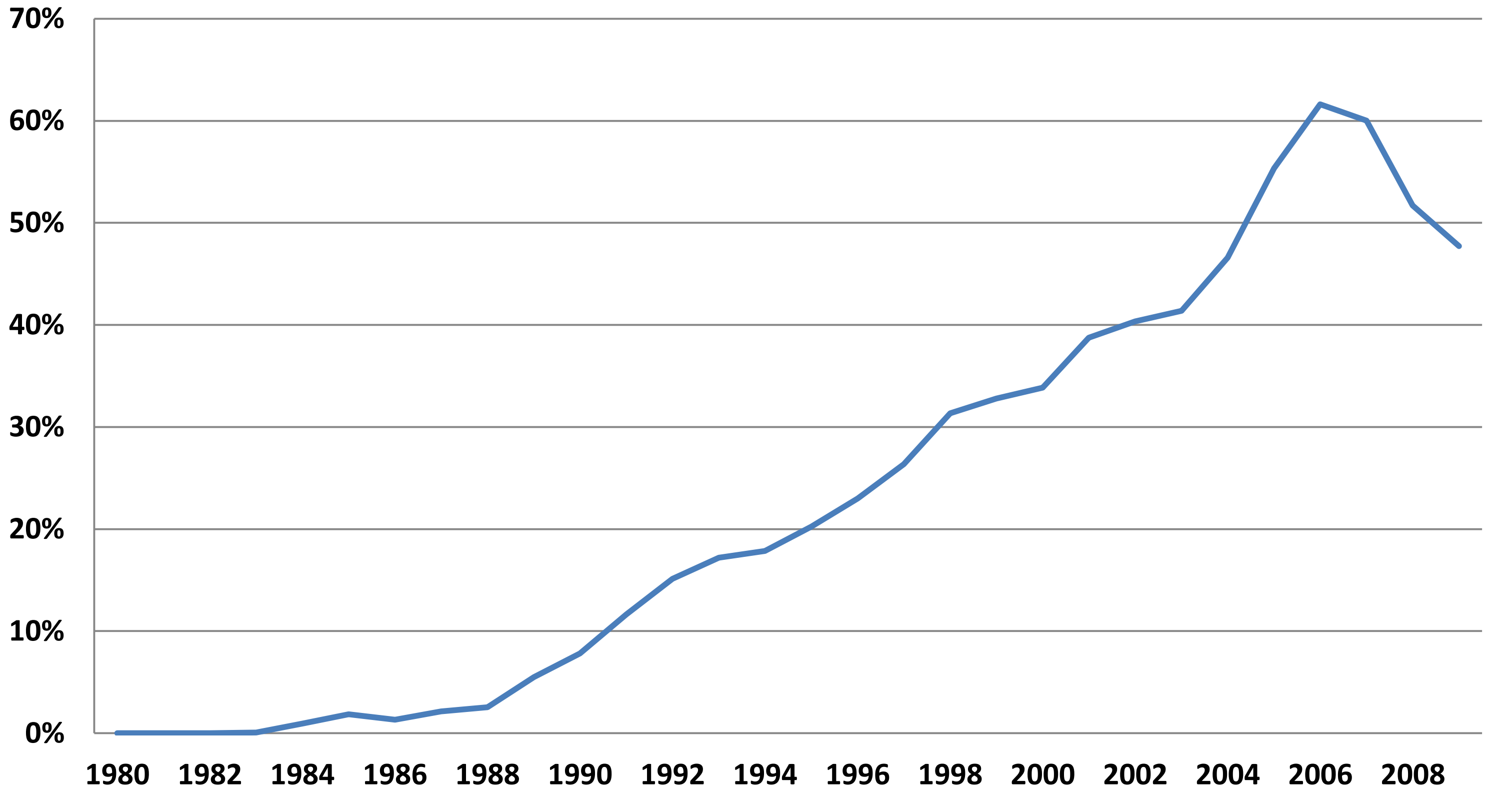
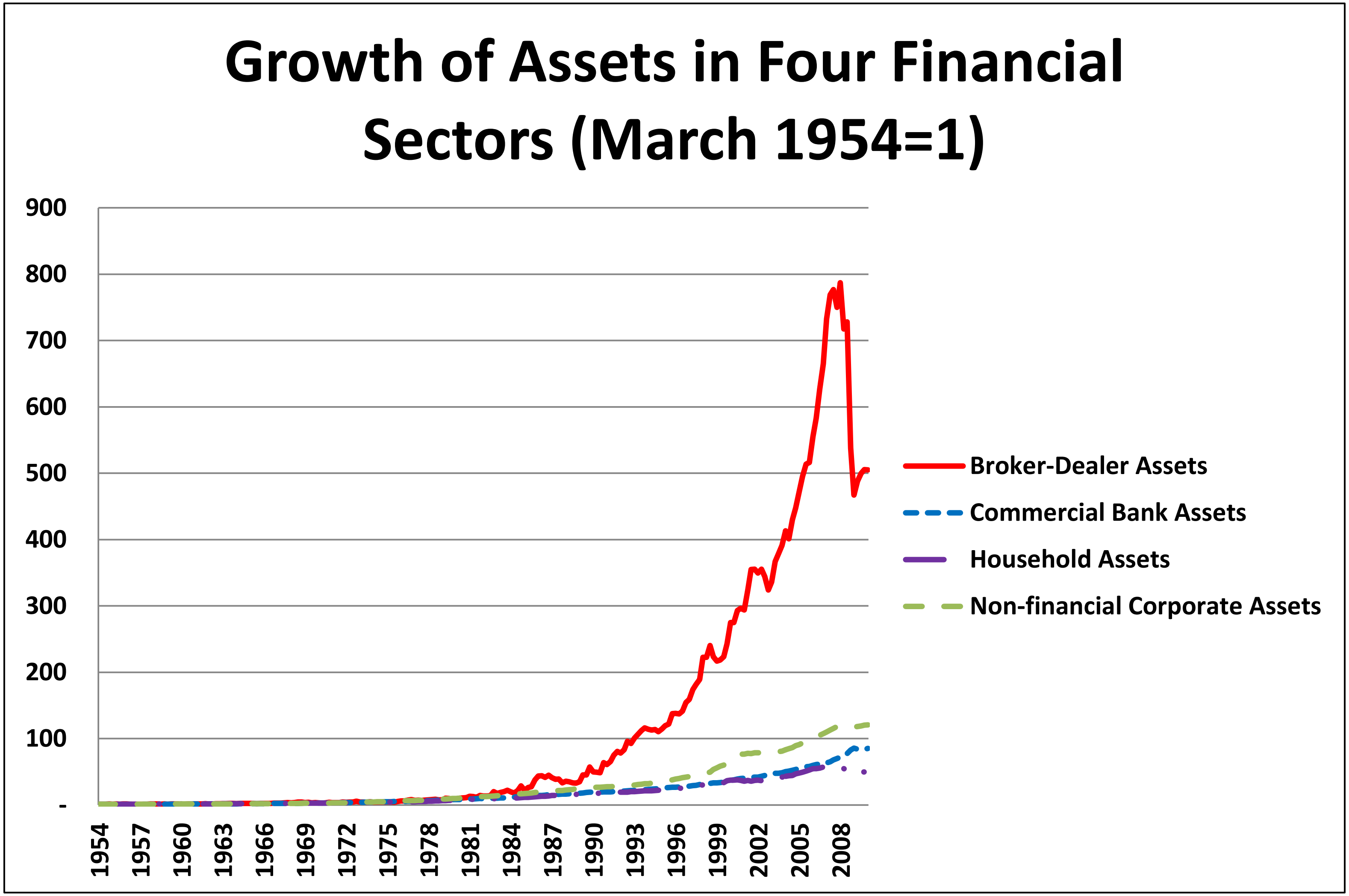
Ratio of Total Private Securitization to Total Bank Loans



Source: Flow of Funds.



Source: Flow of Funds.

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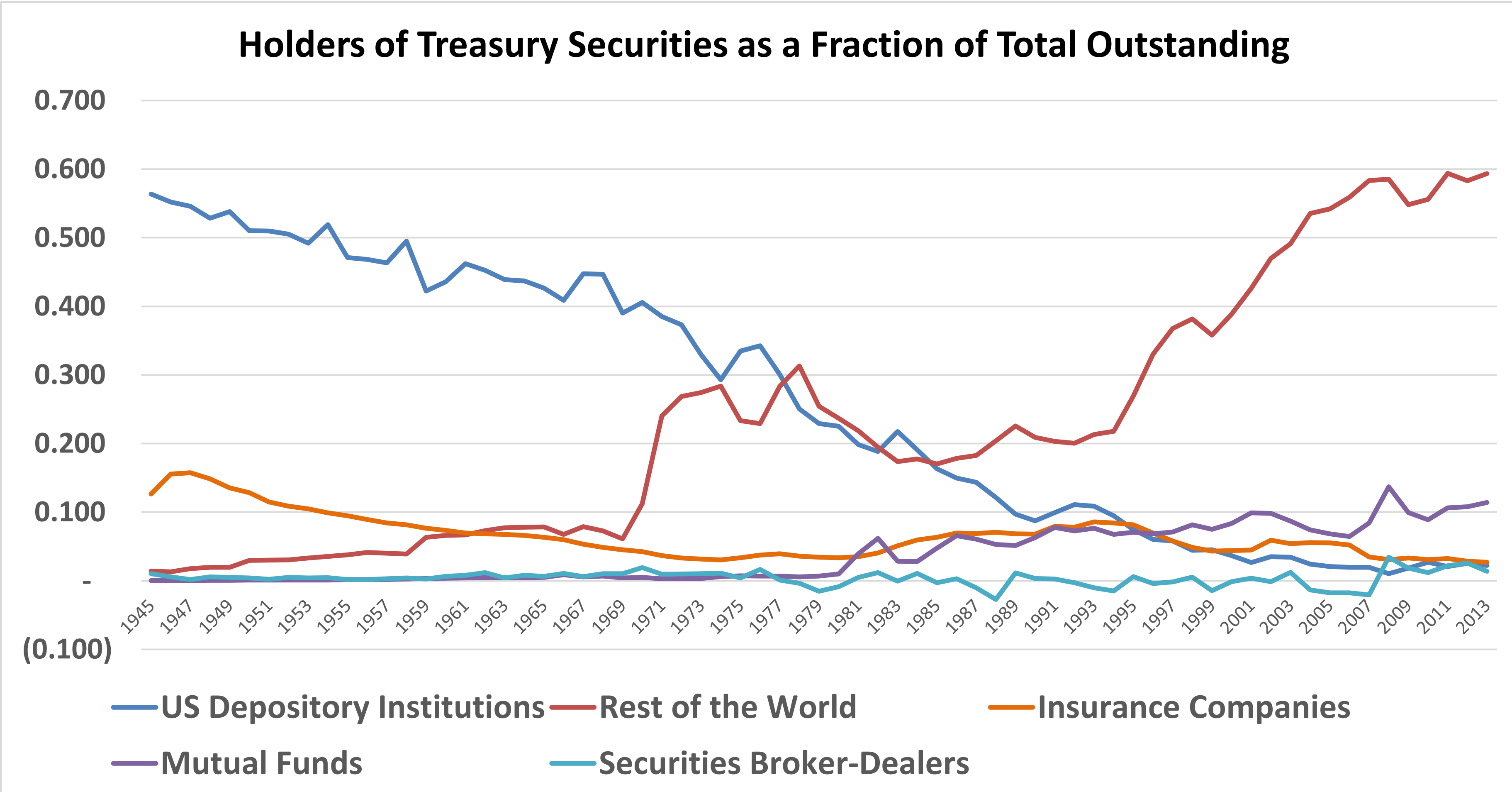
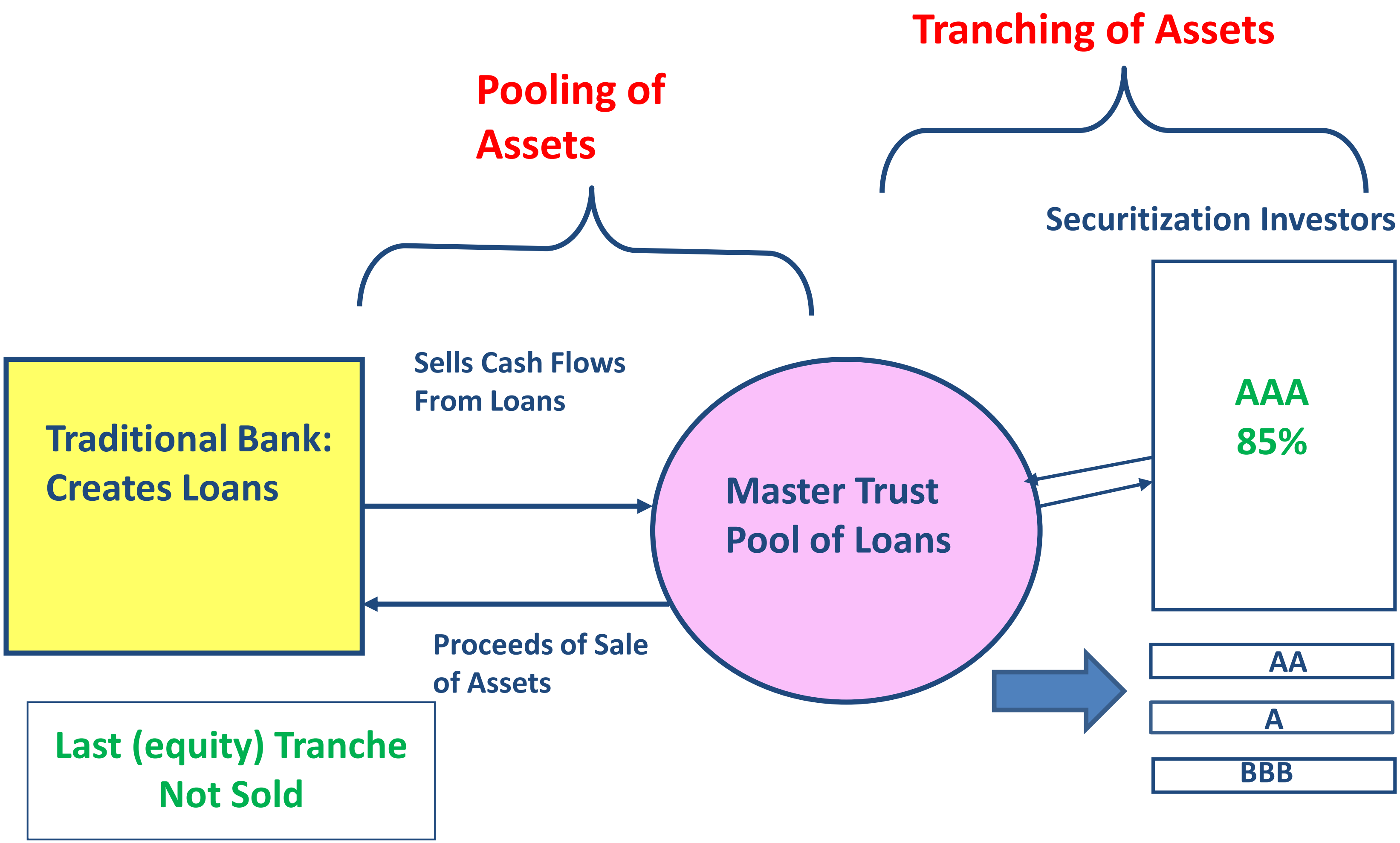
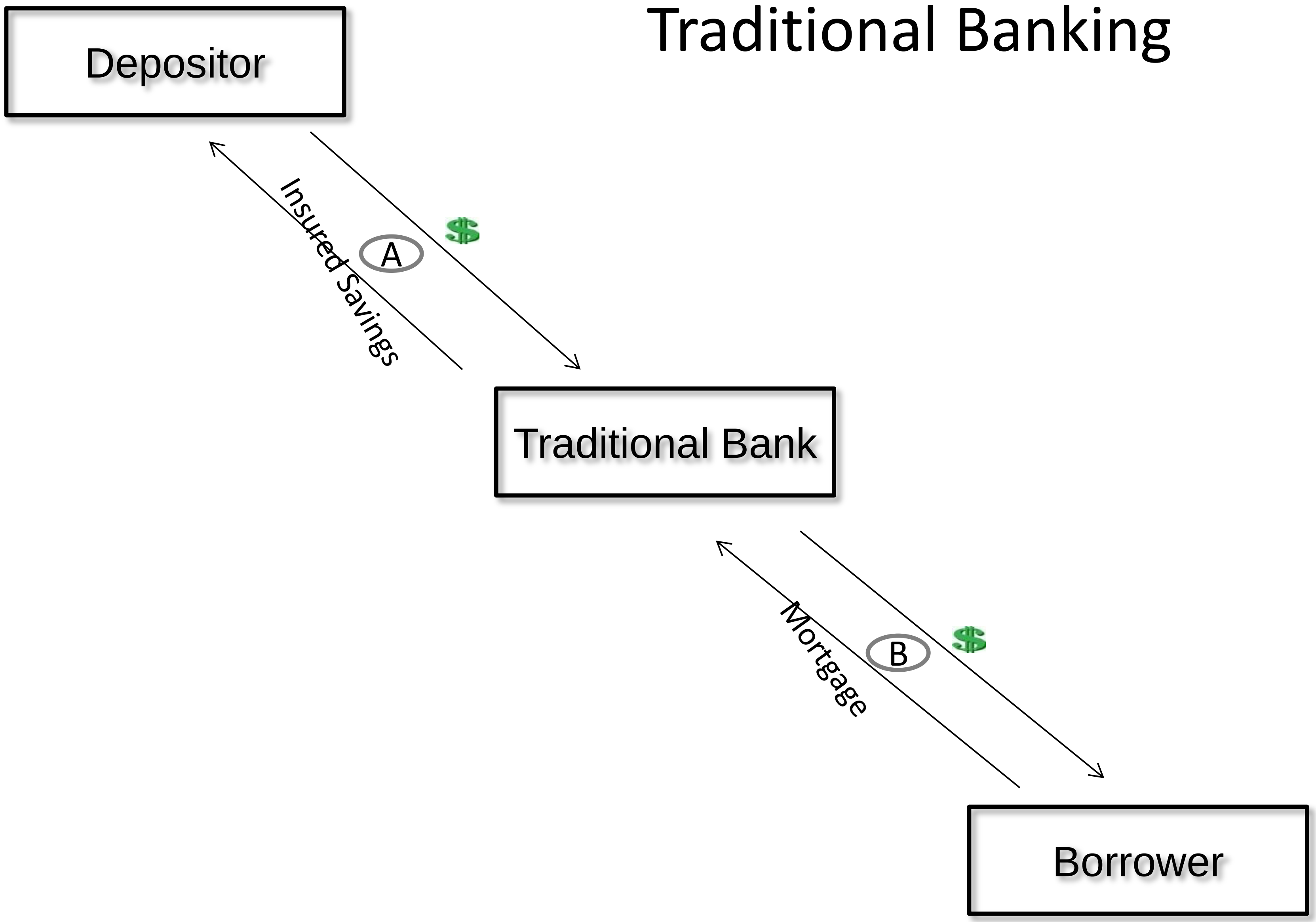
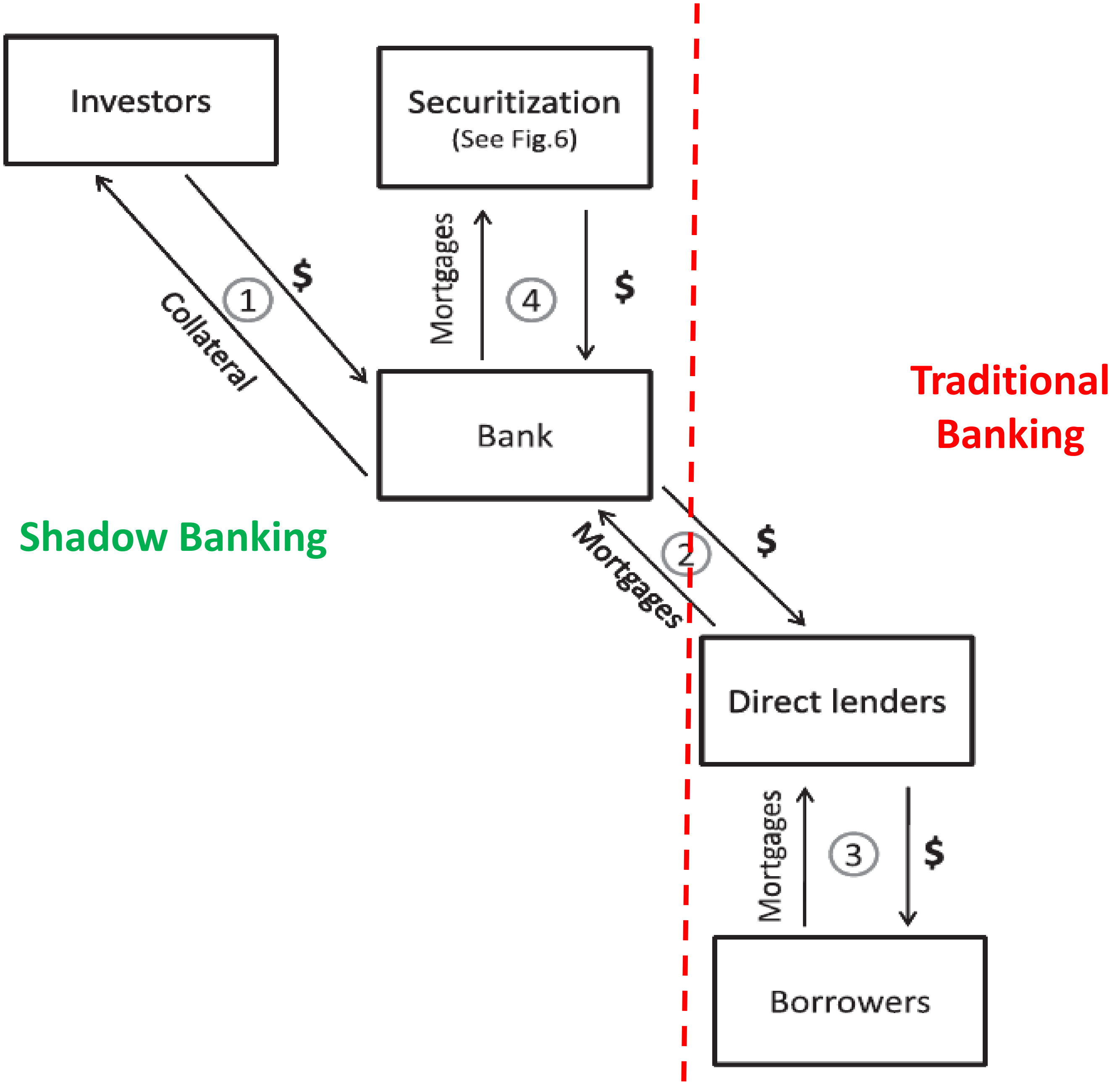

Holders of Treasury Securities as a Fraction of Total Outstanding
0.700
0.600
0.500
0.400
0.300
0.200
0.100
-
(0.100)
1945
1947
1949
1951
1953
1955
1957
1959
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
US Depository Institutions
Rest of the World
Insurance Companies
Mutual Funds
Securities Broker-Dealers

Securitization



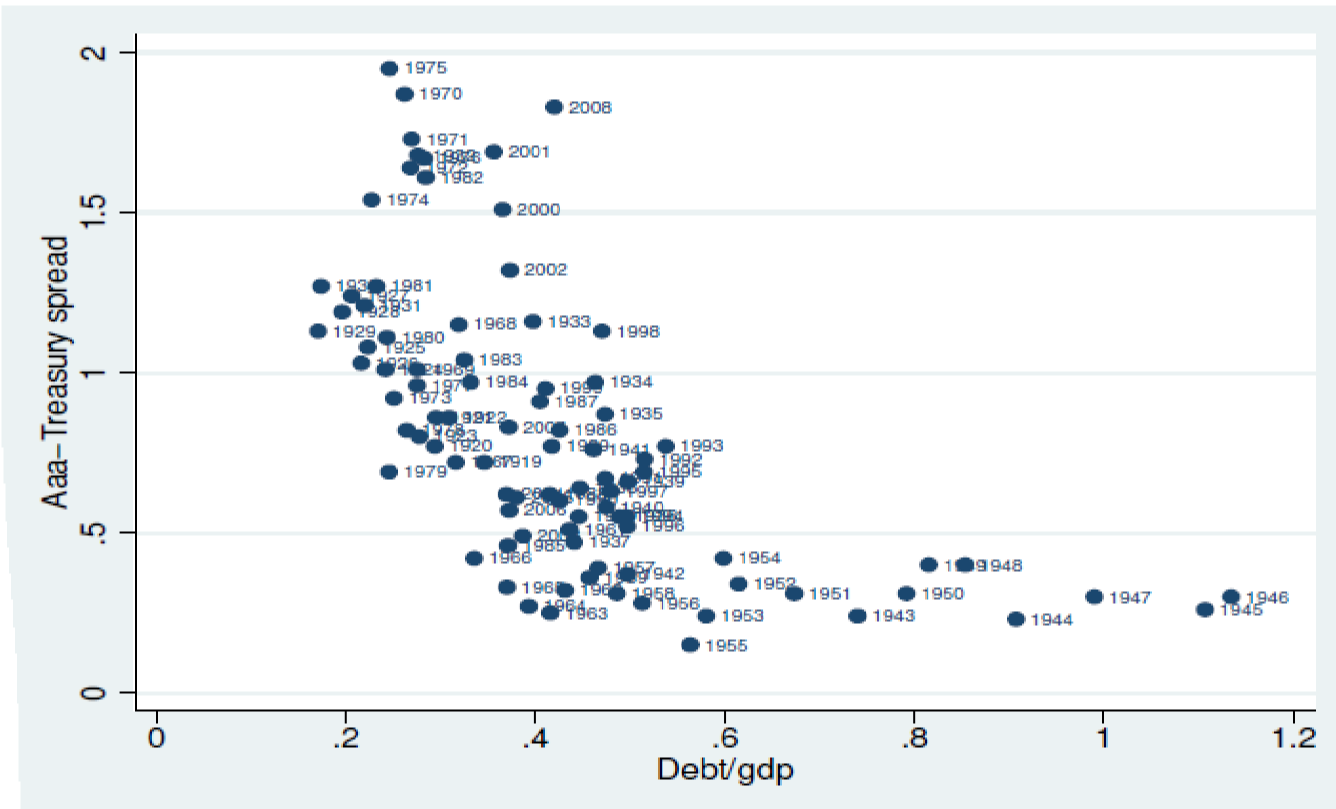
Traditional Banking




Investors
Securitization
(See Fig.6)
Bank
Direct lenders
Borrowers
Collateral
$
1
Mortgages
4
$
Mortgages
2
$
Mortgages
3
$
Traditional Banking
Shadow Banking

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.



Source: Krishnamurthy and Vissing-Jorgensen JPE 2012

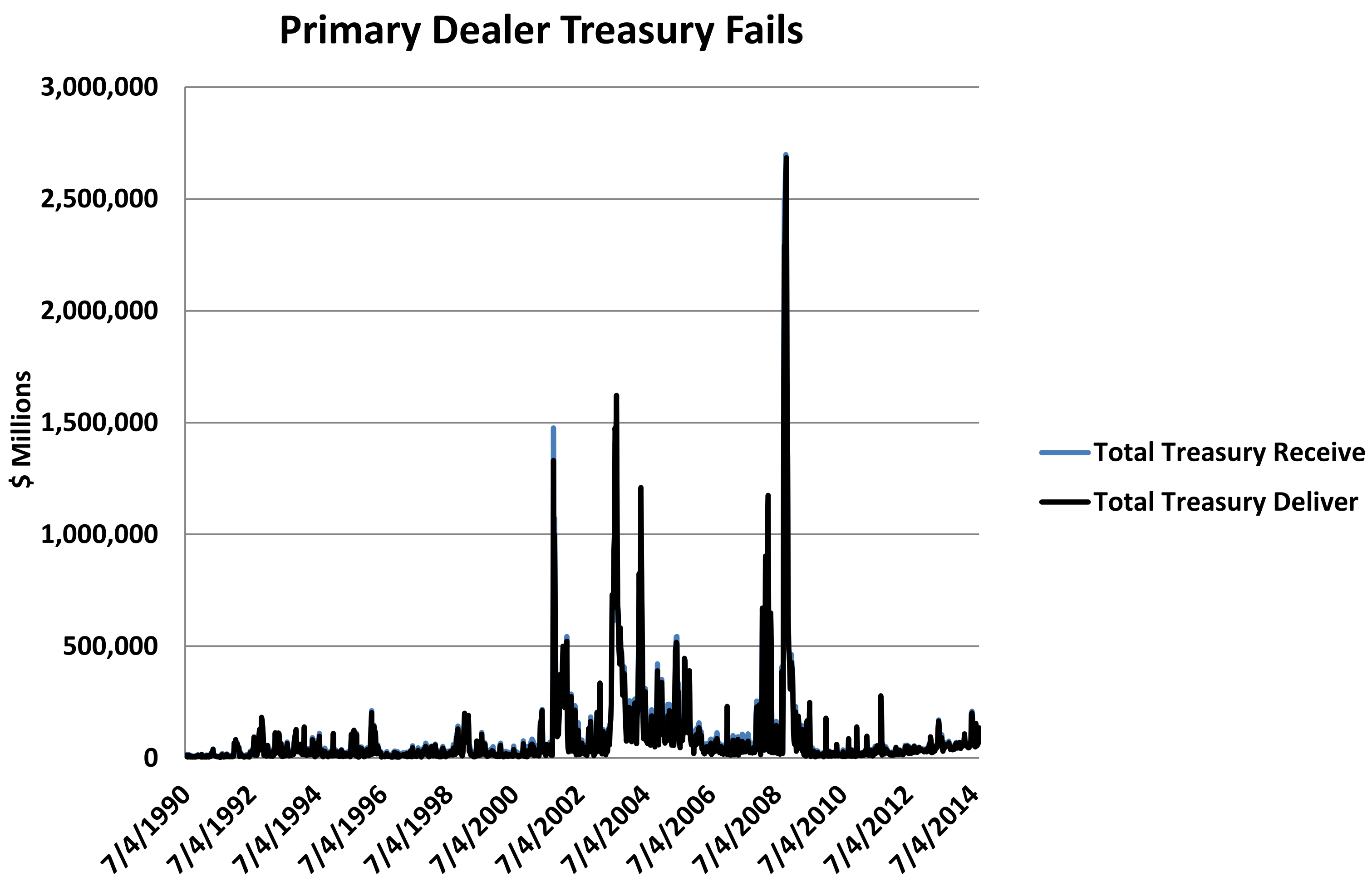
Private Response to Scarcity of Treasuries

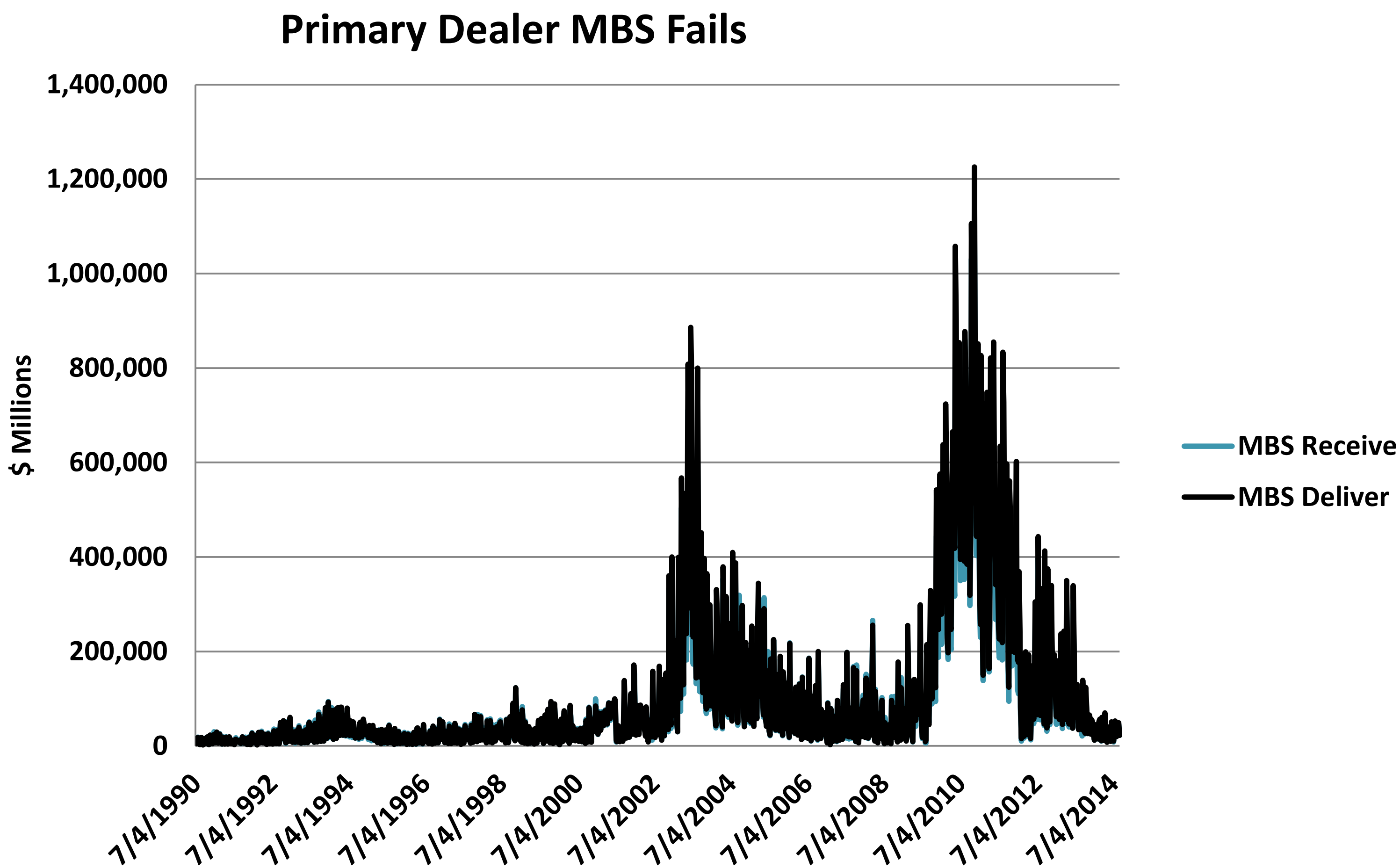
- Lei (2012): Examines *daily* issuance data on 20,000 MBS/ABS deals with 300,000 tranches from 1978-2011.
- Finds that MBS/ABS issuance occurs when convenience yield rises.

- 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
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
$ Millions
7/4/1990
7/4/1992
7/4/1994
7/4/1996
7/4/1998
7/4/2000
7/4/2002
7/4/2004
7/4/2006
7/4/2008
7/4/2010
7/4/2012
7/4/2014
Total Treasury Receive
Total Treasury Deliver



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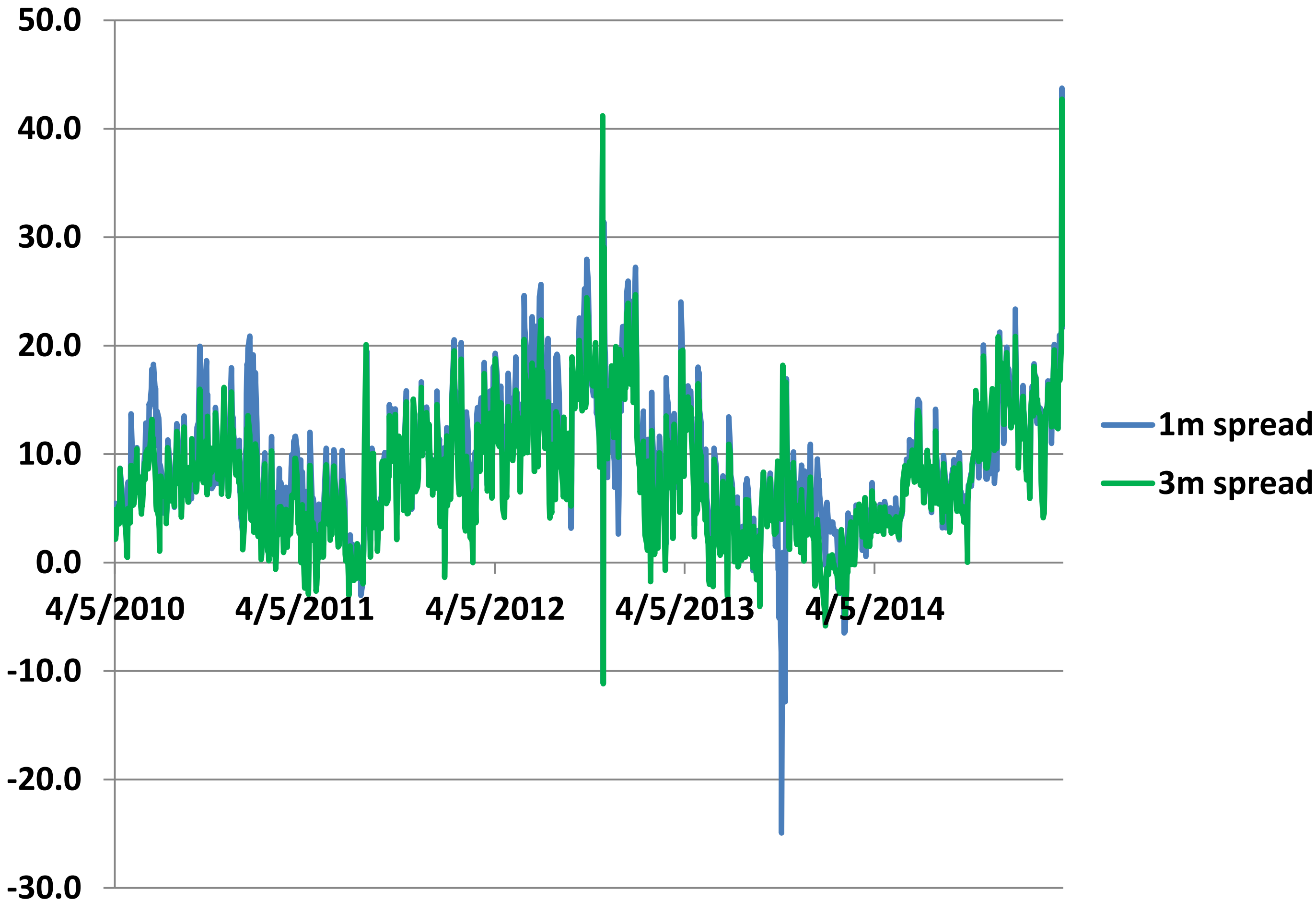
A Measure of Scarcity

- GC Repo minus Treasury (1 month)
  - 36 bps average over 1978 -2011

GC Repo - Treasury



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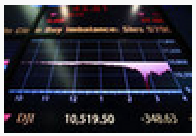
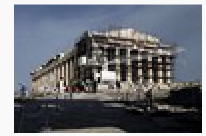


U.K. Man Arrested on Charges Tied to 'Flash Crash'

U.S. Stocks Fall on Mixed Earnings



Limited Fallout From Greek Bond Slump

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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 mark

Econometrics

- Shows that repo fails are *caused by* a rise in the scarcity premium or convenience yield.

- When Treasuries are scarce, there are more repo fails.

Bank Runs

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


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EUROPY
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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.

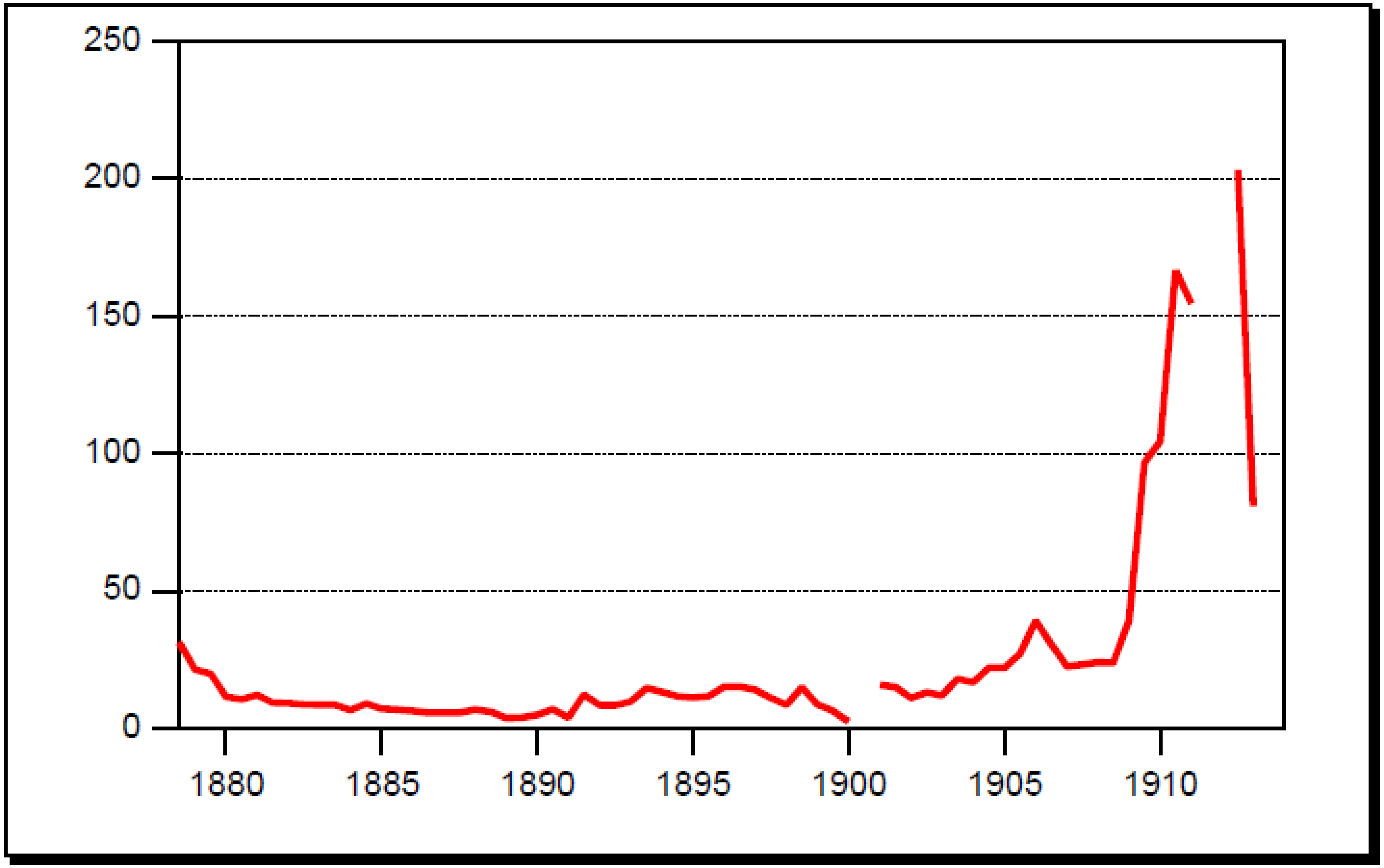
The Under-Issuance Puzzle

- 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 Rate from Note Issuance, % per annum: Traditional Calculation



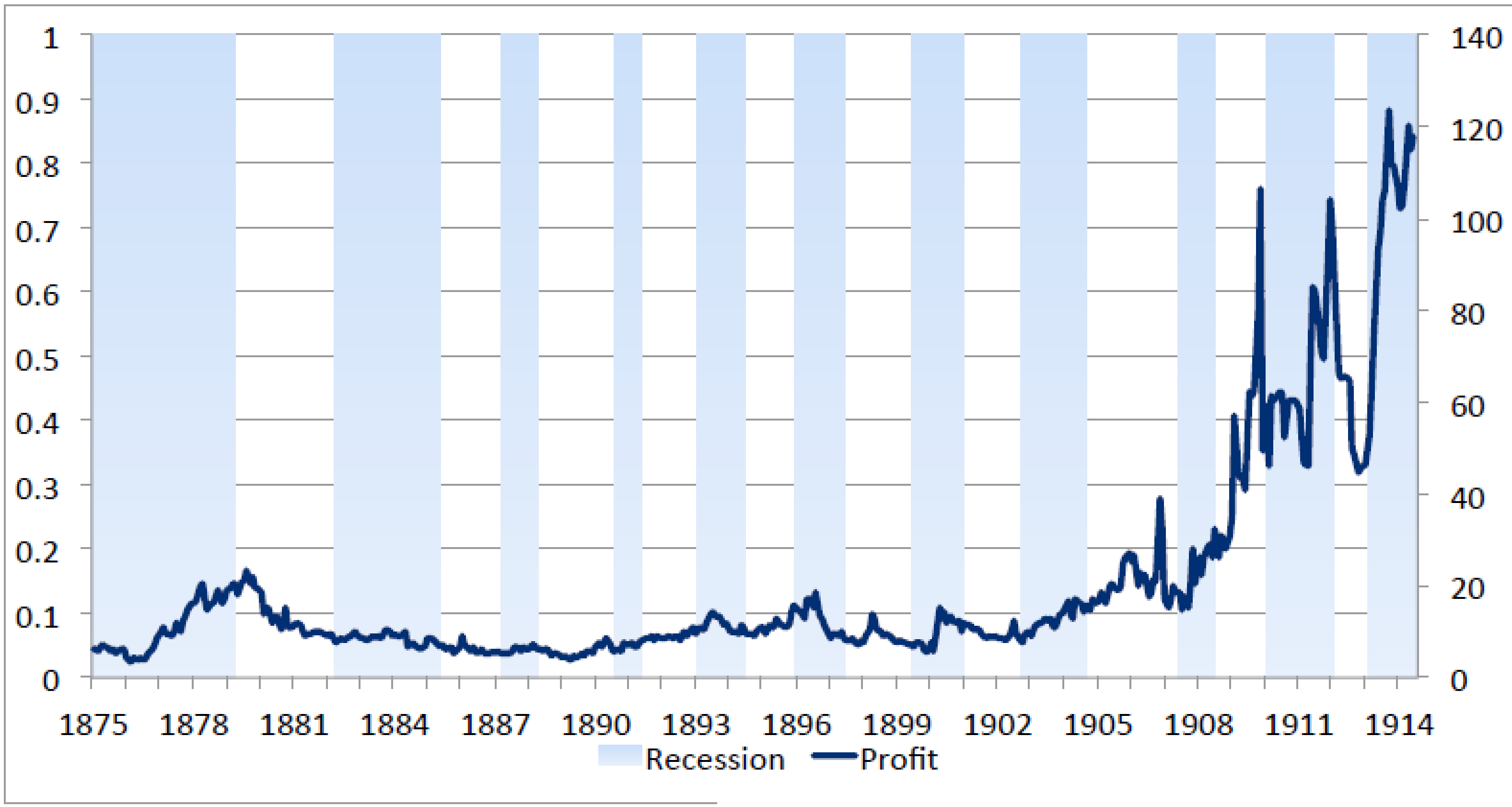
But . . .

- There was no arbitrage opportunity. “Profit” due to:
  - a convenience yield on Treasuries
  - and costly bank capital.

- Treasuries scarce. Had to reverse them in at 1-2%.

- Banks held Treasuries on balance sheet.

Profit Series (shaded areas = recessions)



“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.

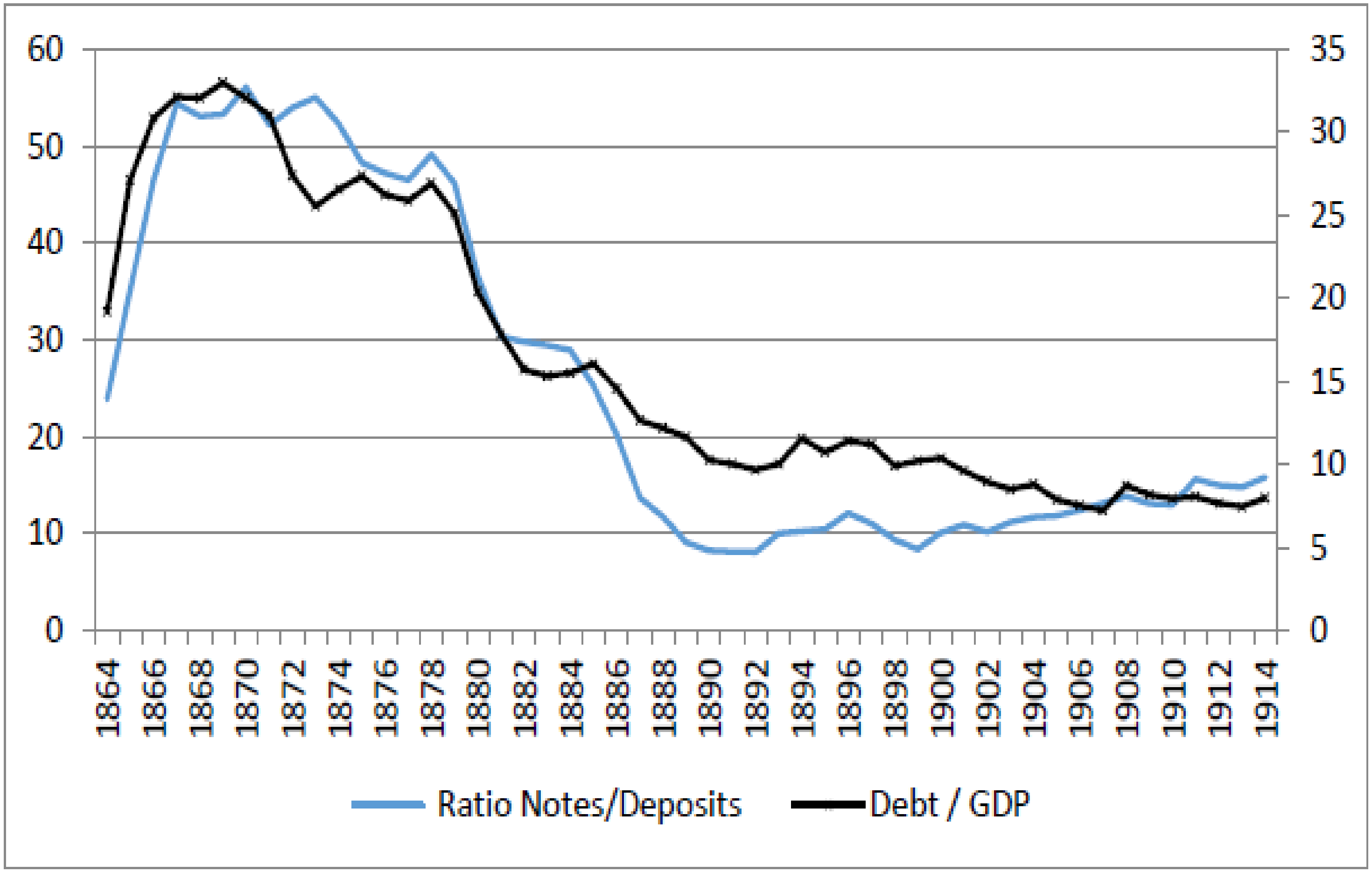
Econometric Results

- "Arb profits" explained by scarcity of Treasuries (and costs of bank capital).
  - Banks had other uses for Treasuries
  - Insurance companies also demanded Treasuries

Meanwhile --

- - - - the shadow banking system grew---

Ratio of Notes to Deposits and Treasury Debt to GDP
Correlation = 0.96



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.”
- Five major banking panics.

- Same problems now:
  - Unintended consequences
  - Conceptual issues

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

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