

# Macro-Modelling

with a focus on the role of financial markets

ECON 244, Spring 2013

Shadow Banking

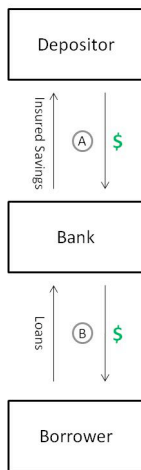
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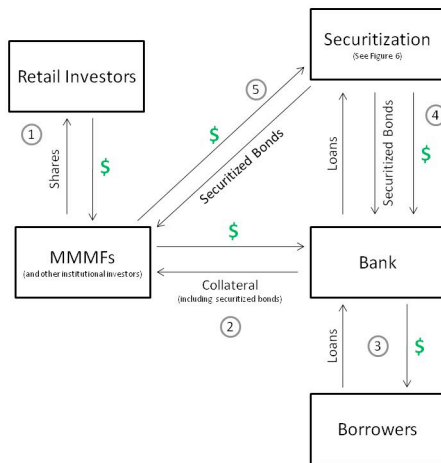
# Shadow Banking

- Based on Gorton and Metrick (2011)
- After the Great Depression, the US enjoyed no panic during 75 years.
- Deposit insurance was key for this stability,
- The crisis in 2007 was not generated in the traditional banking system, but in a set of lightly regulated institutions.
- Broadly defined, shadow banking includes:
  - Familiar institutions: Investment banks, money-market, mutual funds, and mortgage brokers
  - Some old contracts: Sale and repurchase agreements (repo)
  - Some esoteric instruments: Asset-backed securities (ABS), collateralized-debt obligations (CDOs), and asset-backed commercial paper (ABCP).

# Traditional Banking Operations



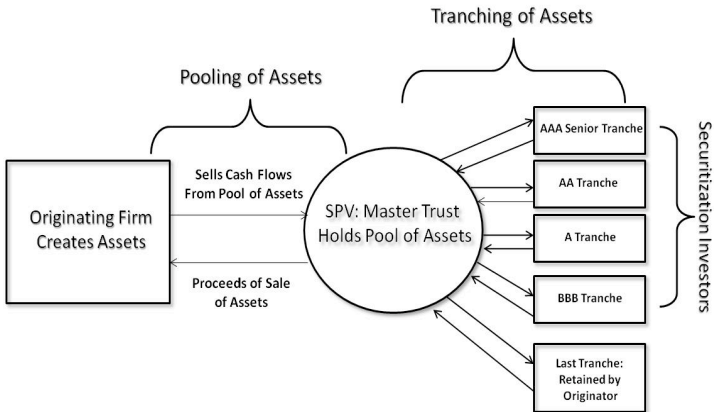
# Shadow Banking Operations



# Shadow Banking

- Step 1: Money market mutual funds (MMMFs)
- Step 2: Similar to step A with repo agreements.
- Step 3: Same as step B.
- Step 4: Securitization used as collateral.
- Step 5: Securitization bought by investors.

# Securitization



# Securitization

- Securitization distributes risk by **aggregating assets in a pool** (often by selling assets to a special purpose entity), then issuing new securities backed by the assets and their cash flows.
- The securities are sold to investors who share the risk and reward from those assets.
- Investors' rights to receive cash flows are divided into "tranches".
- **Not subject to bankruptcy** (since assets are off-balance sheet)

## Securitization

- Dramatic increase in loan sales. A challenge, both theoretically and empirically, to arguments concerning bank existence.
- The borrowing firm could have issued a security directly!!!
- Maybe bank keeps a portion of the cash flows that maintain incentives, as it would have had the entire loan been kept on its balance sheet. (Gorton and Pennacchi (95)).
- Market participants seem to rely on banks' incentives to maintain their reputations for monitoring. (Ordonez (10))
- Banks hide information (Dang, Gorton, Holmstrom and Ordonez (13))



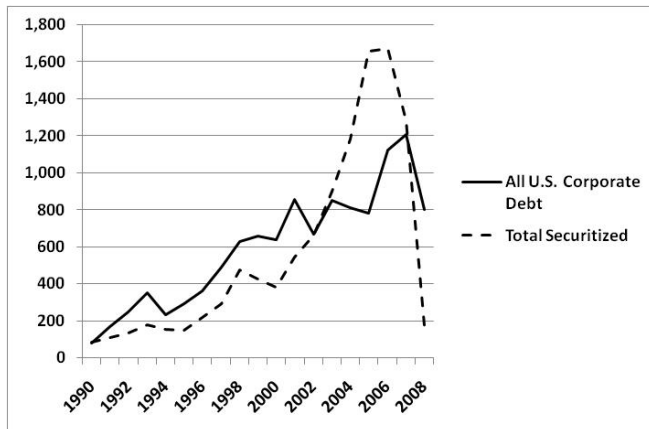
## Securitization and SPVs

- SPV are "bankrupt remote" and cannot become legally bankrupt. Off-balance sheet.
- Why investors put their money in SPVs? Ordonez (11).
- Decline in charter values (due to deregulation) induces more risk-taking and less quality of securities.
- Banks exit the regulated sector via off-balance sheet securitization, which has no requirements for regulatory capital.
- Adverse selection on the origination of securities does not seem to have been a problem. Limited discretion on origination and the residual retained by the originator.

## Securitization

- At the end of 2005 there were \$2 trillion outstanding (10 % of total outstanding bond market debt, 35 % of mortgage-related debt and 40 % of corporate debt in the United States).
- In nominal terms, from 1995 to 2004, ABS amount outstanding has grown about 19 percent annually (with mortgage-related debt and corporate debt each growing at about 10 percent).
- Largest sectors in this market: credit card BS (20 %), home-equity BS (25 %), automobile BS (10 %), and CDOs (17 %).

# Growth of Securitization



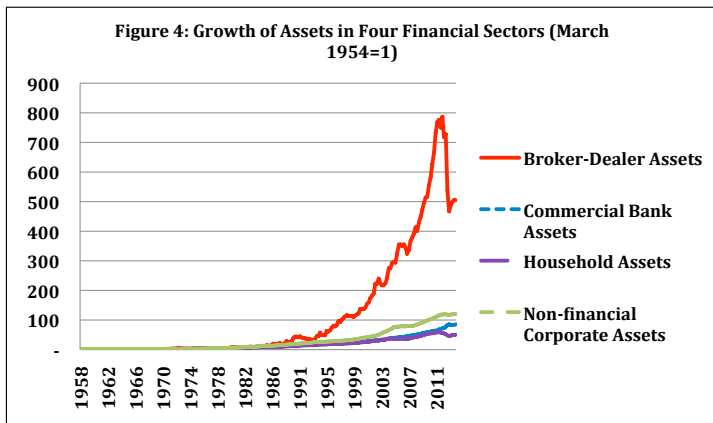
# Why a Shadow Banking?

- Changes in the financial system in the last decades led to a decline of traditional banking
  - More competition from junk bonds and commercial paper
  - Pressures from MMMFs
  - Banks moved out of the traditional banking system.

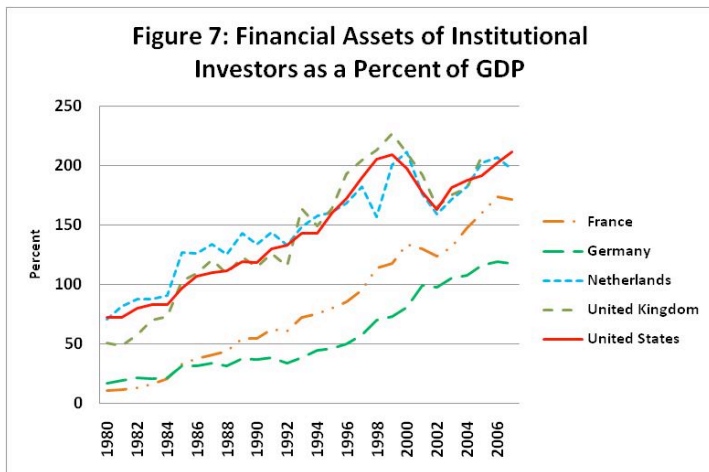
## Institutional Investors (MMMFs)

- They were a response to interest-rate ceilings on demand deposits (Regulation Q), in the seventies.
- MMMFs grew from \$76.36 billion in 1980 to \$1.85 trillion by 2000 and reached a peak of \$3.8 trillion in 2008.
- Highly regulated, but does not have to pay for the implicit insurance that governments provide to the financial system.

# Growth of Institutional Investors



# Growth of Institutional Investors



# Repo

- Growth of money under management by institutional investors. Want safe, liquid investments that pay interests.
- A repo contract is not a debtor in the bankruptcy proceedings.
- Repo collateral can be rehypothecated. Hence, money velocity associated with the collateral.
- The repo became the blood of the financial system.



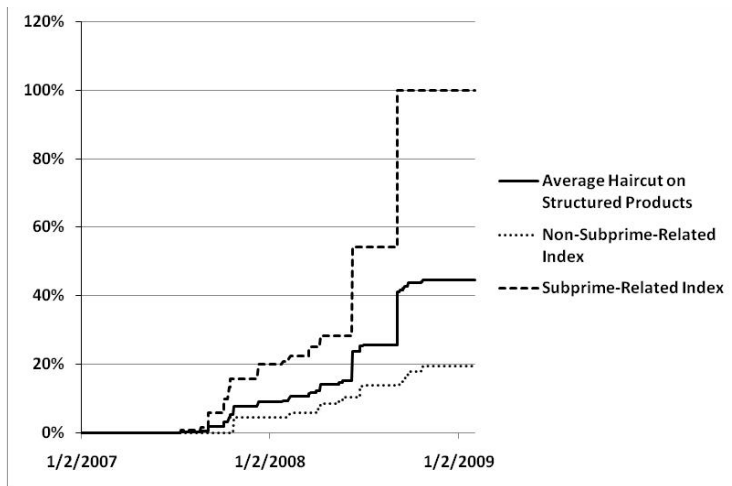
# Repo

- By using a repo a market participant can sell a security that he does not own by borrowing it from another party in the repo market. Short positions in securities markets.
- The Federal Reserve counted repo transactions as money in a monetary aggregate called M3. In 2006 discontinued.
- The repo market had an average daily trading volume of about \$2.3 trillion in 2008, compared to the NYSE of around \$80 billion in 2008.

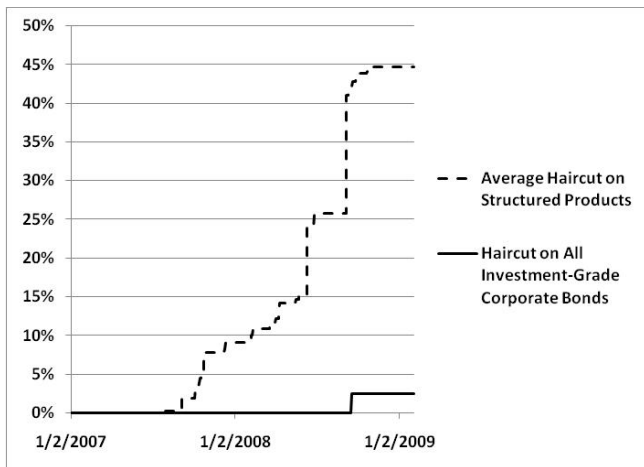
# Collapse of Shadow Banking

- Epicenter of the crisis. Run on repo.
- An increase in a repo haircut is like a withdrawal from banks.
- Run on special purpose vehicles (SPVs).
- Run on MMMFs for a flight to quality (MMMFs started investing in treasury bonds).
- **The crisis was just another "Bank Run".**

# Haircuts



# Haircuts



## A Back of the Envelope Calculation

- Repo Market: \$10 trillion dollars.
- If average haircut grows by 40%, then \$4 trillion has to be raised.
- How? Through assets sales, which reduce prices further.
- This generates a downward spiral such that assets cannot be used much as collateral.
- **This is a large "Bank Run"**

# Message

- **What we observed is not different that what we knew.**
- Increases in repo haircuts are withdrawals from securitized banks, a **standard bank run.**
- Banks are forced to fire sell assets, which drive down asset prices.
- Assets become information sensitive. Liquidity dries up and the system becomes insolvent.

## Need for Regulation

- The problem of demand deposit panics was only solved in 1934 with the passage of federal deposit insurance.
- MMMFs compete with depository banks, provide an implicit promise to investors that they will never lose money (made explicit by the government in the crisis), and do not have to pay for this promise.
- Repo and securitization should be regulated because they are new forms of banking, but with the same vulnerability as other forms of private bank-created money

# Dodd-Franks

- Many provisions relevant to shadow banking:
  - Hedge funds must now register with the SEC.
  - OTC derivatives trading will be moved to exchanges and clearing-houses.
  - All systemically important institutions will be regulated by the Federal Reserve.
  - Retail finance lenders subject to regulation from the Consumer Financial Protection Bureau.
- Almost silent on regulation for MMMFs, securitization and repo!!!