Discussion
"Banks Interconnectivity and Leverage"
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Banks Interconnectivity and Leverage

- ▶ What links banks' interconnectiveness to leverage

- ▶ Observation:
  - ▶ before crisis: increase in lev & connect.
  - ▶ after crisis: sudden fall in lev & connect.

- ▶ Paper is about:
  - ▶ explaining these dynamics
  - ▶ parsimonious model
  - ▶ bayesian learning about crisis

- ▶ Important question!
  - ▶ financial fragility and regulation

Discussion

- Model
- How it connects to the data
- Good framework to think about how high leverage and interconnectivity lead to fragility?
- NB: I focus on US

Basic Model Structure

- ▶ partial equilibrium bank optimization

- ▶ risk-averse entrepreneurs = banks

- ▶ assets: capital, risk-free asset, insurance, net worth

- ▶ face idiosyncratic shocks on capital

- ▶ capital higher expected return but risky

- ▶ want insurance because of risk-aversion

- ▶ Insurance
  - ▶ subject to non-linear costs
  - ▶ give up a fraction of capital exposed to idiosyncratic risk
  - ▶ all banks do that: bundle idiosyncratic parts to riskless index-like bond

- ▶ Individual banks' capital structure not determined
  - ▶ determined by equity owner's risk aversion

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- ▶ Model take-away

  - ▶ Bank capital structure determined by equity holders' risk aversion
  - ▶ Measures correlated bc parameters move them in SAME direction
  - ▶ Higher expected return: more risk bearing capacity $\rightarrow$ increase leverage
  - ▶ More risk more incentives for ↑ insurance
  - ▶ Movements over time bc beliefs about p move

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    - loan syndicate (suggested by authors)
    - intermediation chains, funding (used in empirical analysis)
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- ▶ role of regulatory arbitrage
  - ▶ no increase in U.S. bank holding company leverage
  - ▶ commercial banks used ABCP conduits to lower regulatory capital Acharya, Schnabl, Suarez JFE 2013

US- Bank holding company sample

Leverage

Interconnectedness
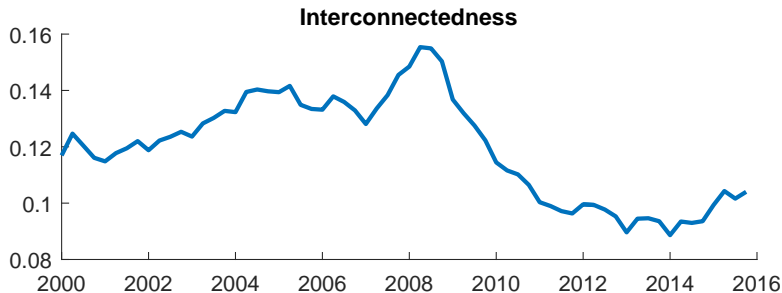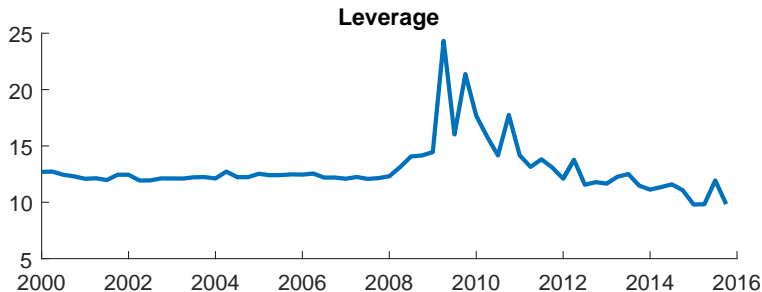
ABCP Conduits used by largest banks

## Table from Acharya, Schnabl & Suarez JFE 2013

Panel B: Ten largest sponsors

Sponsor	Country	ABCP (billion)	Assets (billion)	Tier 1 capital (billion)	ABCP/Tier 1 (percent)	Tier 1 ratio (percent)
Citigroup	United States	92.7	1,884.3	90.9	102.0	8.6
ABN Amro	Netherlands	68.6	1,300.0	31.2	219.5	8.5
Bank of America	United States	45.7	1,459.7	91.1	50.2	8.6
HBOS Plc	Great Britain	43.9	1,161.7	44.0	99.7	8.1
JP Morgan	United States	42.7	1,351.5	81.1	52.7	8.7
HSBC	Great Britain	39.4	1,860.8	87.8	44.9	9.4
Deutsche Bank AG	Germany	38.7	2,070.0	31.0	125.0	8.5
Société Générale	France	38.6	1,260.2	29.4	131.3	7.8
Barclays Plc	Great Britain	33.1	1,956.7	45.2	73.2	7.7
Rabobank	Netherlands	30.7	732.9	34.8	88.3	10.7

ABCP market larger over time

Figure from Acharya, Schnabl & Suarez JFE 2013

A
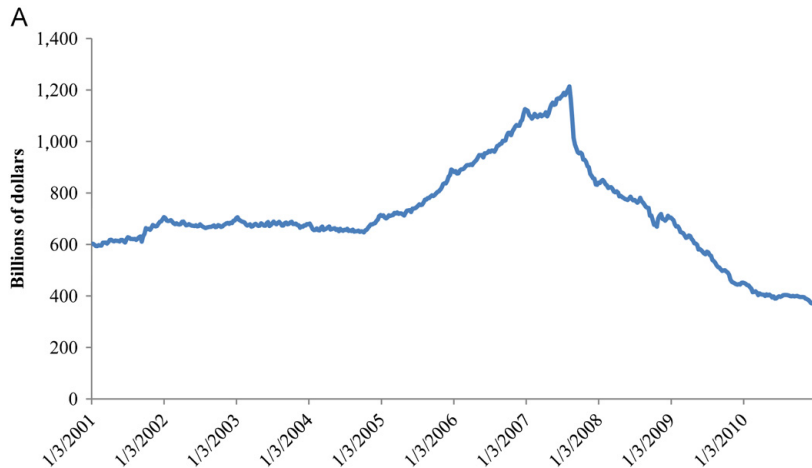
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- ▶ Leverage and risk-taking might have been excessive
    - ▶ in model M&M holds, $V^F \perp\!\!\!\perp$ capital structure
    - ▶ tax advantage of debt, bankruptcy costs, limited liability with deposit insurance and implicit bailout guarantee etc
    - ▶ increase because
        - ▶ leverage ratchet Admati, DeMarzo, Hellwig, Pfleiderei
        - ▶ more competition among fin. institutions Hanson, Kashyap, Stein
        - ▶ increase in demand for safe assets Bernanke

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- ▶ What drives differences in leverage dynamics?
    - ▶ commercial banks: no increase
    - ▶ broker dealers: increase
    - ▶ diff driven by differential beliefs?

Risk-weighted assets

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- Ratio of risk-weighted assets to assets in the data
  - no perfect measure of risk exposure
  - but high RWA/A in 2004-2005 associated with larger cum. losses, lower profitability & lower capital ratios during 2008-2012 (Begenau & Stafford 2016)

Risk-Weighted Assets relative to Assets

Risk-weighted Assets rel. Assets
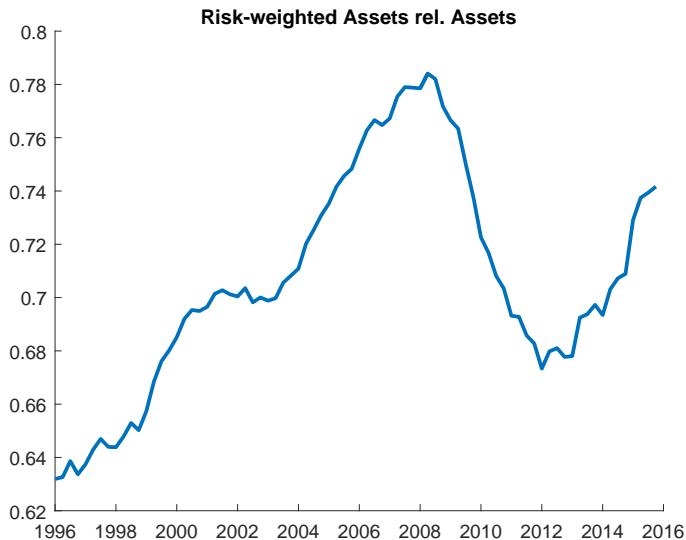
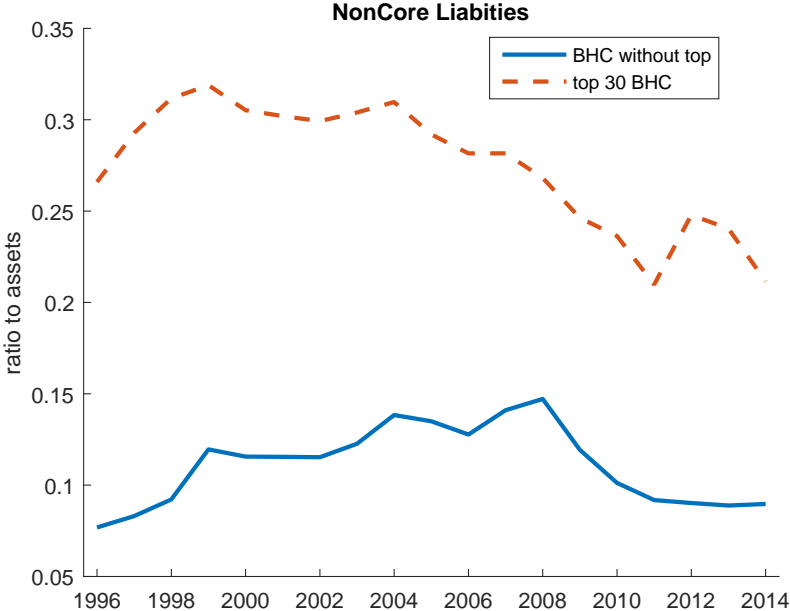▶ exposure ↑ to securities with high RW – not necess. agg. exp
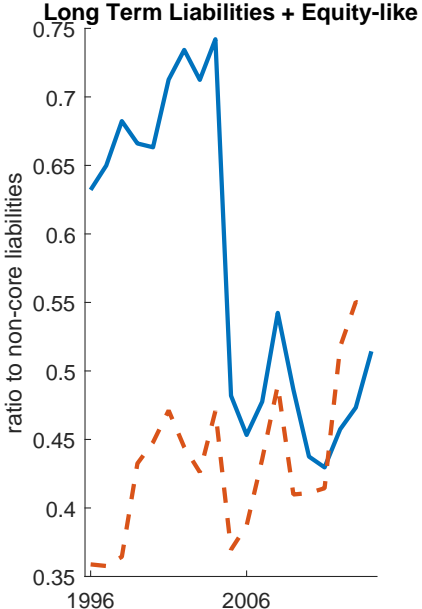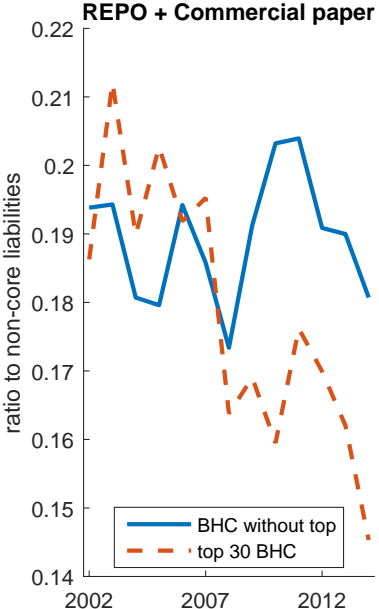
RWA/A ratio for low and high capitalized banks

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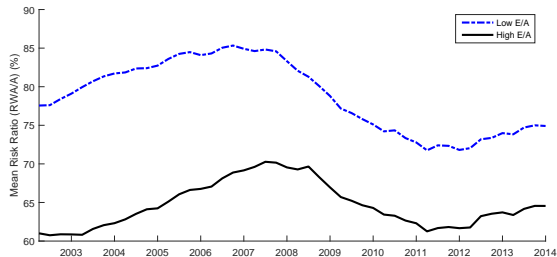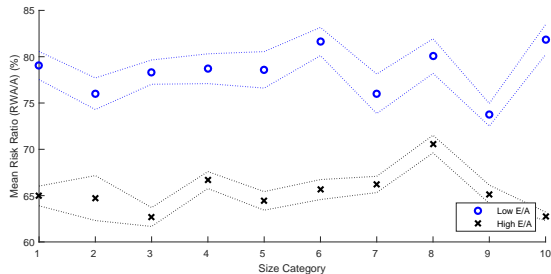
Measuring Connectiveness

- paper measures it as (Non-Deposit Liabilities)/Assets

BHC Sample: Non-Core Liabilities

NonCore Liabities

ratio to assets

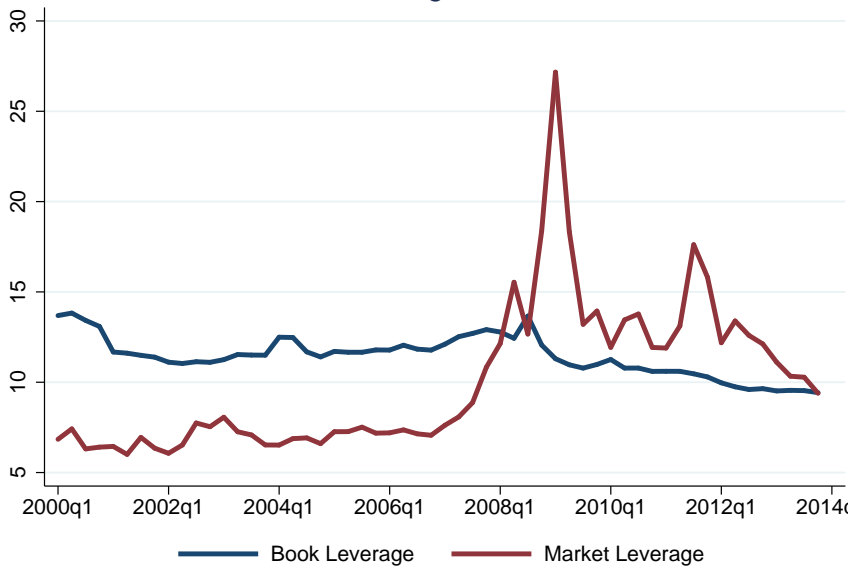Legend: BHC without top; top 30 BHC

BHC Sample: Non-Core Components

Measuring Leverage: Book versus Market

Leverage Ratios

Conclusion

- ▶ Very nice paper!

- ▶ Important question with a Bayesian learning story as answer
  - ▶ parsimonious and transparent, remarkably successful
  - ▶ M&M view of bank capital structure
  - ▶ Assigns learning important role to Bayesian learning
  - ▶ Cross-sectional differences due to different diversification technologies leads to more interconnectivity and leverage

- ▶ Good framework to think about how high leverage and interconnectivity lead to fragility?

- ▶ Suggestions
  - ▶ connect model better to the data
    - ▶ risk-aversion?
    - ▶ role of excessive risk-taking and systemic risk
    - ▶ institutional details (deposit insurance....)
    - ▶ what drives differences among different intermediaries

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Additional notes 1

- "'return differential"' is not equal to R^K/R^L as former takes leverage into account latter does not, thus time series of "'return-differential"' not conclusive about time series of investment opportunities (though I agree - interest margins have declined over time)
- interest income is only a small portion of income for non-depository institutions - suggest to include net income (includes all income sources) and for robustness net income $+$ interest expense as highly levered firms will have higher interest expense mechanically
- compute return differential per sector
- statement on banks with lower diversification costs suggest that smaller banks should have been less inte

Additional notes 2

- in the flow of funds: interbank liabilities only include depository institutions (not brokers for example) and the FED which you seemed to have netted out - would be great to have a data appendix with the precise definitions and series mnemonics
- a_{t+1} on page 35 is not assets - it's like equity after shocks
- residuals in equation (22) probably serially autocorrelated
- prop 5.1. particularly its proof not very clear and intuitive