

Financial Intermediation and the Post-Crisis Financial System

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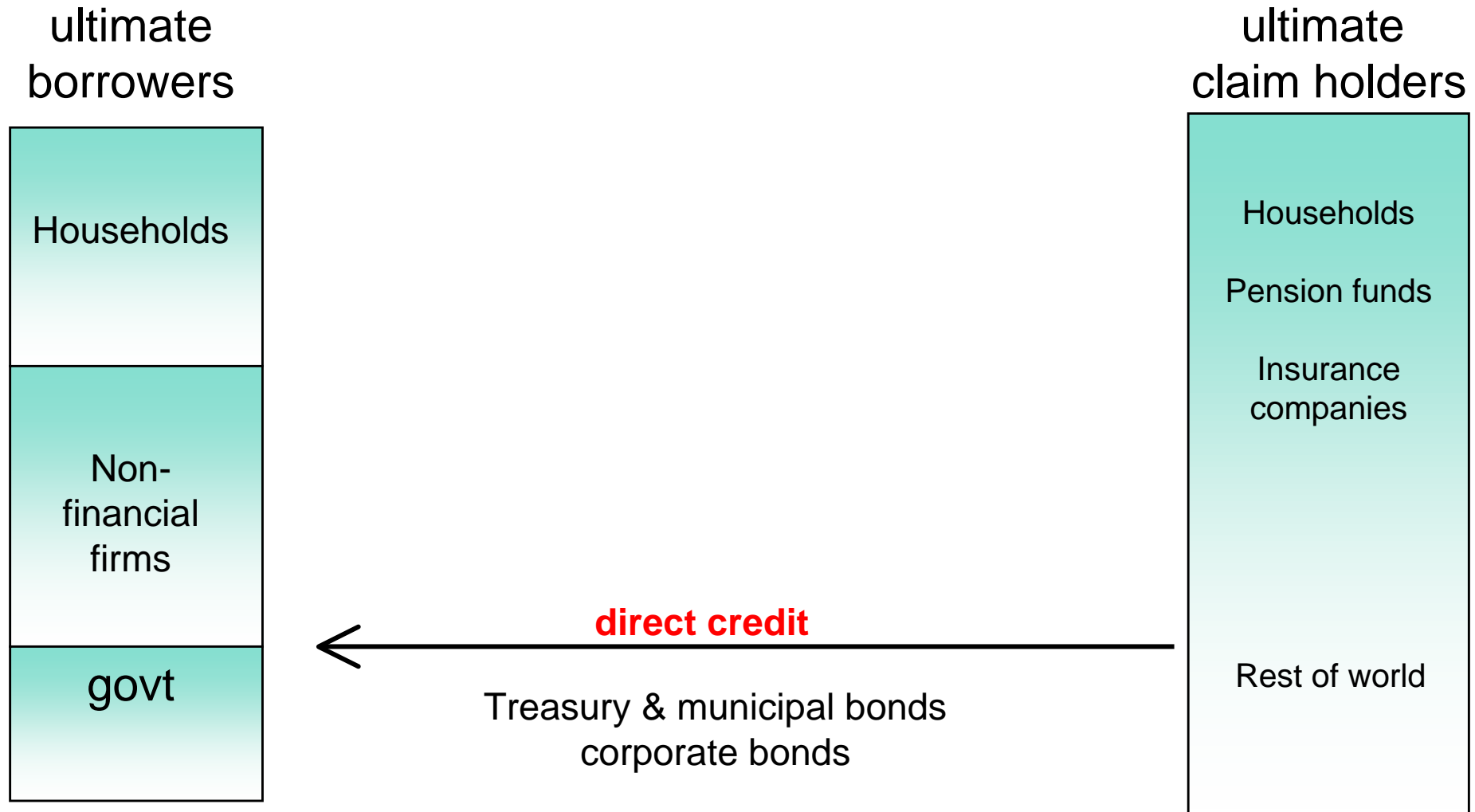
8th BIS Annual Conference

Basel, June 25-26, 2009

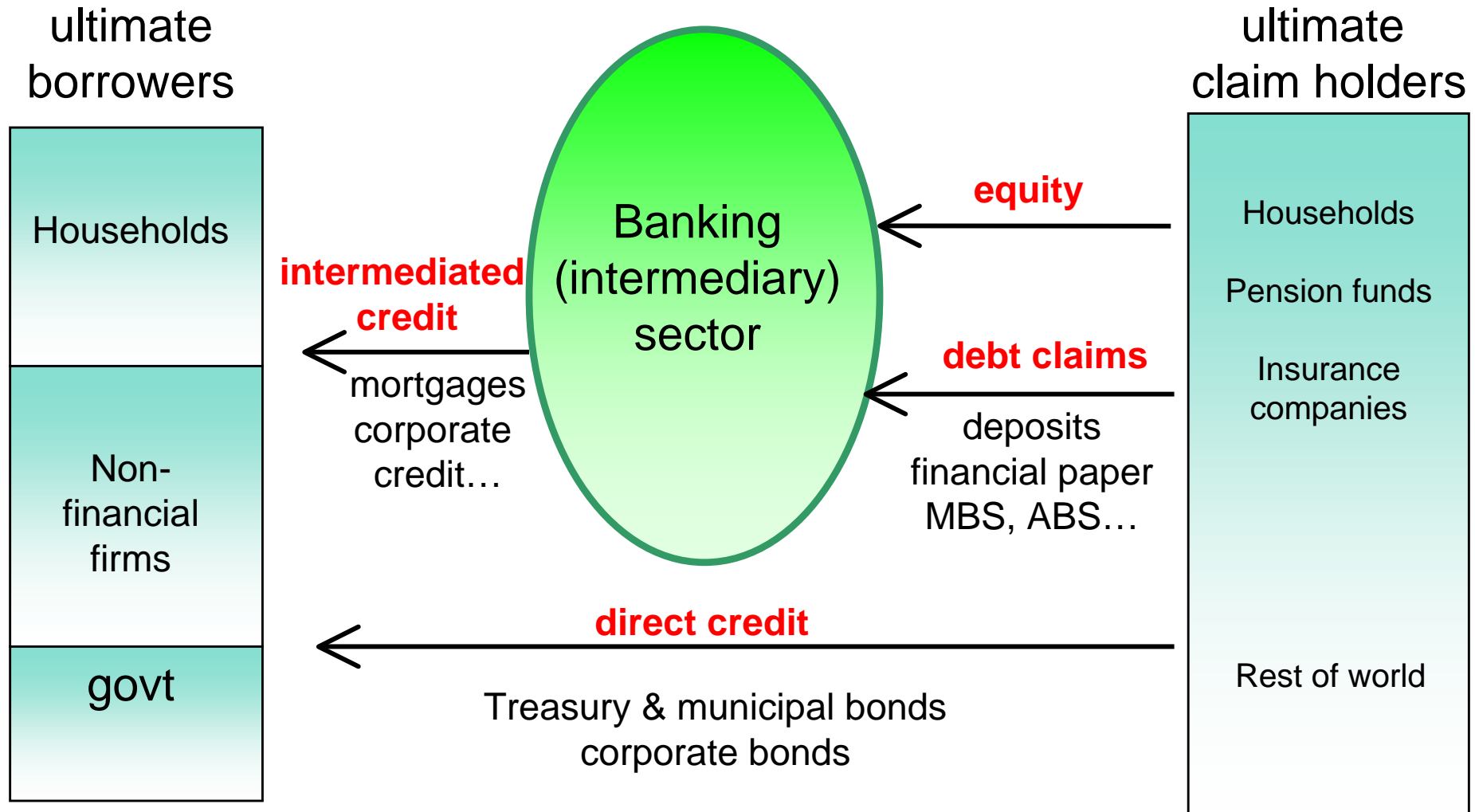
Outline

- Lessons on financial system architecture from global financial crisis
- Implications for
 - Size of financial sector relative to real economy
 - Securitization
 - Financial regulation
 - Accounting standards
 - Monetary policy

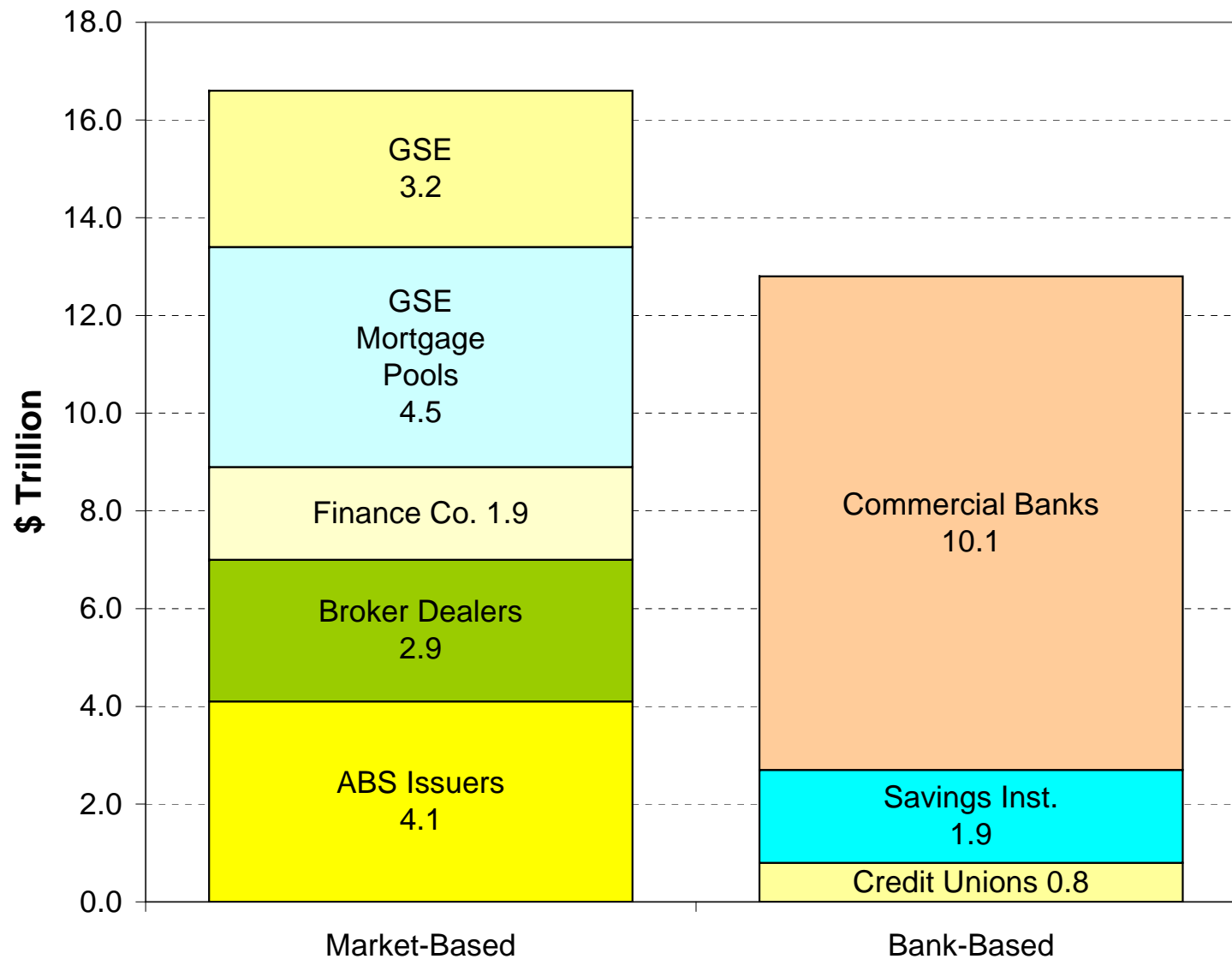
Stylized Financial System



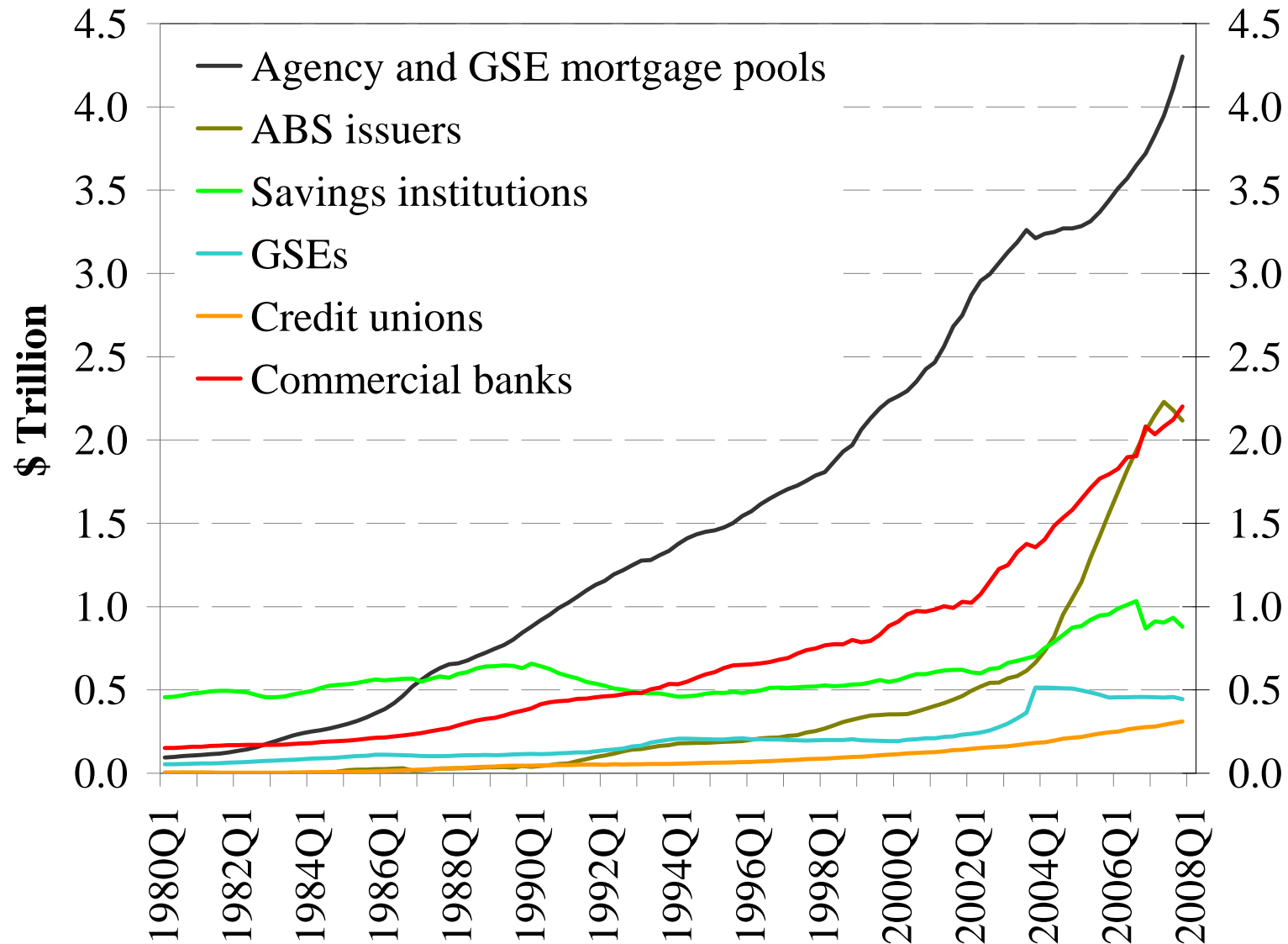
Stylized Financial System



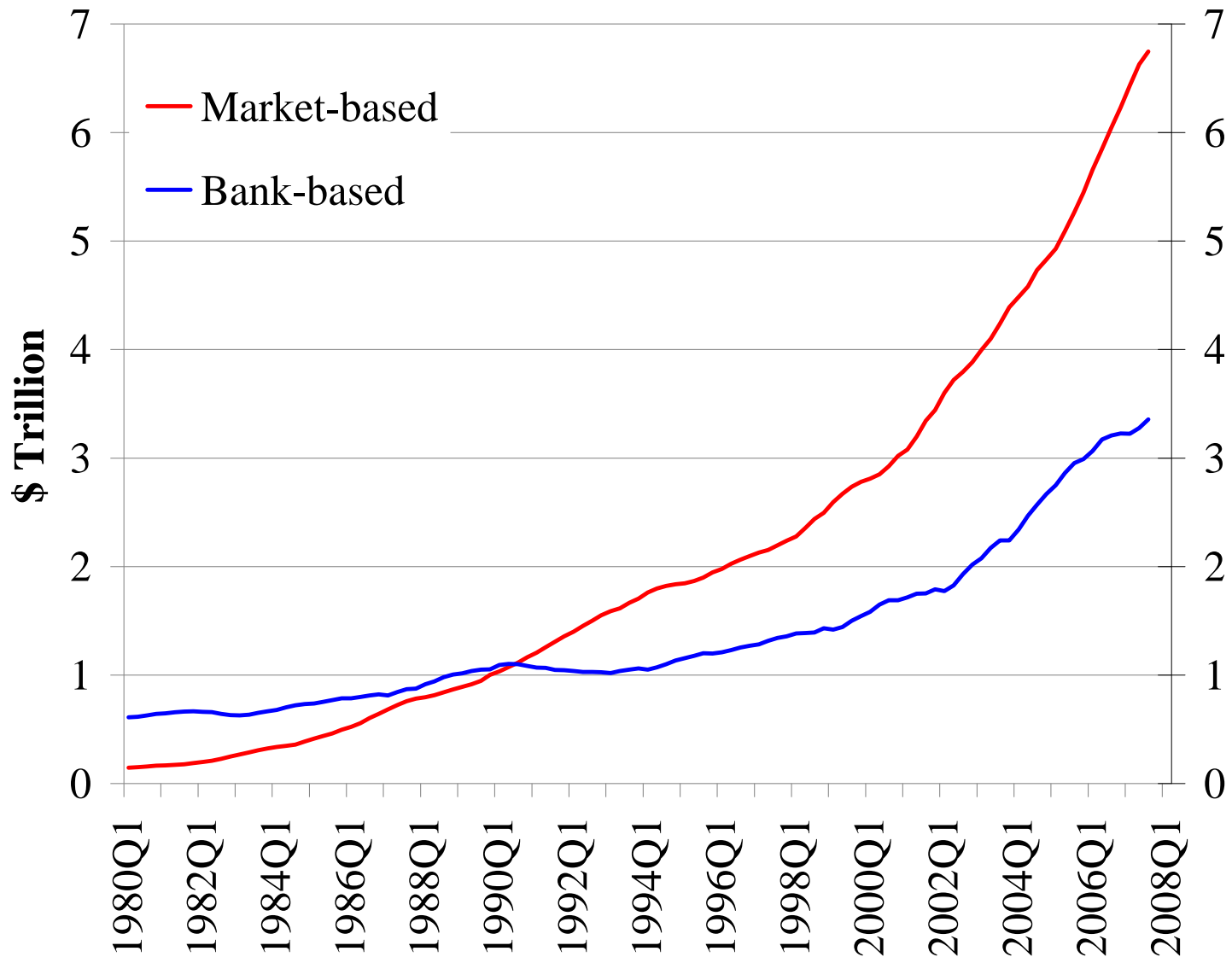
US Financial Intermediaries Total Assets (2007Q2)



Holding of US Home Mortgages by Type of Financial Institution



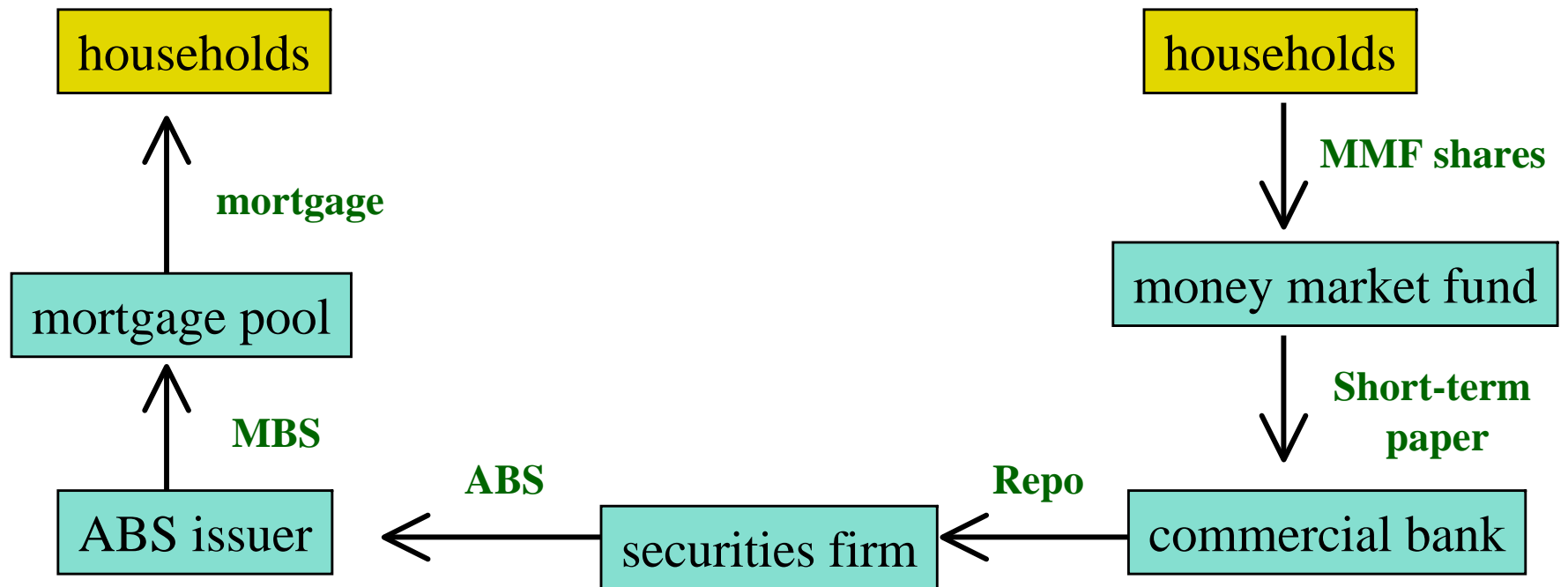
Market-Based and Bank-Based Holding of Home Mortgages



Short Intermediation Chain



Long Intermediation Chain



What Are the Advantages of the Long Intermediation Chain?

- “Securitization enables dispersion of credit risk”
- “Long chains promote more efficient maturity transformation”
 - “Households want short, liquid claims”
 - “Shadow banking system gives them what they want”

But Evidence in this Crisis Points the Other Way

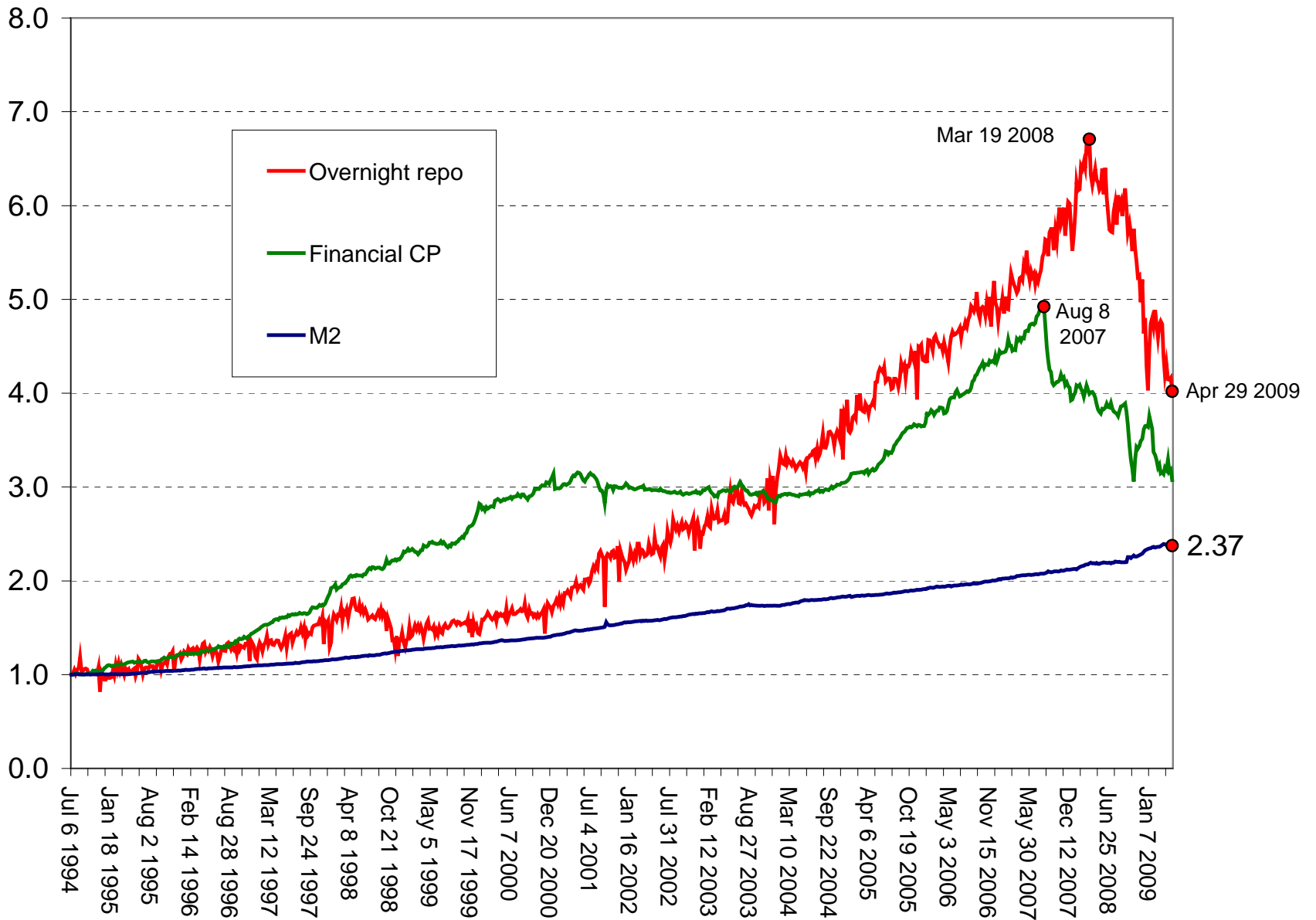
- Securitization has *concentrated risks* in leveraged sector
- Biggest growth in short-term debt was *between* financial intermediaries
- Financial intermediaries have become more *intertwined*
 - “CoVaR” Adrian and Brunnermeier (2009)

Exposure to Subprime

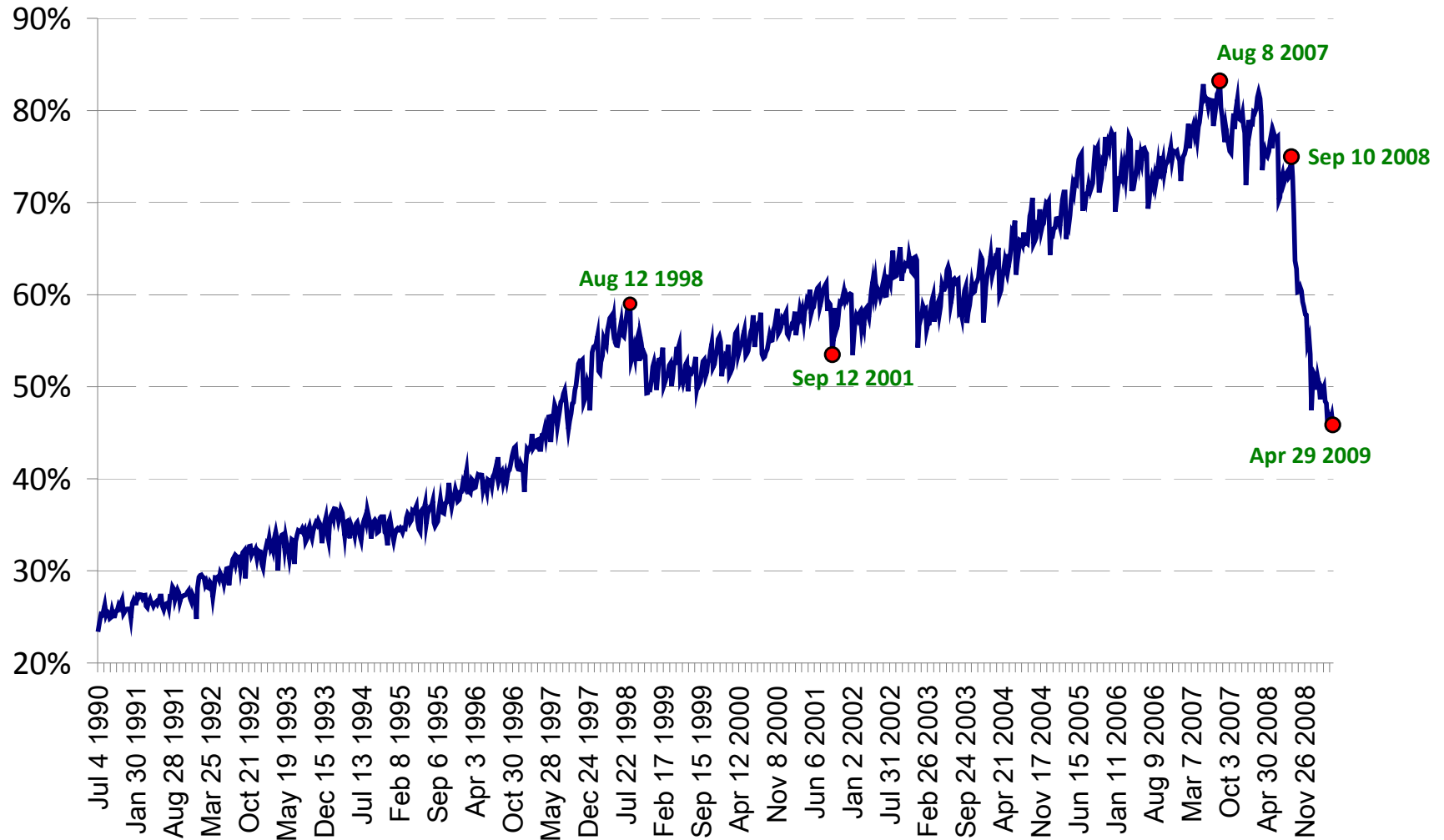
	Total reported sub-prime exposure (US\$bn)	Percent of reported exposure
Investment Banks	75	5%
Commercial Banks	418	31%
GSEs	112	8%
Hedge Funds	291	21%
Insurance Companies	319	23%
Finance Companies	95	7%
Mutual and Pension Funds	57	4%
Leveraged Sector	896	66%
Unleveraged Sector	472	34%
Total	1,368	100%

Source: Greenlaw, Hatzius, Kashyap and Shin (2008)

Overnight repos, Financial CP and M2 (weekly, July 6 1994 as base date)



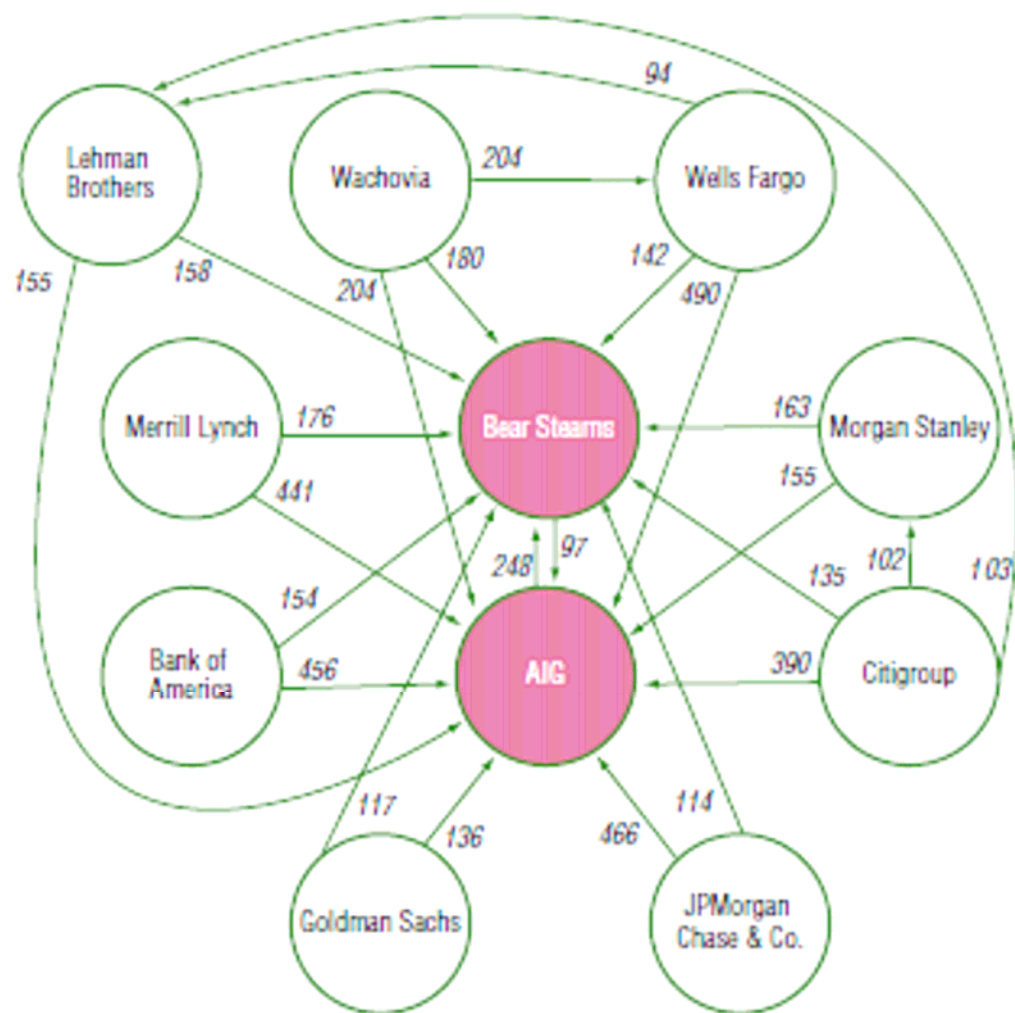
Repos and Financial CP as Fraction of M2 (weekly)



Source: Adrian and Shin (2009)

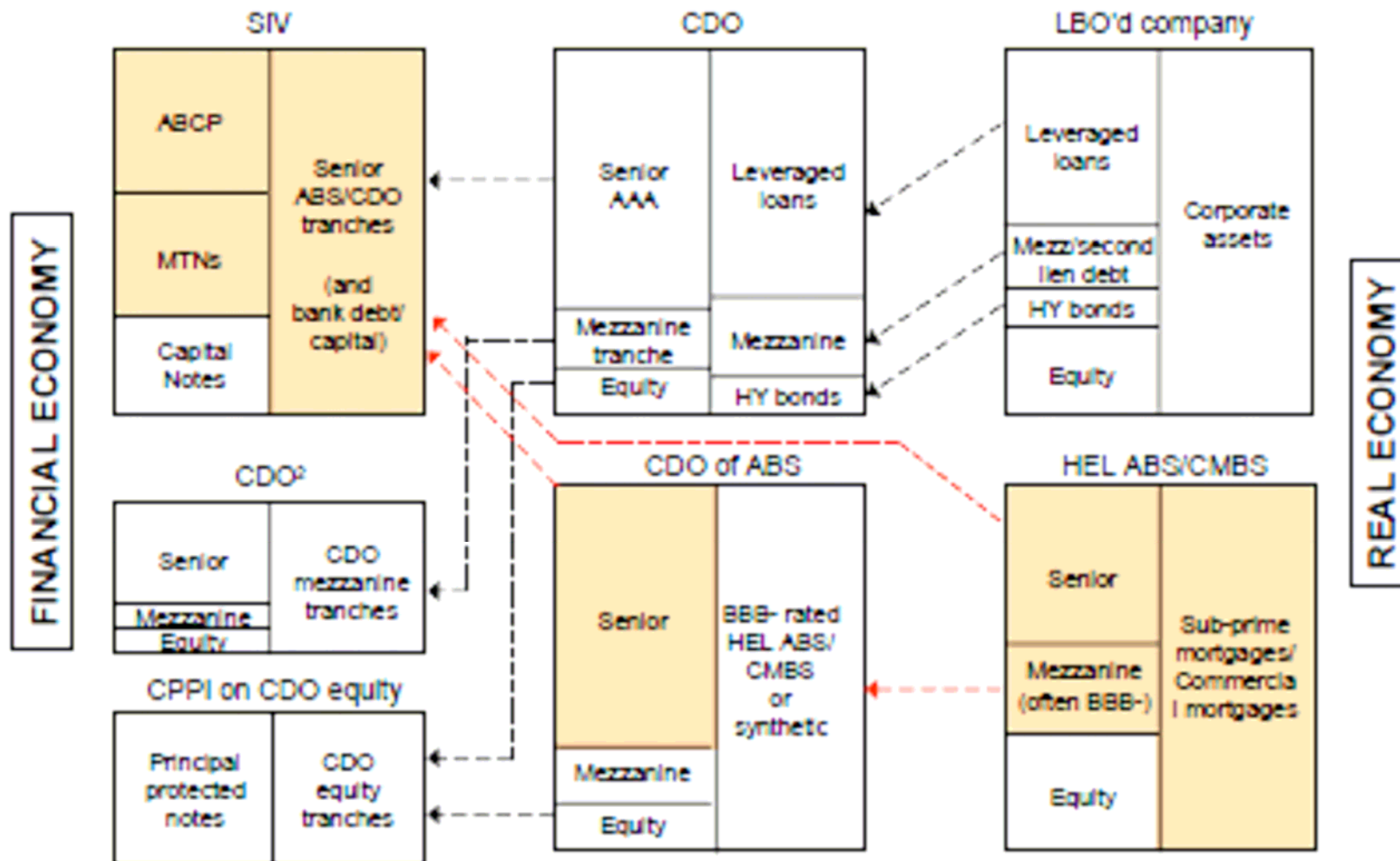
US Institutions' CoVaR

IMF Co-Risk Measures (March 2008)



Source: IMF GFSR (April 2009)

Multi-layered Financial System



Source: Haldane (2009)

Global Interconnectedness

Chart 2: Global Financial Network: 1995

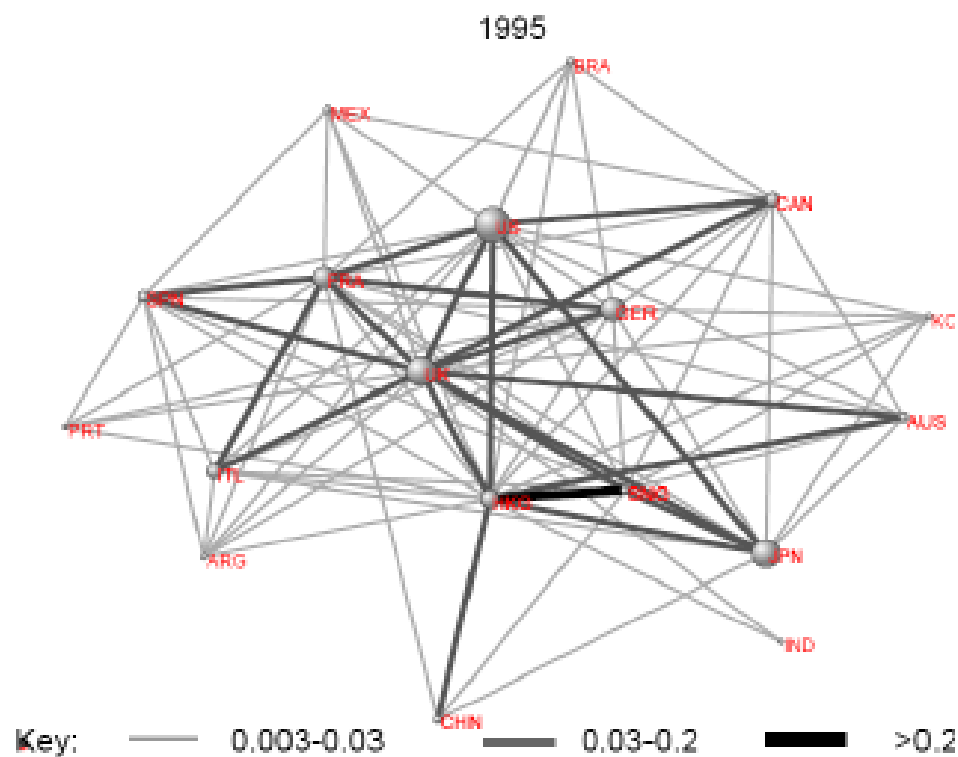
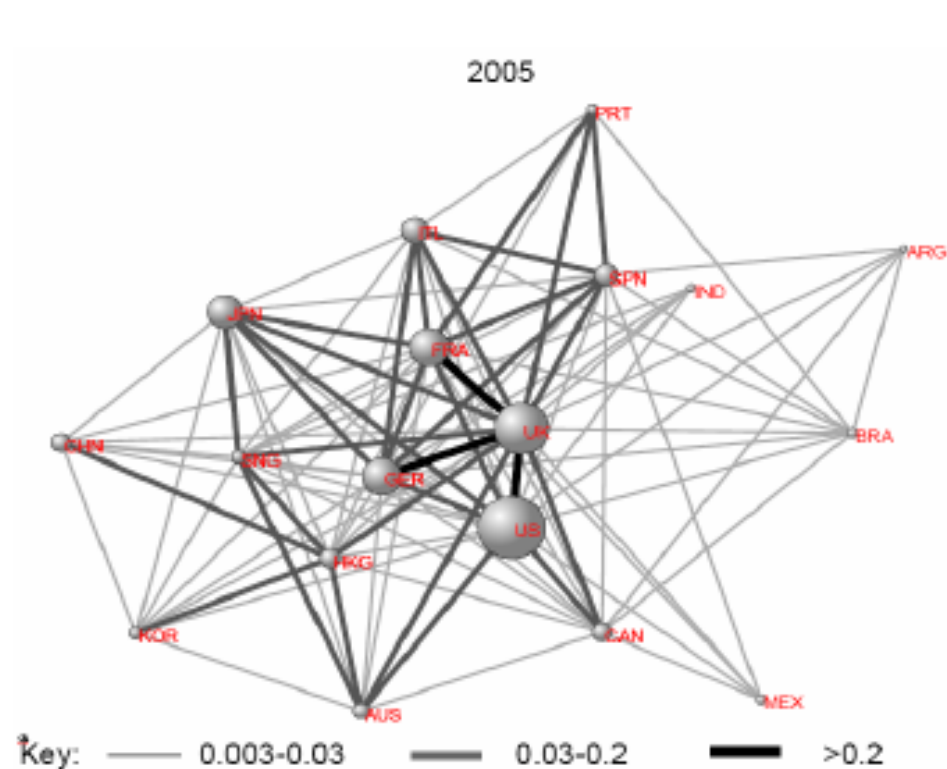


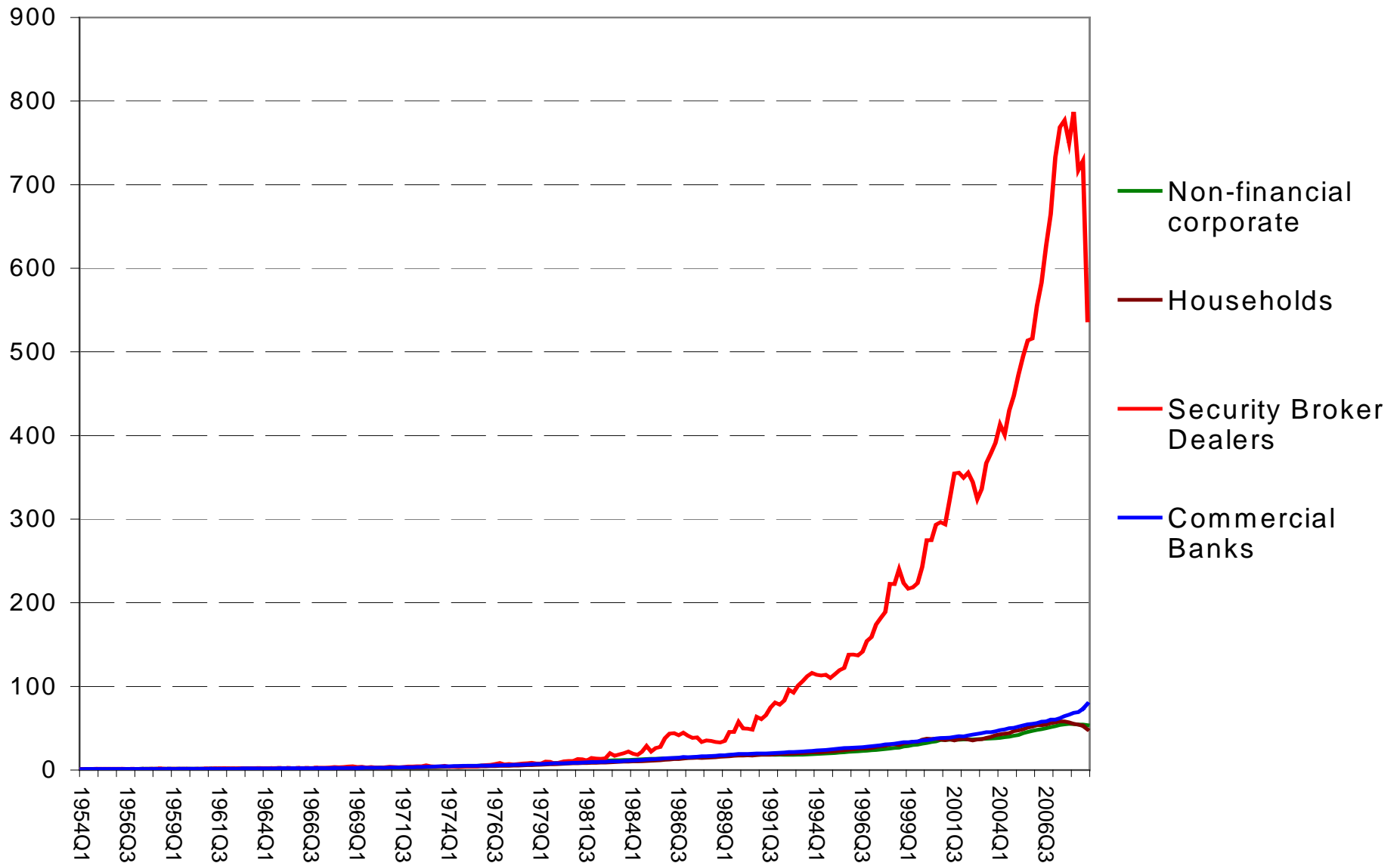
Chart 3: Global Financial Network: 2005



Source: Haldane (2009)

Relative Size of Intermediary Sector

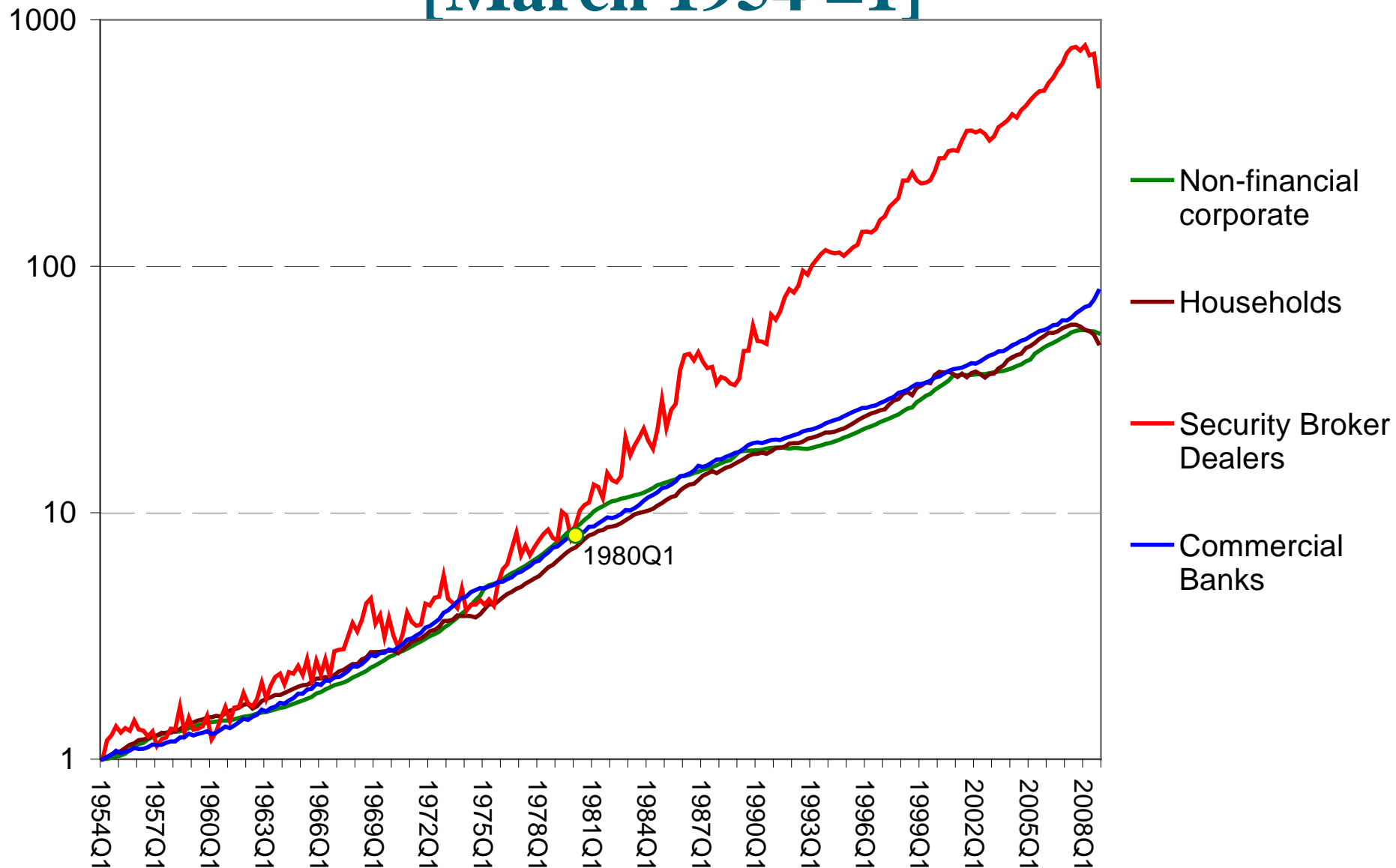
Total Assets of Four Sectors [March 1954 = 1]



(Source: Federal Reserve, Flow of Funds)

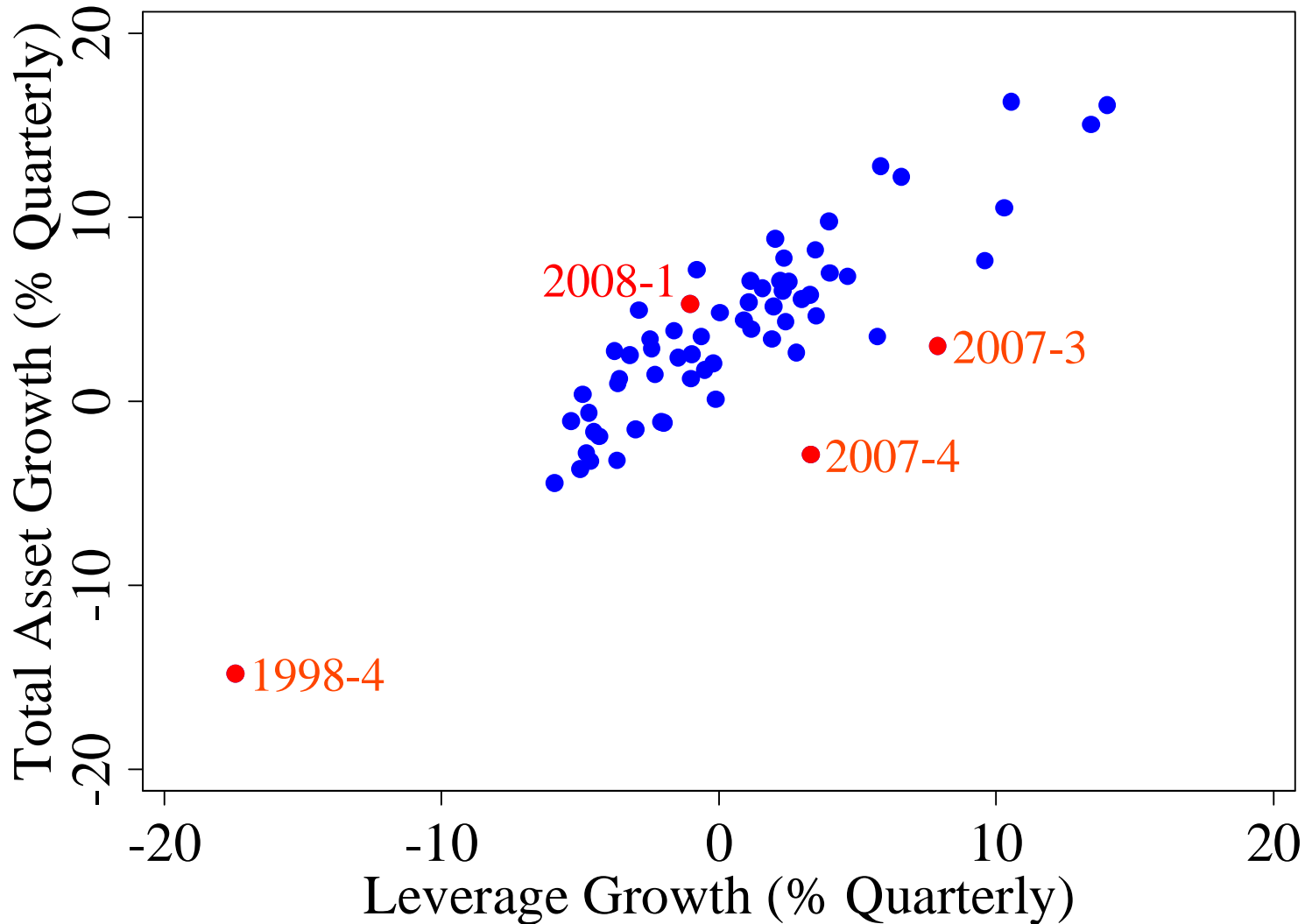
Total Assets (Log Scale)

[March 1954 = 1]



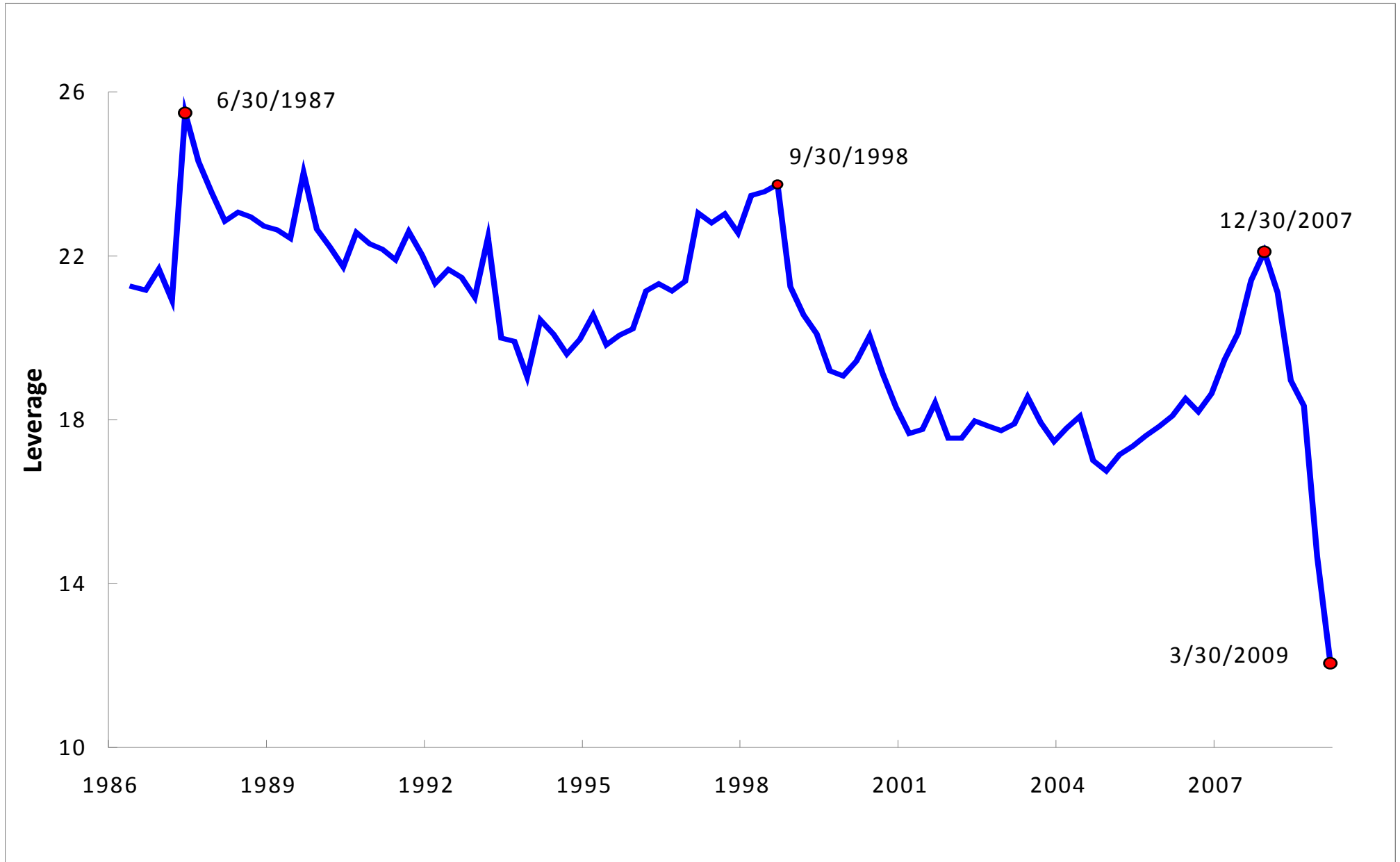
(Source: Federal Reserve, Flow of Funds)

Procyclical Leverage of Five US Investment Banks

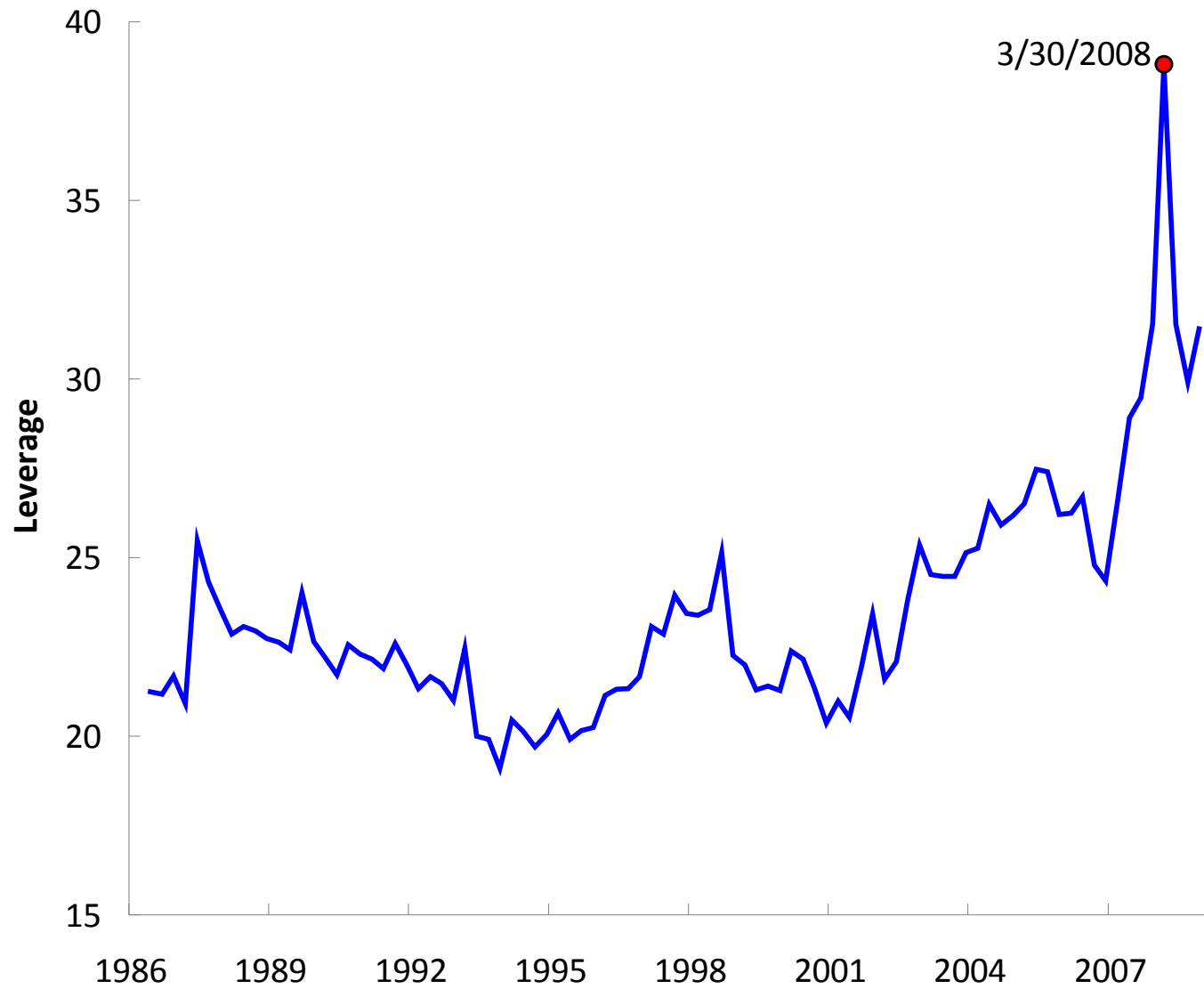


Source: Adrian and Shin (2007)

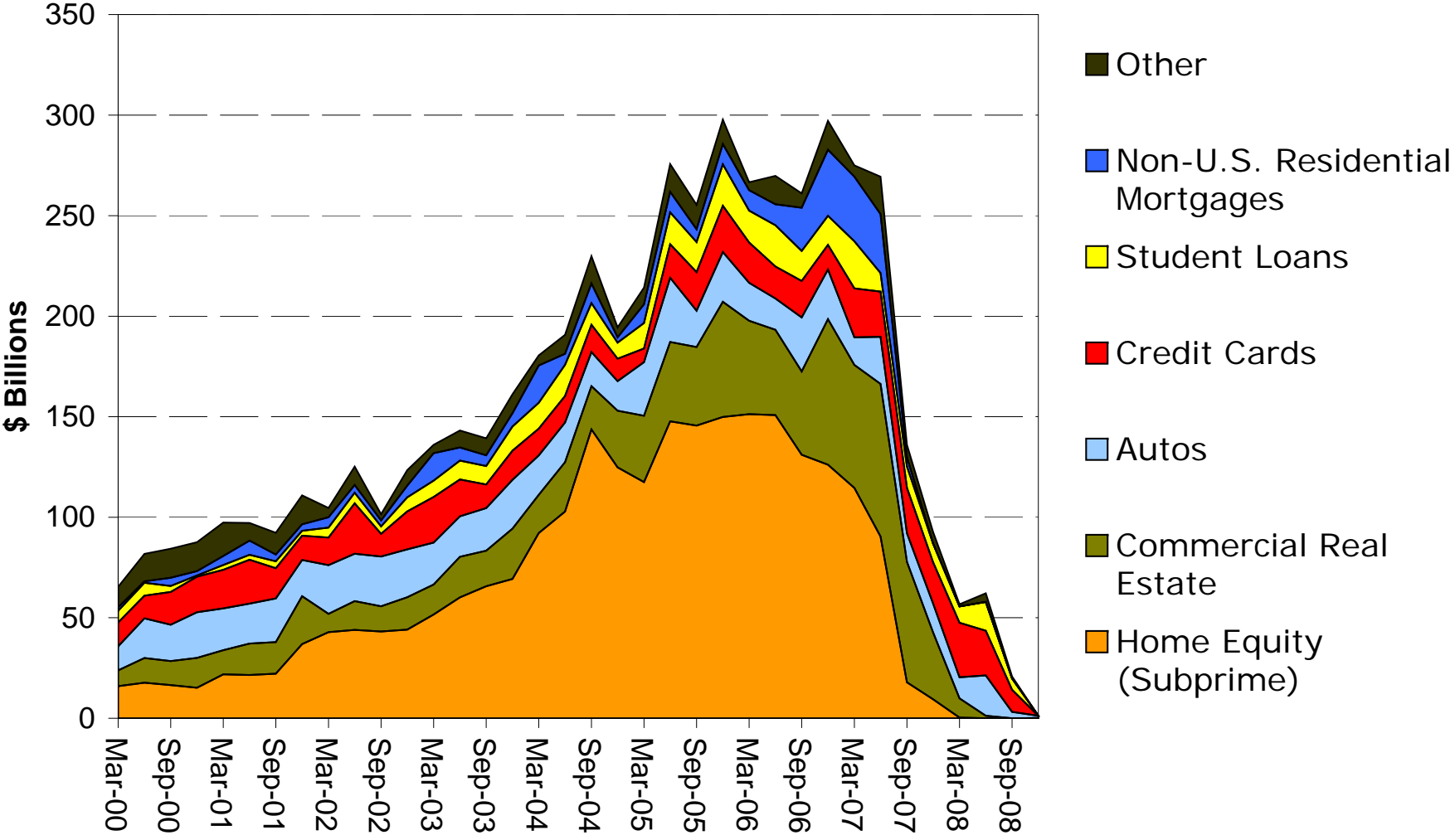
US Primary Dealer Mean Leverage



All Primary Dealer Mean Leverage

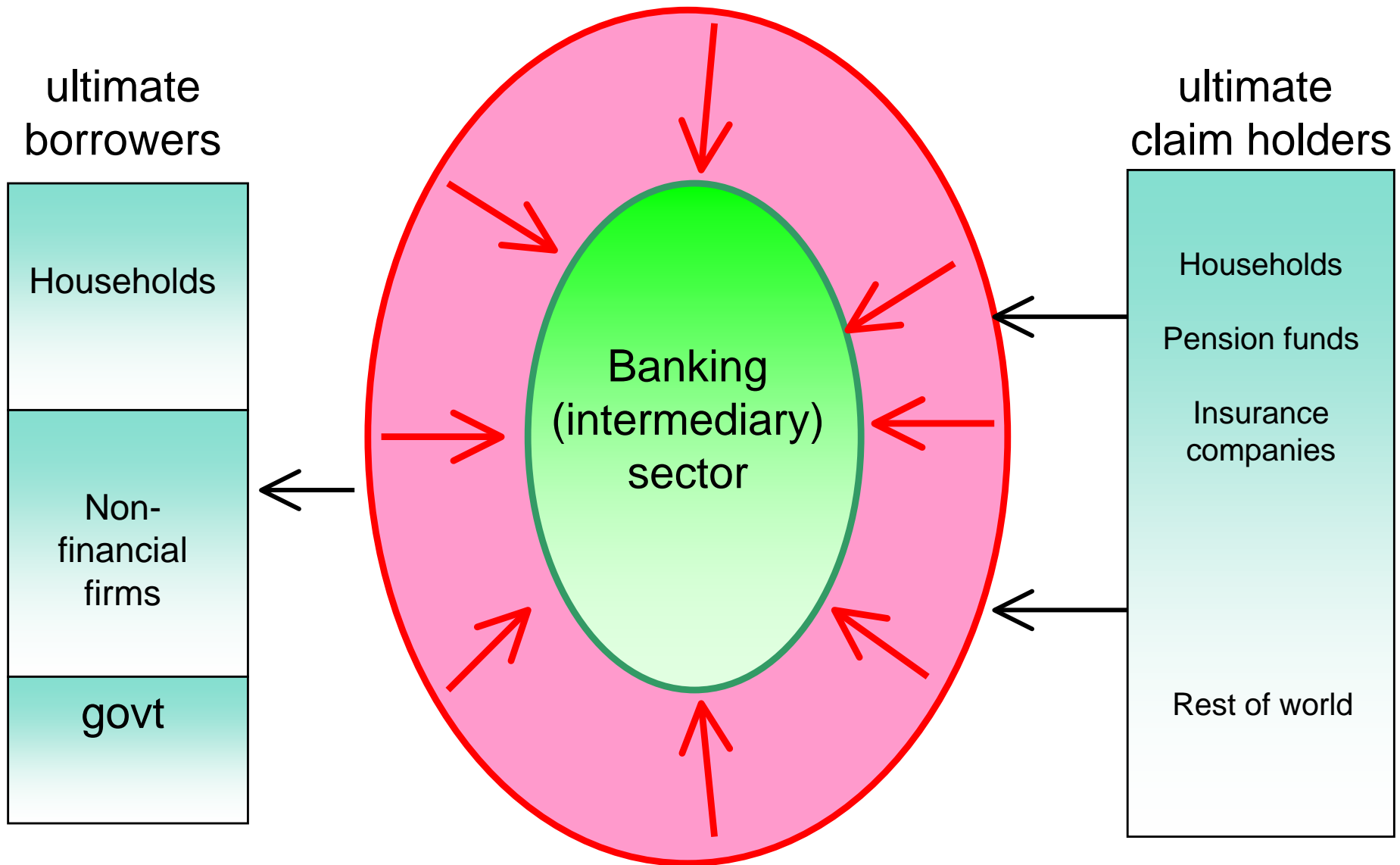


New Issuance of Asset Backed Securities in Previous Three Months

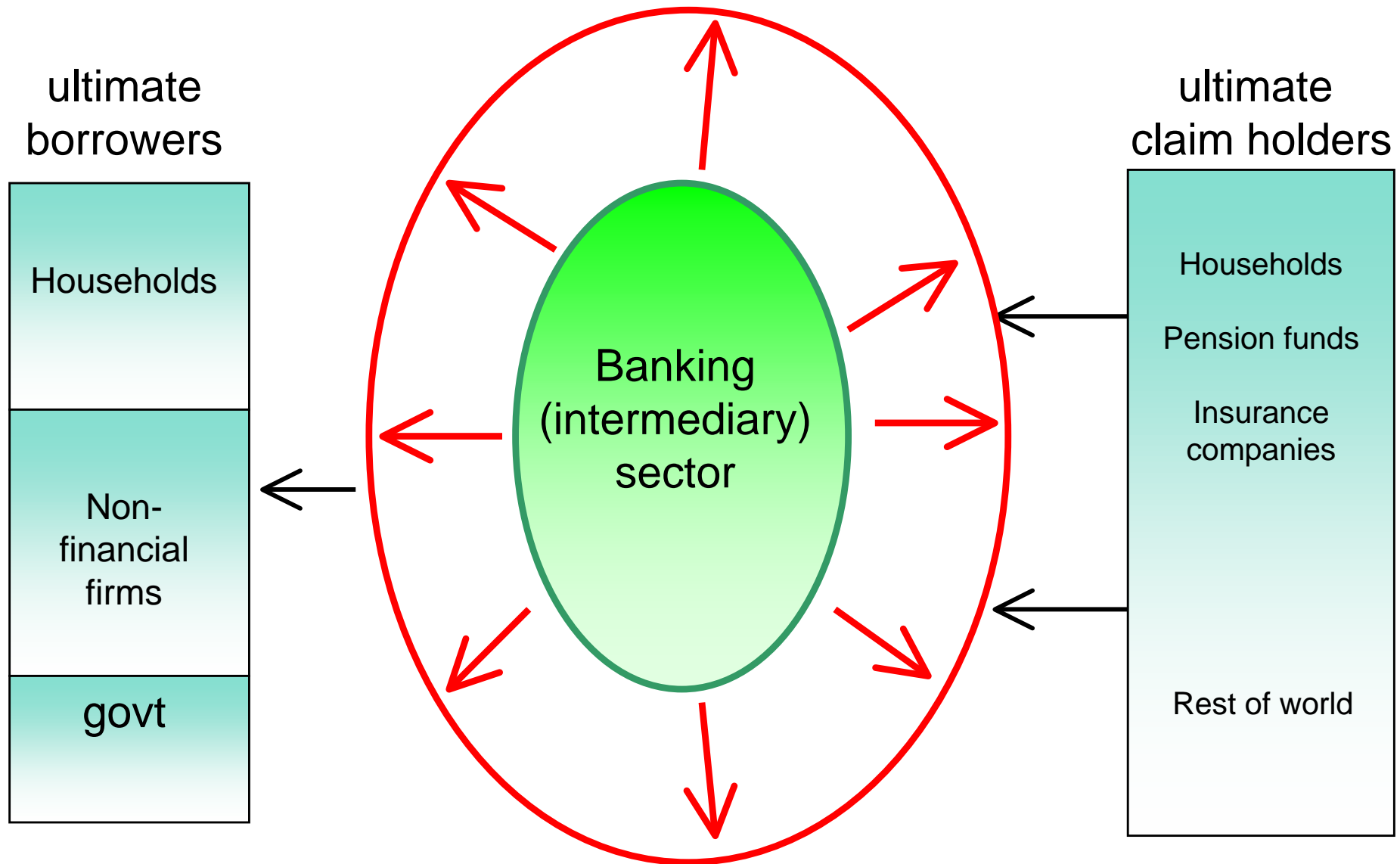


Source: JP Morgan

Biggest Damage is Done in Contractions



But Seeds of Crises Are Sown in Expansions



How To Moderate Balance Sheet Boom/Bust Cycles?

Individual Bank Balance Sheet

Assets

Liabilities

Loans to firms, households	Liabilities to non-banks (e.g. deposits)
Claims on other banks	Liabilities to other banks
	Equity

Individual bank

Balance Sheet for Banking Sector

Assets	Liabilities
Total lending to ultimate borrowers (firms, households govt)	Total debt liabilities to non-banks Total equity

Banking sector

**Slow moving:
increases in line
with household wealth**

Aggregate Balance Sheet Identity

$$\sum_{i=1}^n y_i = \sum_{i=1}^n e_i z_i (\lambda_i - 1) + \sum_{i=1}^n e_i$$

Total lending to
ultimate borrowers

Total debt liabilities
To non-banks

Total equity of
intermediaries

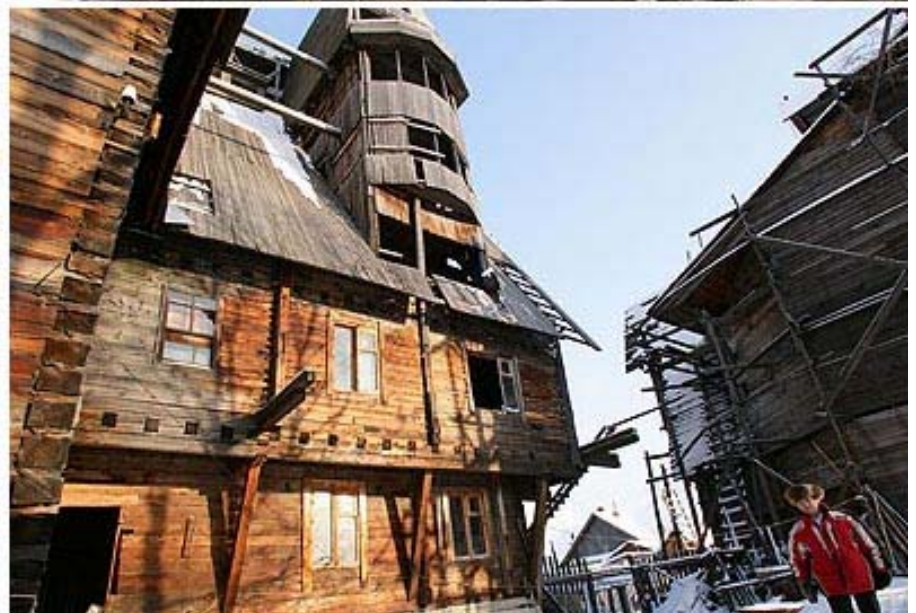
Booms

- Higher leverage of financial intermediaries
- Larger balance sheets of intermediaries
- Greater intertwining of intermediaries
 - Longer chains
 - Maturity mismatch to sustain longer chains

Architectural Analogy

- Adding extra capacity (more rooms) to a house when constrained by limited footprint
 - The only way is to build up (like a Manhattan skyscraper)
 - Except that Manhattan skyscraper is planned ahead, as a coherent whole
 - Better analogy is adding extra floors to a building without anticipating future floors on top

Sutyagin House in Archangel



Busts

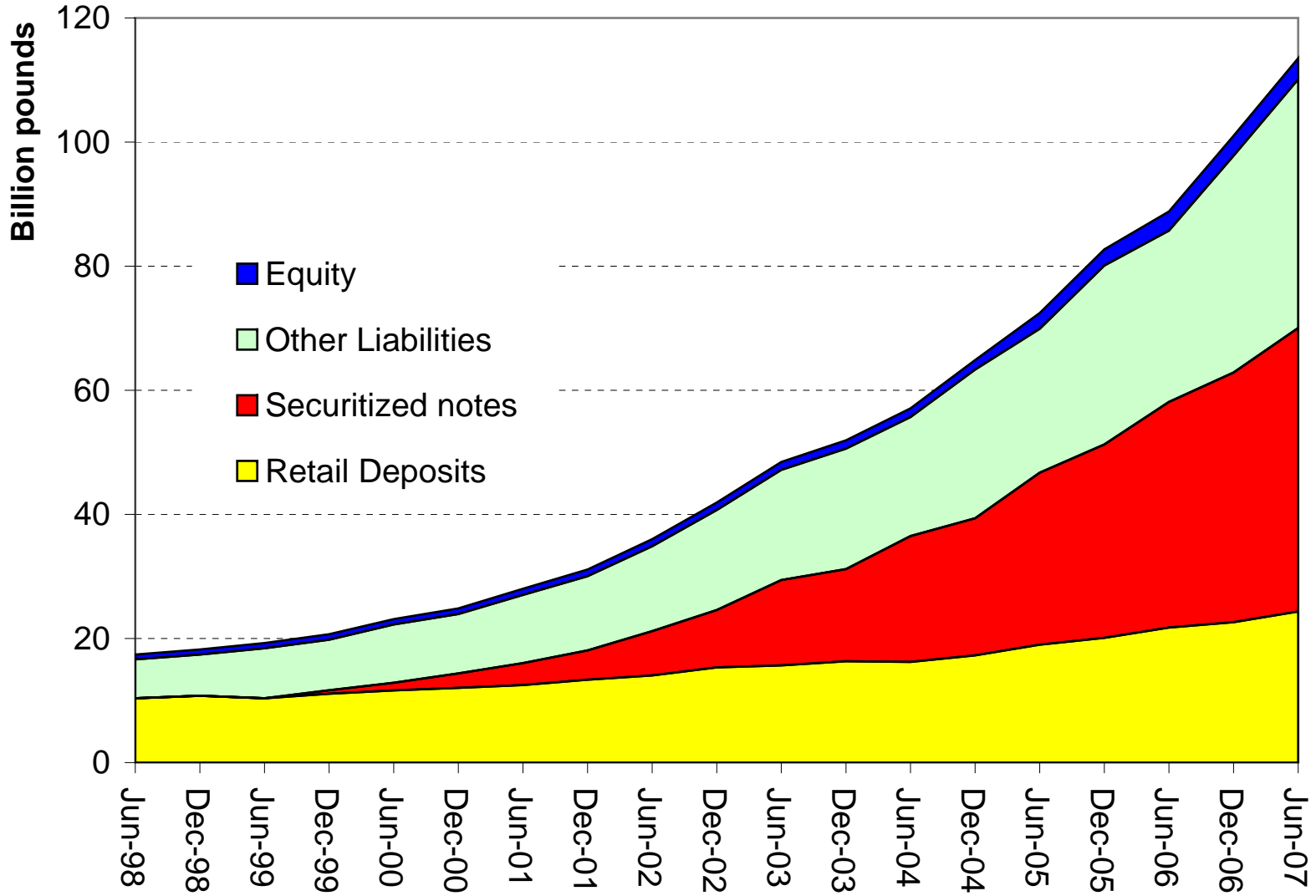
- Deleveraging
- Shrinking balance sheets
- Unraveling of interbank lending
 - Runs
 - Retrenchment

Northern Rock



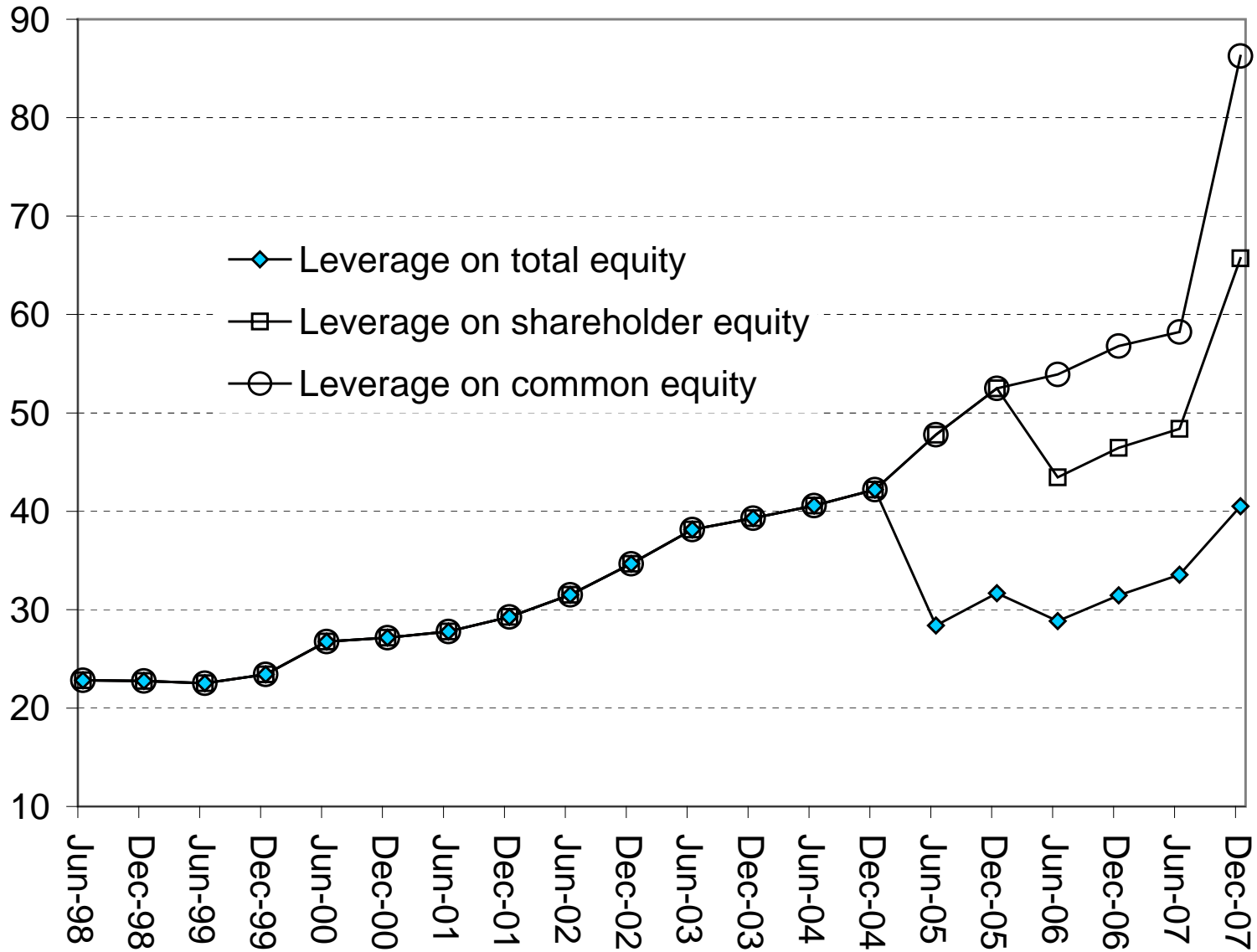
Composition of Northern Rock's Liabilities

(June 1998 - June 2007)



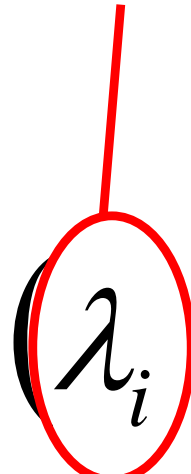
Northern Rock's Leverage

June 1998 - December 2007




What Prescriptions for Better Functioning Intermediary Sector?

Approach 1: Moderate Fluctuations in Leverage through Countercyclical Capital Regulation

$$\sum_{i=1}^n y_i = \sum_{i=1}^n e_i z_i (\lambda_i - 1) + \sum_{i=1}^n e_i$$


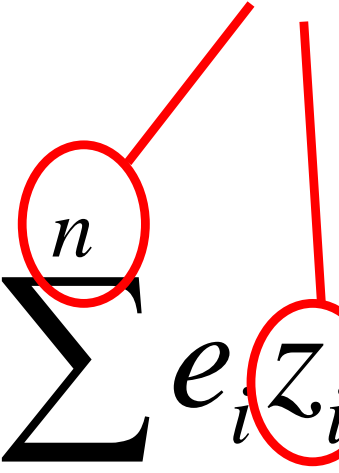
- Leverage cap (e.g. Switzerland)
- Countercyclical capital targets (Geneva Report)

Approach 2: Moderate Fluctuations in Equity through Forward-looking Provisioning

$$\sum_{i=1}^n y_i = \sum_{i=1}^n e_i z_i (\lambda_i - 1) + \sum_{i=1}^n e_i$$


- Spanish Statistical Provisioning
- Pigovian Tax (Geneva Report)

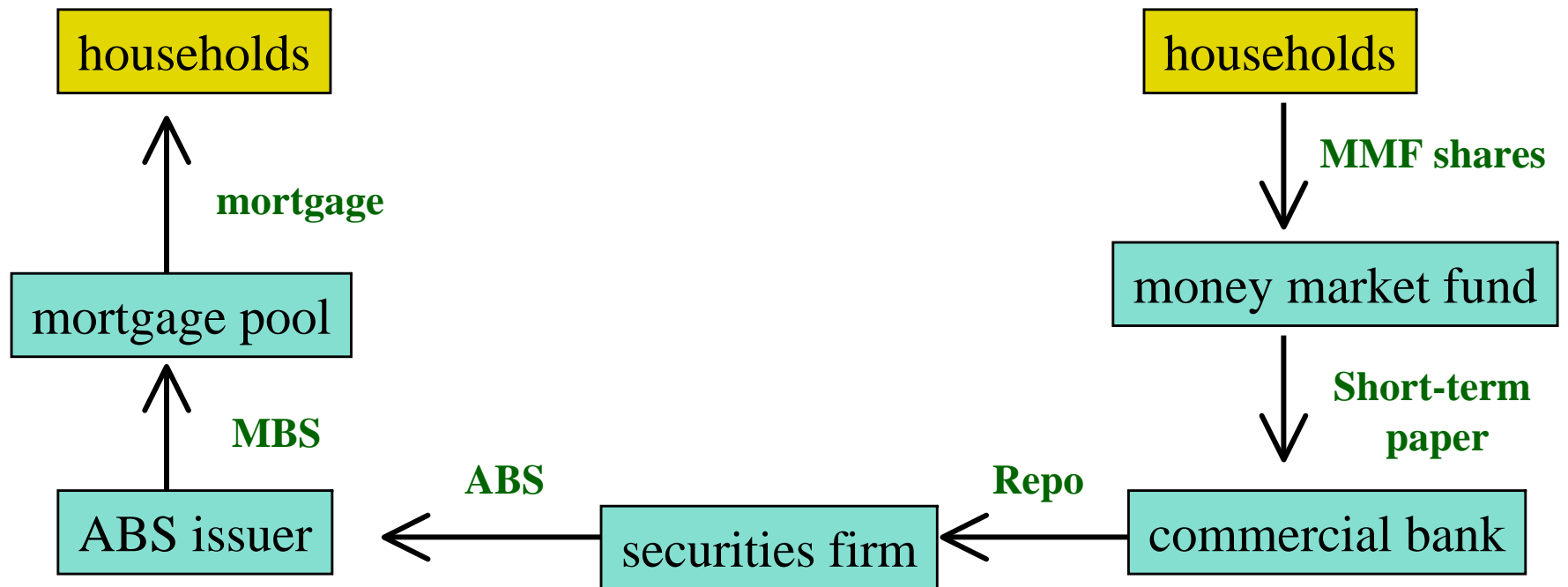
Approach 3: Shortening Intermediation Chains through Development of New Instruments

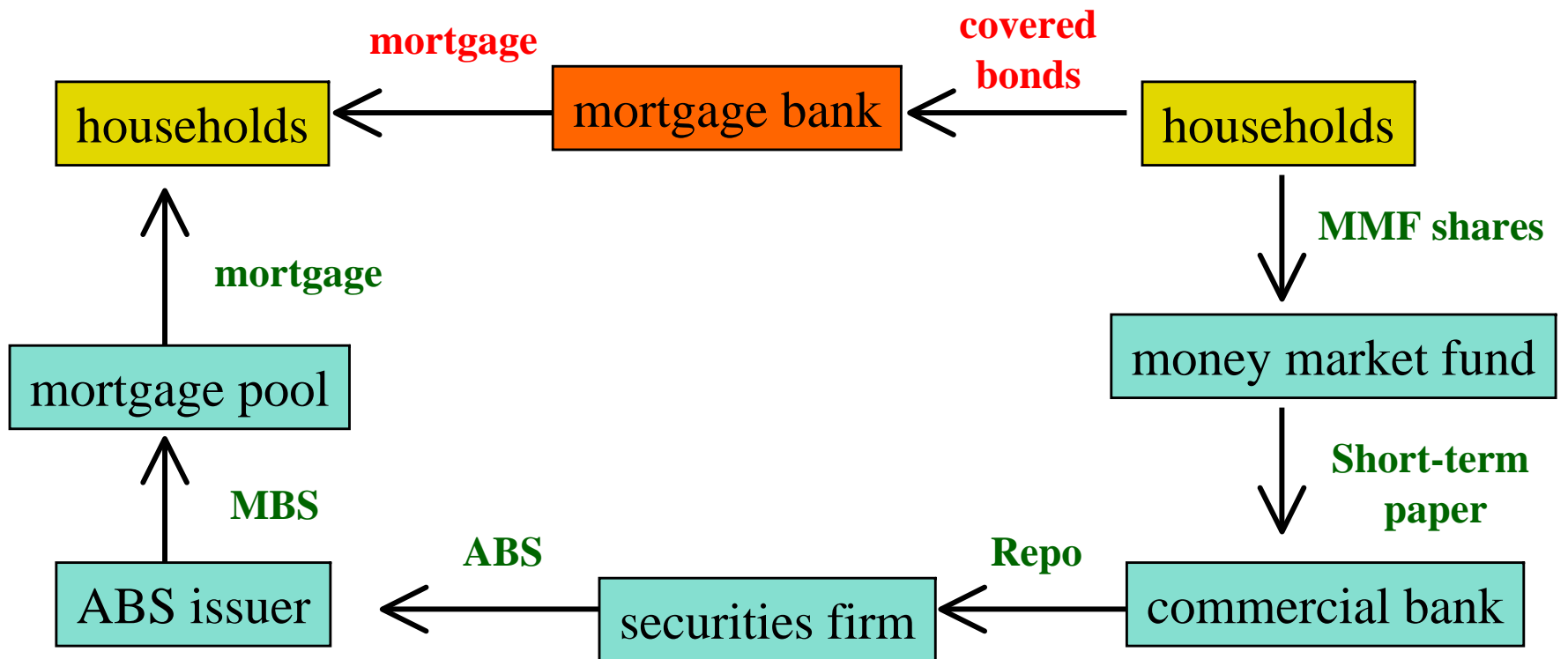
$$\sum_{i=1}^n y_i = \sum_{i=1}^n e_i z_i (\lambda_i - 1) + \sum_{i=1}^n e_i$$


Covered bonds

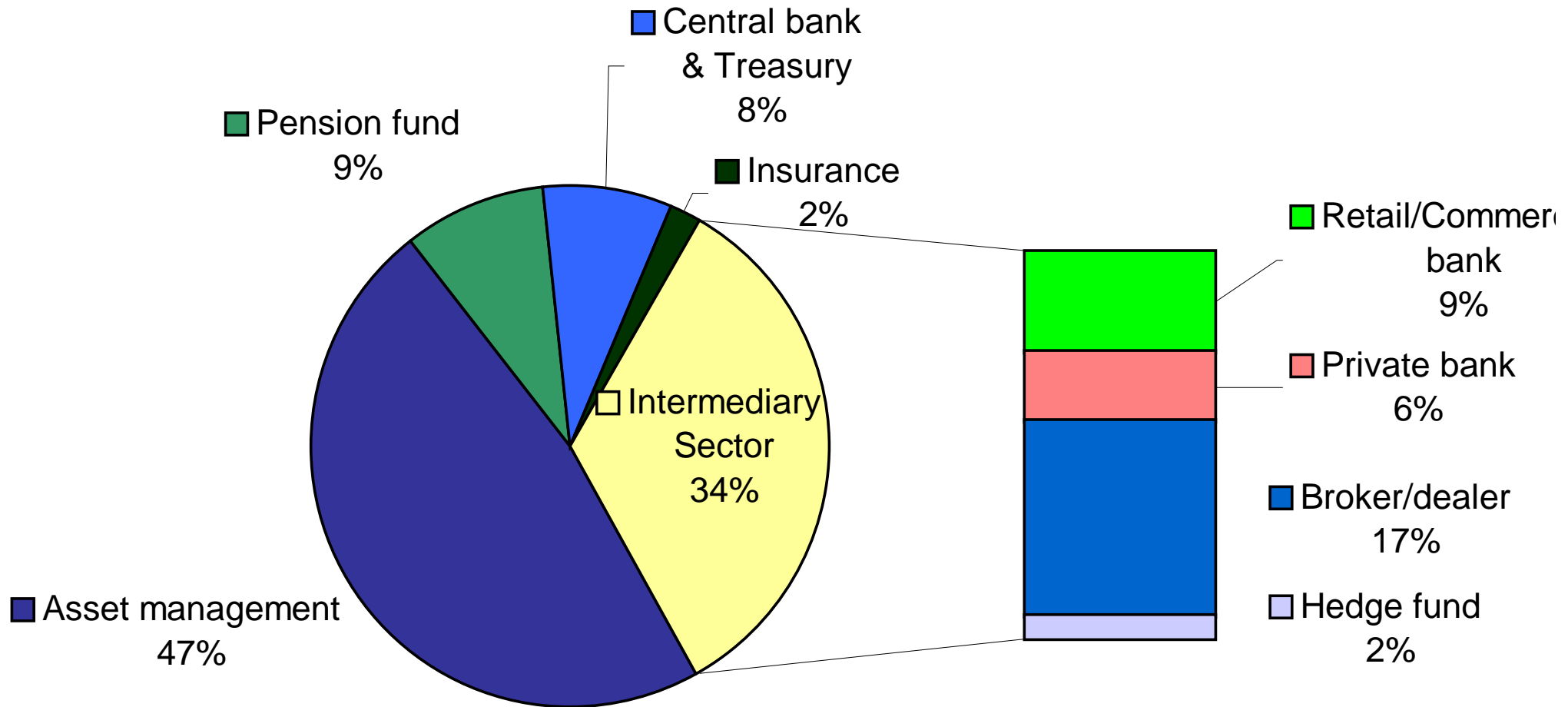
- Danish mortgage bonds
- German pfandbrief bonds

Long Intermediation Chain





Investors in Covered Bonds



Source: SIFMA (2009)

Hurdles to be Overcome

- Seniority of depositors (and hence deposit insurance agency)
 - In the United States, FDIC policy is to restrict covered bonds to 4% or less of total liabilities
 - An alternative is to develop specialist “narrow” covered bond banks who do not take deposits and only issue covered bonds
 - Model provided by mortgage banks in Denmark

Some Features of Possible Future Financial System

- Smaller intermediary sector
 - Especially securities sector
- Shorter intermediation chains
 - Less profitable
 - Less maturity transformation
- With regulatory brakes
- Monetary policy?
- Accounting standards?