The Financial Crisis

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Marinus van Reymerswaele, 1567

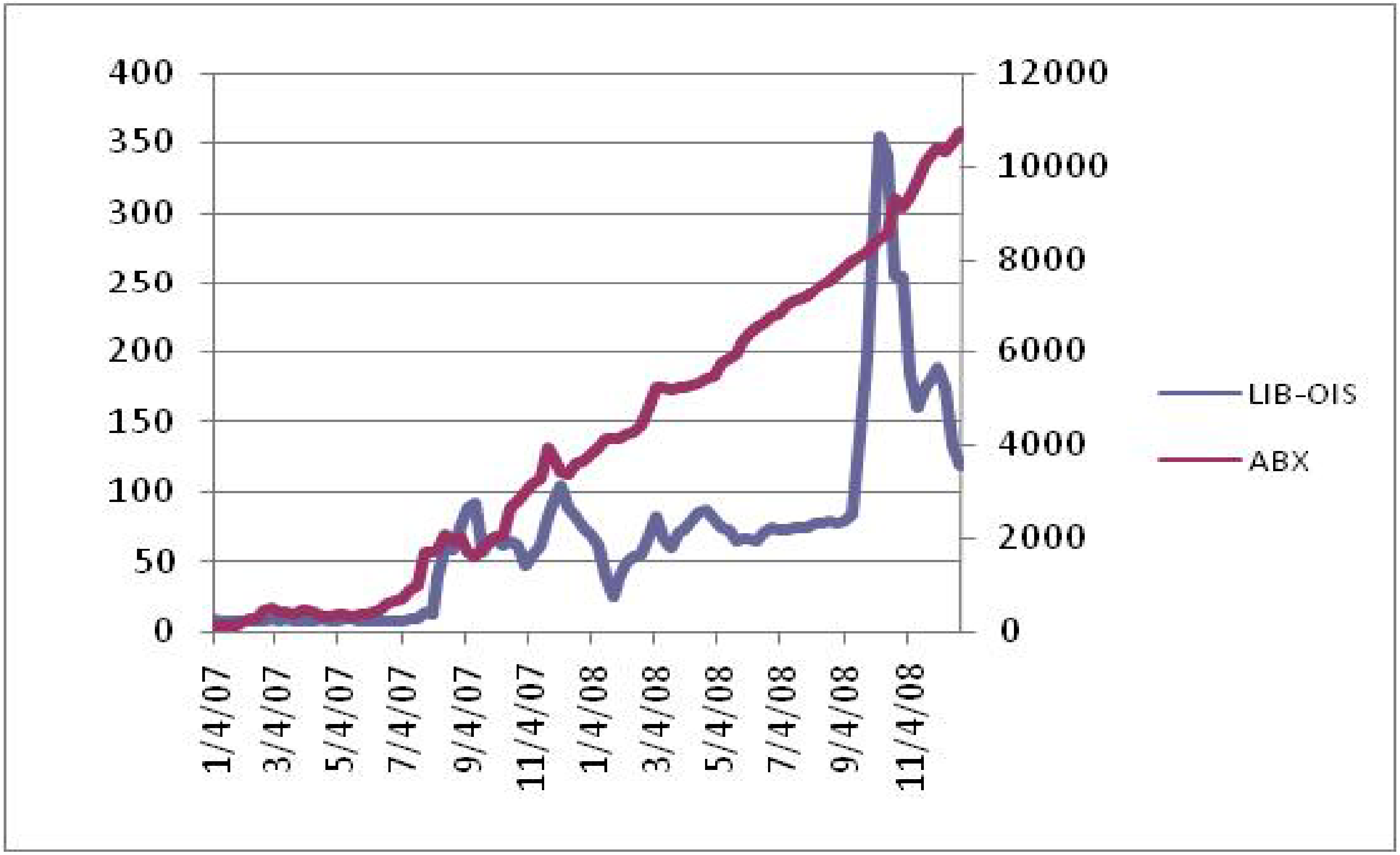
What is the "crisis"?

- What you saw: firms fail, get acquired, or get bailed out (Lehman Brothers, Bear Stearns, Merrill Lynch, AIG); people lose their homes; unemployment rise.

The Crisis

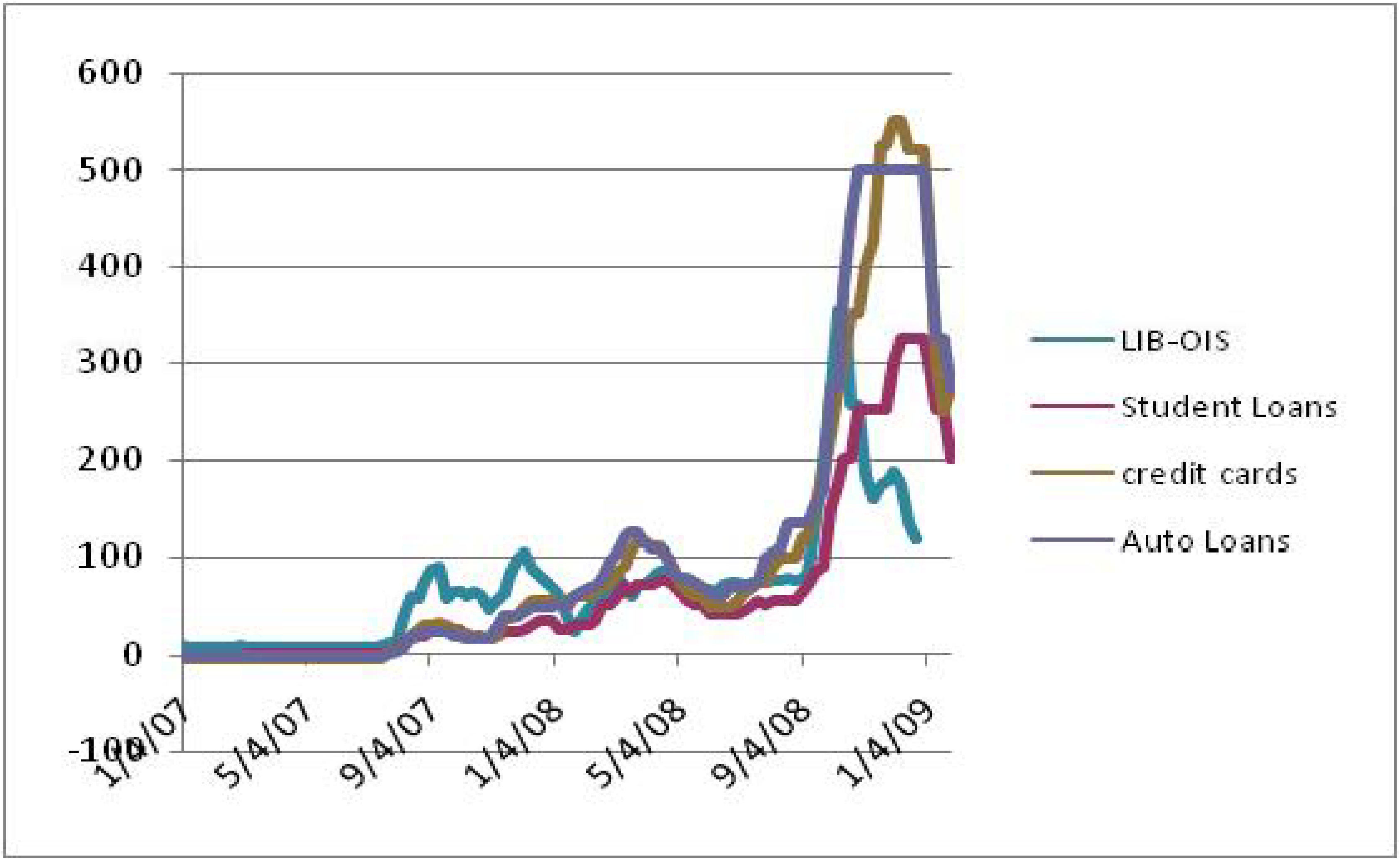
- What you <u>did not see</u>: <u>ALL bond prices fall.</u>
- Why did all bond prices fall? Why not just subprime bond prices?

Subprime Fundamentals and the Interbank Market



LIB-OIS on left-hand Y-axis, ABX spreads on right-hand y-axis.

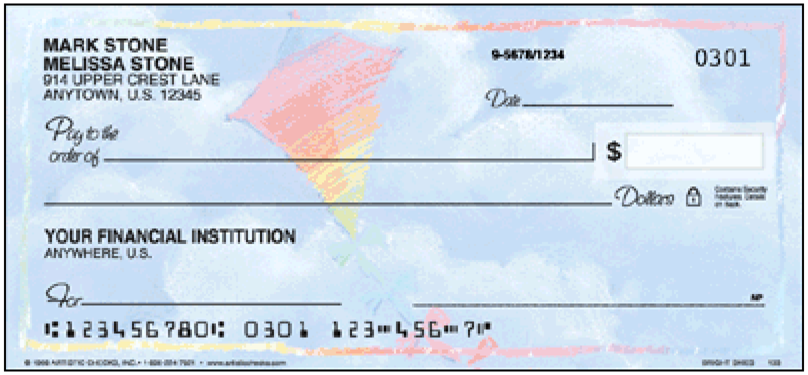
LIB-OIS and Non-Subprime AAA Assets, 2007-2008

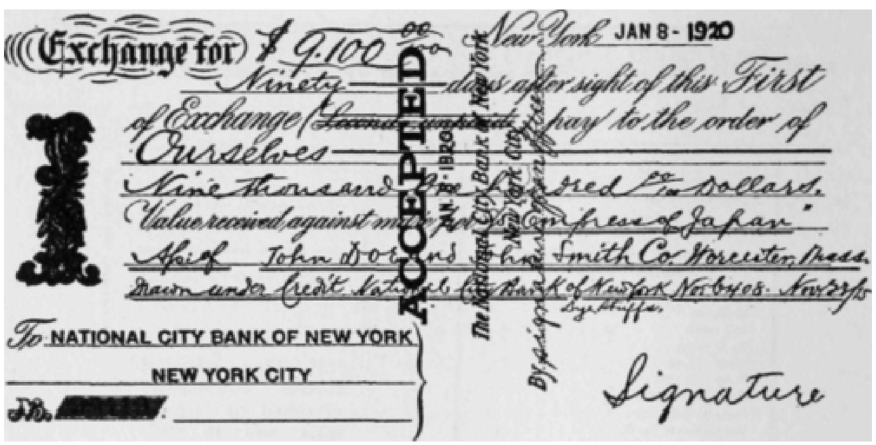


What is a financial crisis?

- A “financial crisis” occurs when households or firms no longer believe that bank debt (money) is worth par – instead they want cash. There is a bank run.
- All financial crises are bank runs.
- Crises are sudden but not irrational.
- Banks do not have the cash, so they are insolvent, if not for government or central bank intervention.

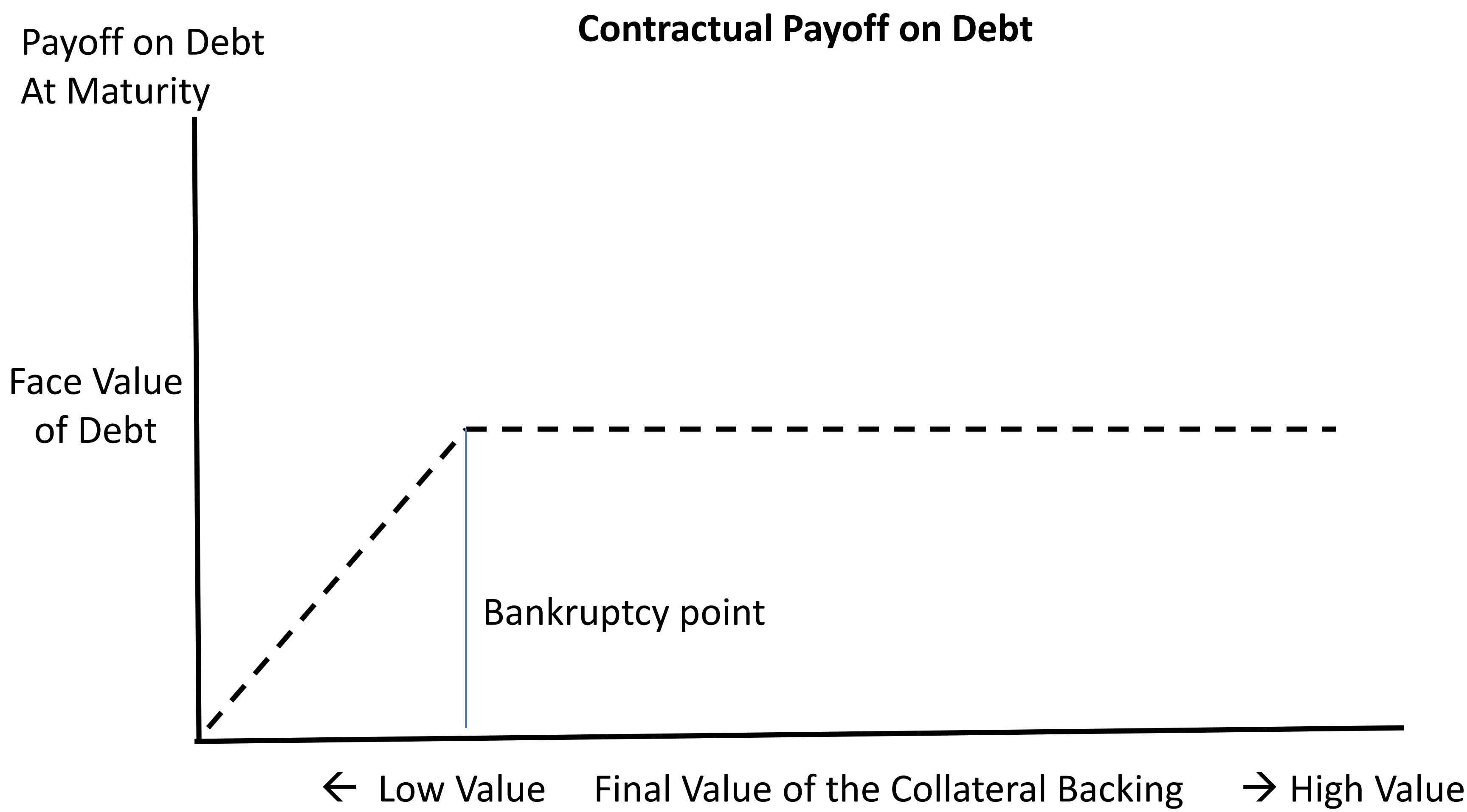
Banks Create Money





Money → Easy to Transact

- No asymmetric information
- Asymmetric info → you lose money to someone better informed than you.

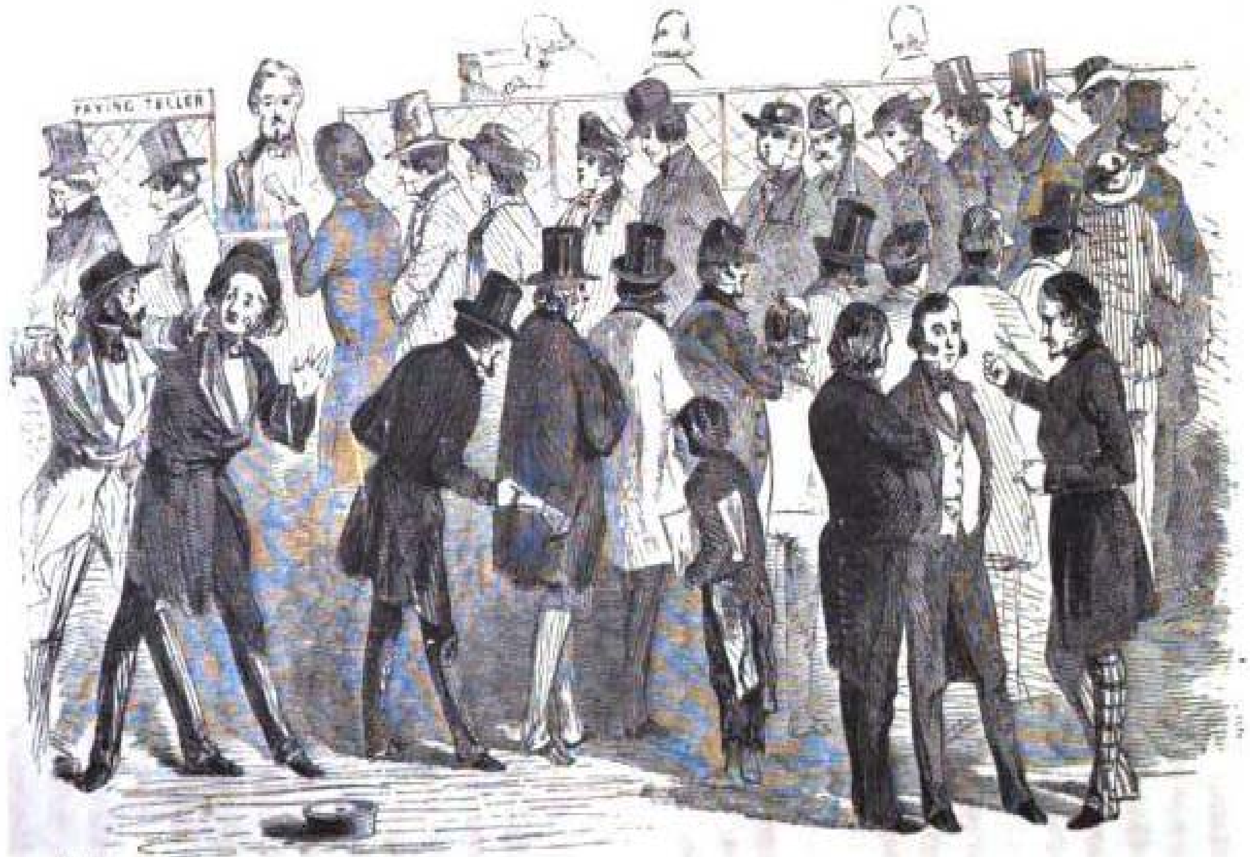

Contractual Payoff on Debt
Payoff on Debt
At Maturity
Face Value
of Debt
Bankruptcy point
← Low Value
Final Value of the Collateral Backing
→ High Value

The Many Forms of Bank Debt

- Creation of bank trading securities requires backing <u>collateral</u>.
  - Free Banking Era (1837-1863): private bank note issuance required backing of state bonds;
  - Demand deposits: backing by diversified loan portfolios;
  - Sale and repurchase agreements (repo): backed by a specific bond; depositor takes physical possession of the collateral;
  - Asset-backed commercial paper: requires backing of high-grade ABS;
  - Commercial paper: only high-grade issuers.

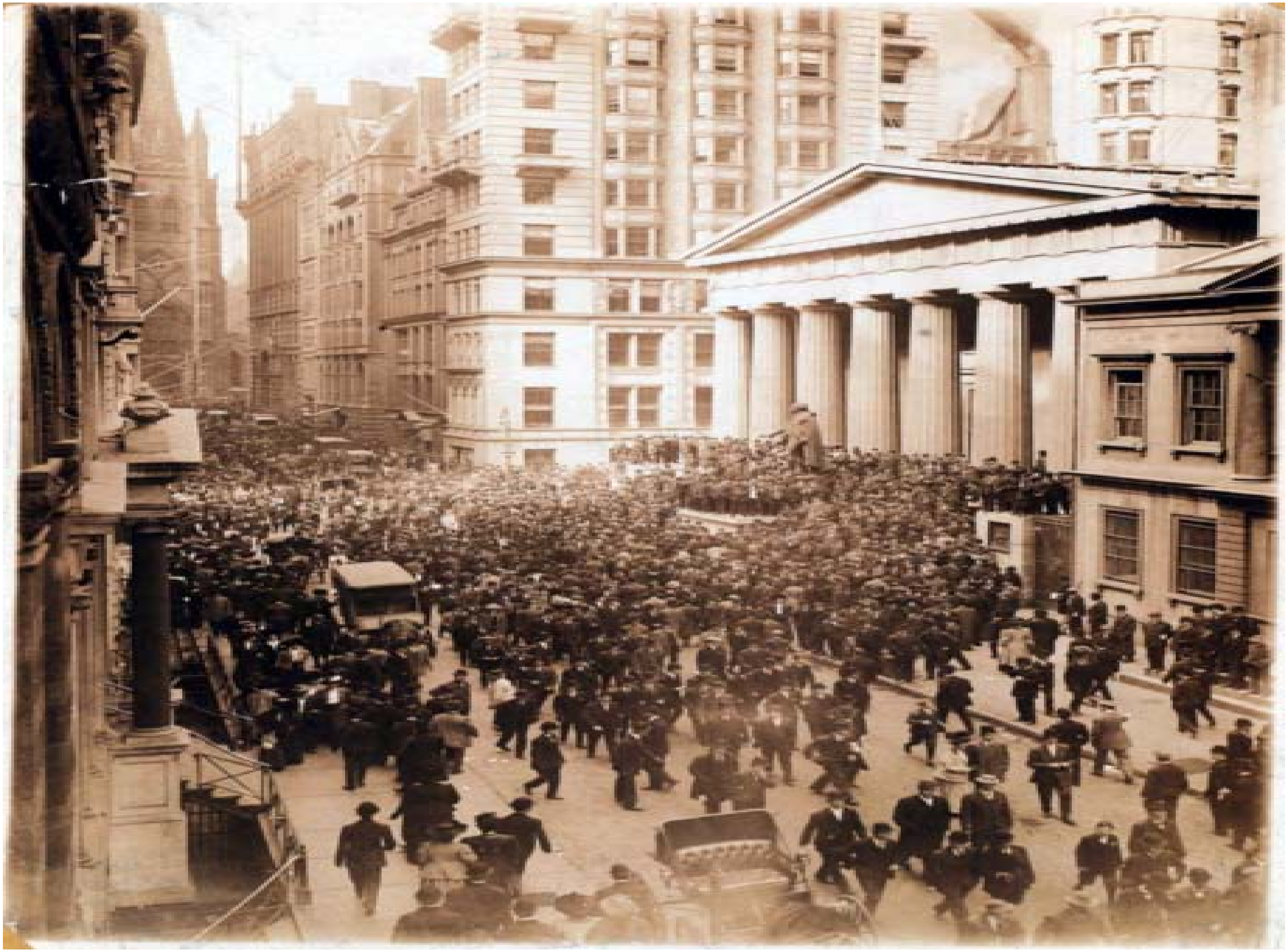
Financial Crises, 1870-2008, Selected Countries

Country	**Financial Crisis (first year)**
Australia	1893, 1989
Canada	1873, 1906, 1923, 1983
Denmark	1877, 1885, 1902, 1907, 1921, 1931, 1987
France	1882, 1889, 1904, 1930, 2008
Germany	1880, 1891, 1901, 1931, 2008
Italy	1887, 1891, 1901, 1930, 1931, 1935, 1990, 2008
Japan	1882, 1907, 1927, 1992
Netherlands	1897, 1921, 1931, 1988
Norway	1899, 1921, 1931, 1988
Spain	1920, 1924, 1931, 1978, 2008
Sweden	1876, 1897, 1907, 1922, 1931, 1991, 2008
Switzerland	1870, 1910, 1931, 2008,
United Kingdom	1890, 1974, 1984, 1991, 2007
United States	1873, 1884, 1893, 1907, 1929, 1984, 2007



A Run on a Bank.

J.S. Gibbons, The Banks of New York, Their Dealers, The Clearing House and the Panic of 1857 (1859), illustration by Herrick.



England, recent crisis

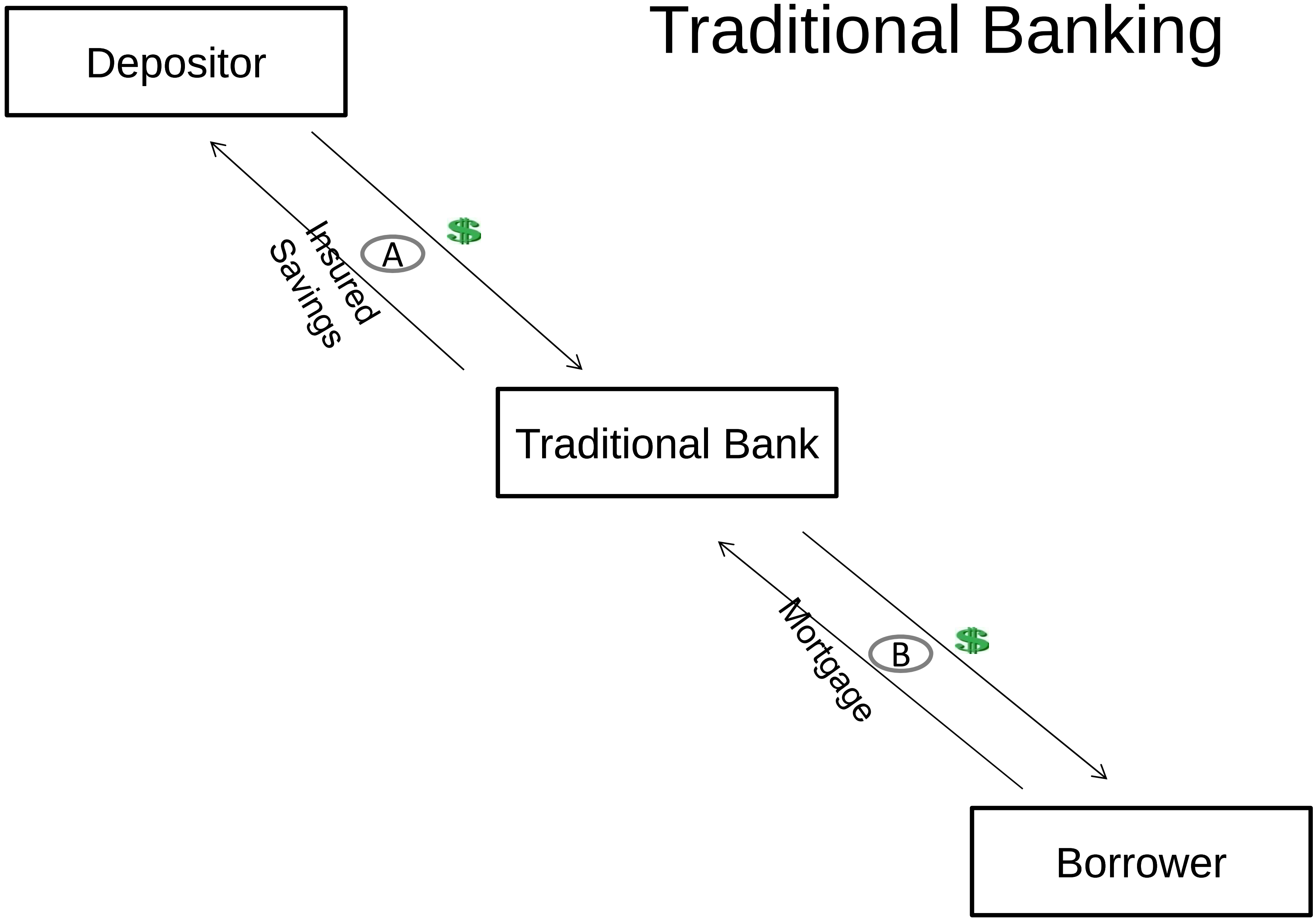
Some U.S. Banking History

- Banking panics have been the norm; the period after FDIC insurance was enacted (1934), till 2007, is the exception.
- Free Banking Era (1837-1862): private money backed by state bonds, but bonds not riskless.
- National Banking Era (1863-1914): Greenbacks backed by US bonds.
- But, from 1857 to 1934 the problem was demand deposits (backed by bank assets).
- Now, repo.

U.S. National Banking Era Panics

NBER Cycle Peak-Trough	Panic Date	%Δ(C/D)	%Δ Pig Iron	Loss per Deposit $	% and # Nat'l Bank Failures
Oct. 1873-Mar. 1879	**Sep. 1873**	**14.53**	**-51.0**	**0.021**	**2.8 (56)**
Mar. 1882-May 1885	**Jun. 1884**	**8.8**	**-14.0**	**0.008**	**0.9 (10)**
Mar. 1887-Apr. 1888	No Panic	3.0	-9.0	0.005	0.4 (12)
Jul. 1890-May 1891	**Nov. 1890**	**9.0**	**-34.0**	**0.001**	**0.4 (14)**
Jan. 1893-Jun. 1894	**May 1893**	**16.0**	**-29.0**	**0.017**	**1.9 (74)**
Dec. 1895-Jun. 1897	**Oct. 1896**	**14.3**	**-4.0**	**0.012**	**1.6 (60)**
Jun. 1899-Dec.1900	No Panic	2.78	-6.7	0.001	0.3 (12)
Sep. 1902-Aug. 1904	No Panic	-4.13	-8.7	0.001	0.6 (28)
May 1907-Jun. 1908	**Oct. 1907**	**11.45**	**-46.5**	**0.001**	**0.3 (20)**
Jan. 1910-Jan. 1912	No Panic	-2.64	-21.7	0.0002	0.1 (10)
Jan. 1913-Dec. 1914	**Aug. 1914**	**10.39**	**-47.1**	**0.001**	**0.4 (28)**

Traditional Banking



Repo is also Money—but for Companies

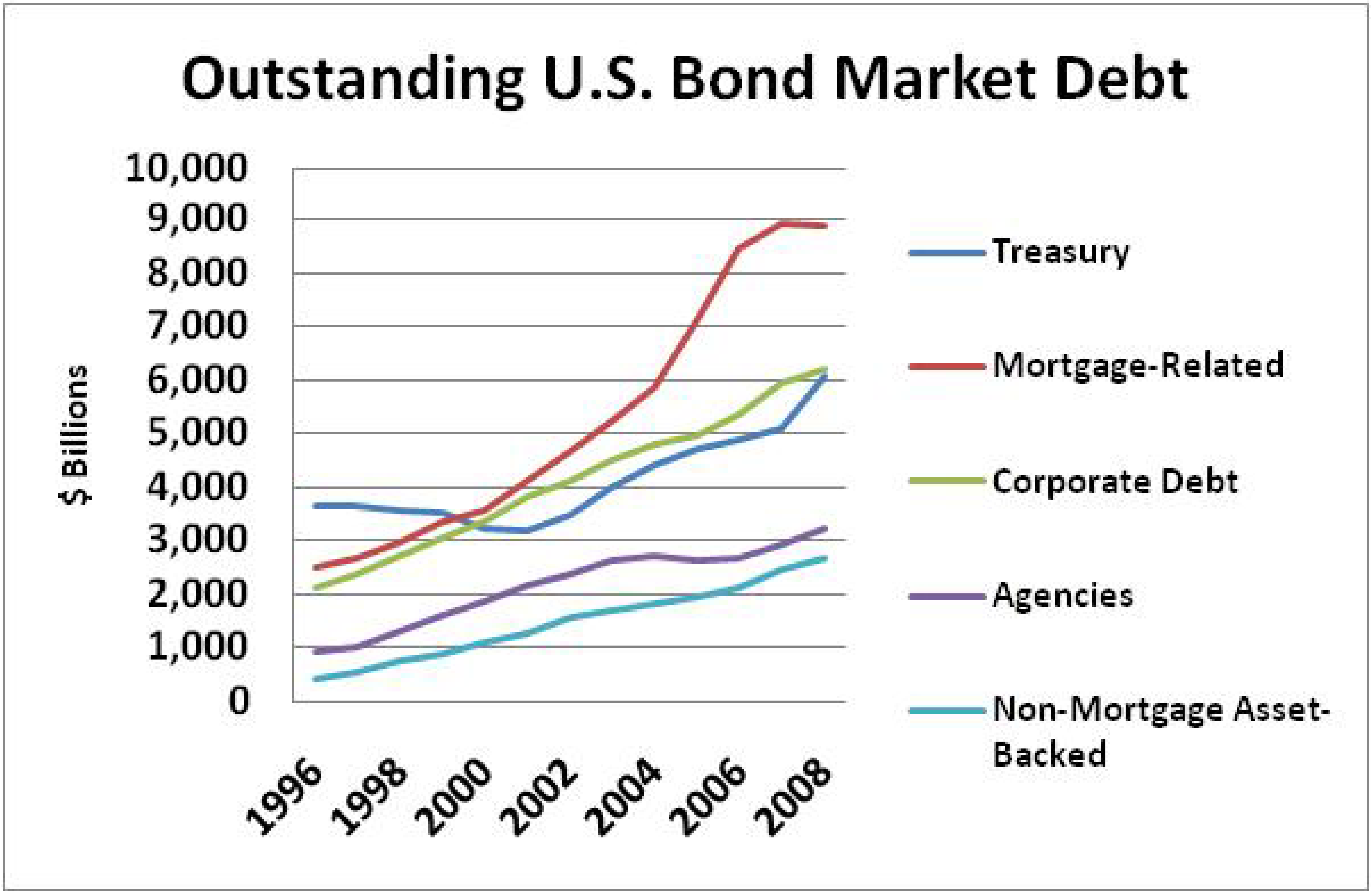
- A sale and repurchase agreement ("repo") is a deposit of cash at a "bank" which is short-term, receives interest, and is backed by collateral.
- Repo short term, usually overnight.
- Trading is fast, minimal due diligence.
- Collateral value may exceed the amount of cash deposited, i.e., there is a ***haircut***. E.g., deposit \$98, receive a bond worth \$100—a 2% haircut.

Size of the Repo Market

- There are no official statistics on the overall size of the repo market.

- Unofficially, the US market is likely to be at least $12 trillion, compared to the total assets in the U.S. banking system of $10 trillion.

43% of Available Collateral is ABS/RMBS/CMBS



Securitization

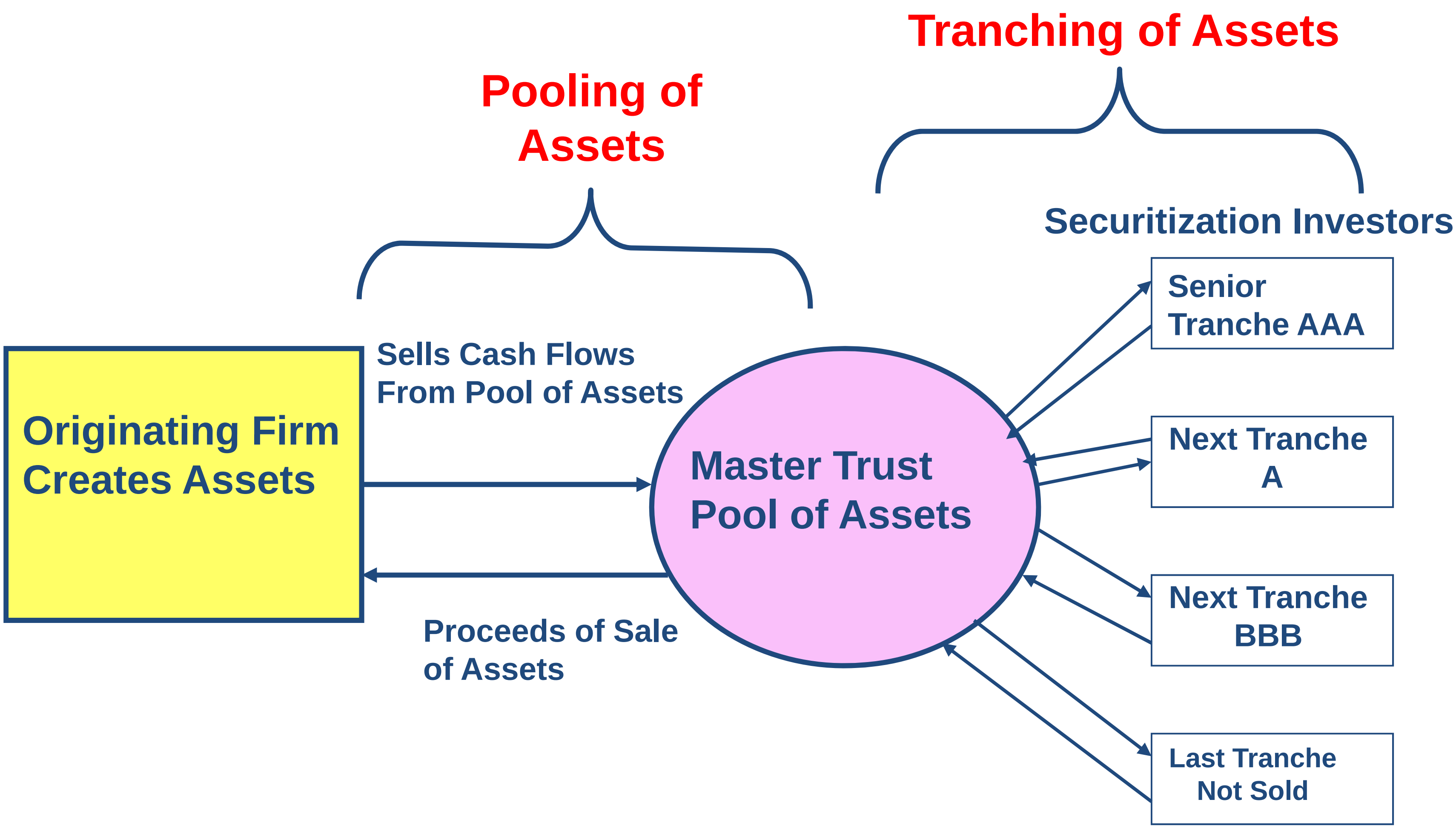
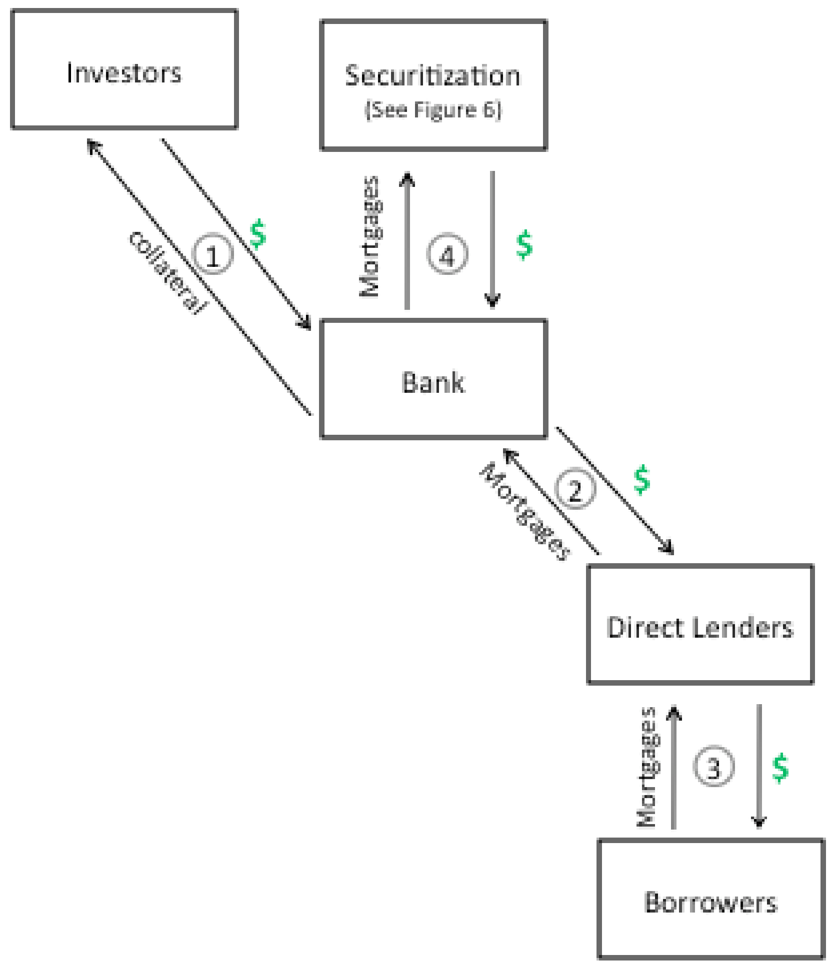
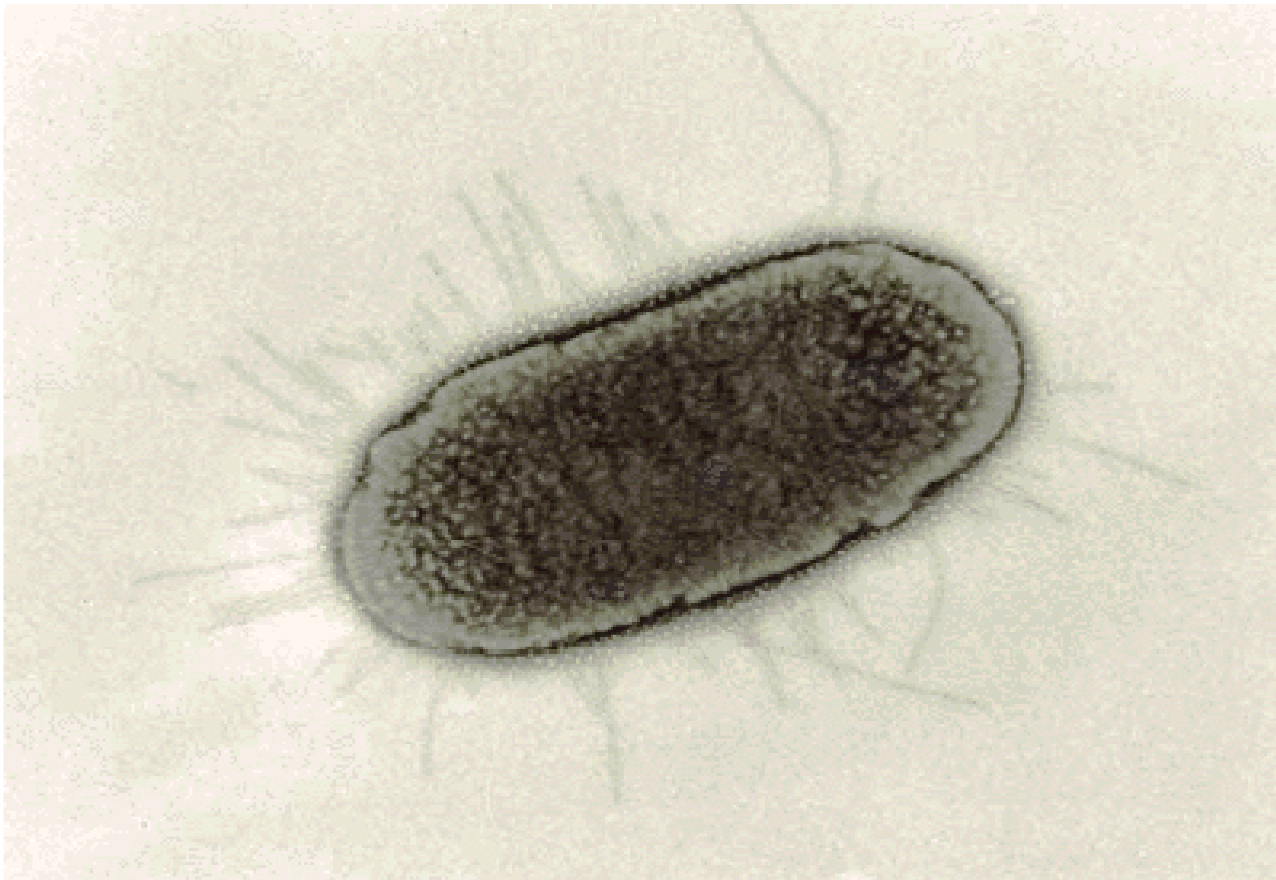


Figure 2: Securitized Banking

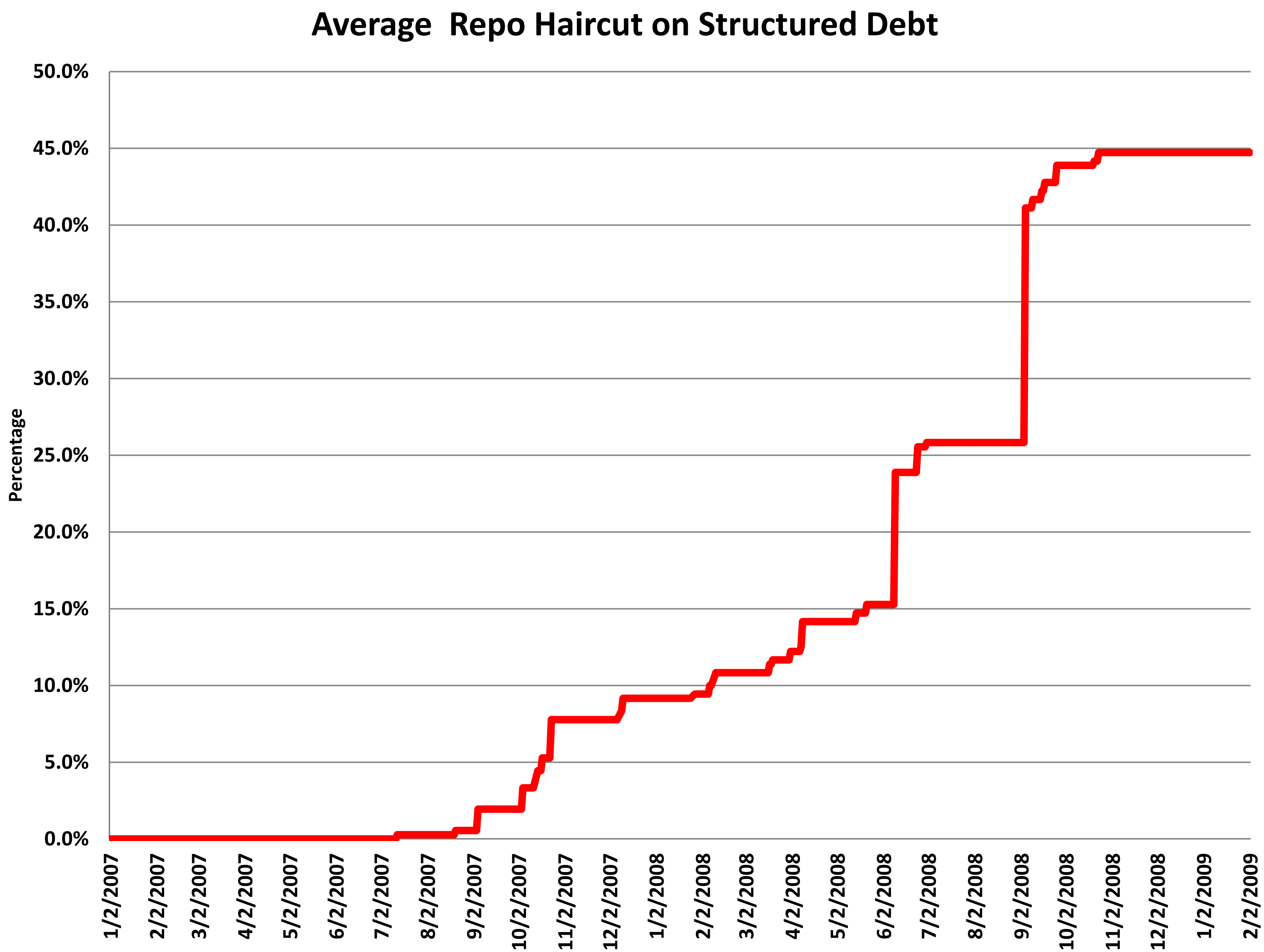


Where did the sub-prime risk go?



The Panic

- Haircuts were zero on all asset classes prior to August 2007.
- A change to a positive haircut is a withdrawal from the securitized banking system.
- E.g., bank was financing a bond worth $100 with repo (zero haircut). With a 20% haircut, the bank only receives $80 for the bond. Bank must come up with the extra $20 – the amount withdrawn.



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
2/2/2007
3/2/2007
4/2/2007
5/2/2007
6/2/2007
7/2/2007
8/2/2007
9/2/2007
10/2/2007
11/2/2007
12/2/2007
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7/2/2008
8/2/2008
9/2/2008
10/2/2008
11/2/2008
12/2/2008
1/2/2009
2/2/2009

Summary

- Crises have happened throughout the history of market economies.
- Financial crises are about demands for cash in exchange for bank debt, which takes many different forms.
- The demands for cash are on such a scale—often the whole banking system is run on---that it is not possible to meet these demands because the assets of the banking system cannot be sold without their prices plummeting.
- Banking systems are bailed out.
- Crises are sudden, unpredictable events, although the level of fragility may be observable.

Some Reading

- Slapped by the Invisible Hand, Gary Gorton
  http://www.amazon.com/Slapped-Invisible-Hand-Management-Association/dp/0199734151/ref=sr_1_1?ie=UTF8&qid=1336757812&sr=8-1
- "Securitized Banking and the Run on Repo," Gorton and Metrick
  - http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1440752
- "Regulating the Shadow Banking System," Gorton and Metrick
  - http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1676947
- "Questions and Answers About the Financial Crisis," Gary Gorton
  - http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1557279
- "Haircuts," Gorton and Metrick
  - http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1447438
- Misunderstanding Financial Crises, Gorton, Forthcoming Fall 2012.