Centrality of Liquidity & Leverage in Diverse Intermediation Models

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“The US financial markets are suffering their rockiest period since the nation’s savings and loan industry collapse at the end of the 1980s”.

Benjamin Friedman

“The current financial crisis in the US is likely to be judged in retrospect as the most wrenching since the end of the second world war”.

Alan Greenspan

“Bear Stearns never run short of capital. It just could not meet is obligations”.

Floyd Norris, NYT, April 14, 2008

Outline

- Background & Immediate Destabilizing Factors
- Two Intermediation Models
- Defining Liquidity
- Market Liquidity Creation
- Liquidity, Valuation & Solvency
- Securitization
- Regulatory flaws
- Some early lessons of the recent financial turmoil
- Bibliography

Background: Good News until mid-2007

- Rapid credit & output growth, low inflation, and pervasive illusion of liquidity;
- Extended period of credit risk under-pricing (low nominal & real interest rates, low credit spreads);
- Global "savings glut" & large official FX reserves;
- Rapid home price appreciation ("bubble");
- Low volatility;
- Greater leverage of financial institutions and consumers;
- Rapid financial innovation (Instruments: ABS, CDOs, CLOs, CDS,.. Mechanisms: SIVs, conduits,..), but not tested through a full business cycle;

=> Improved access to consumer & housing credit.

Immediate Destabilizing Factors (1)

- August 9, 2007 shock at BNP Paribas losses on US sub-prime securities;
- Bursting of the U.S. housing "bubble": House price declines with high (loan/ value) ratios create large negative equity for borrowers;
- Rising defaults of sub-prime mortgages & MBS;
- Realization that credit & mortgage underwriting standards deteriorated seriously since 2004;
- Incentive incompatible lending & staff compensation practices;
- Opacity (products, off-balance sheet items,..);
- Price-sensitive accounting rules;
- High leverage 1/;

1/ (Private Sector Debt/GDP) in 2007 in the US is 3 times the ratio of 1965.

Immediate Destabilizing Factors (2)

- Doubts on valuation of some structured securities (CDOs);
- Difficult to localize risk exposures;
- Liquidity deteriorated markedly;
- Increasing asset correlations;
- Uneven distribution of liquidity among financial institutions;
- Efforts by Financial Institutions to reduce exposure to further losses lead to "the break becoming the accelerator".

➔ From risk reappraisal to financial panic!

Two Financial Organization Models:

(i) Bank-Intermediated and (ii) Securitized Finance

- Bank-Intermediated: Banks as only financial intermediaries w/assets valued at historical cost (originate & retain); Vs.
- Securitized Finance (Market-based): Most financial intermediation takes place in the market by trading securities (primary & re-packaged, ex. MBS, banks originate and transfer risk, selling ABS).
- Problems with limited/partial transfers of risk.

=> From the traditional bank relationship model to a modern post-intermediated financial system.

Common Factors

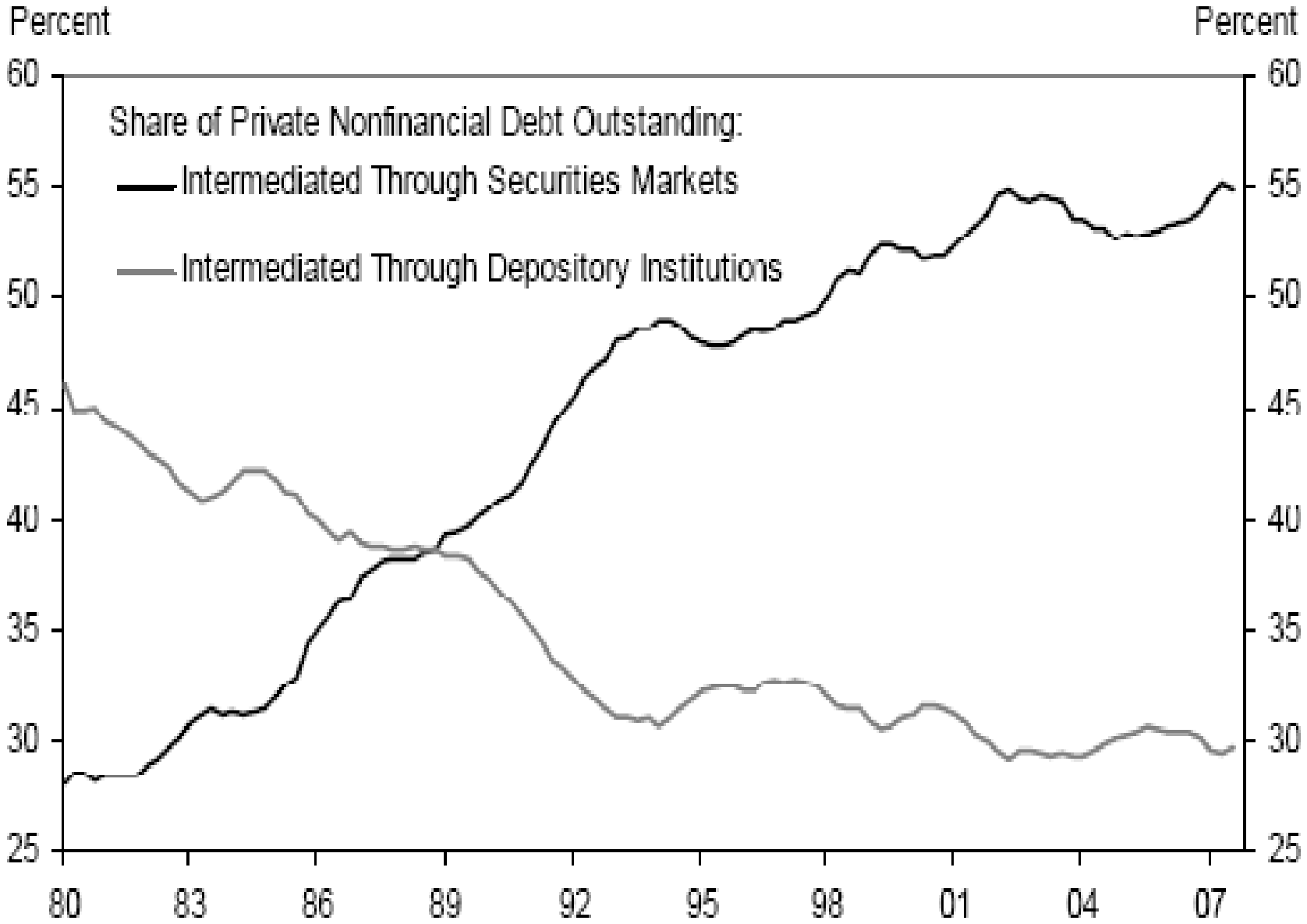
- Criticality of Liquidity for the operation and functioning of both models (Coordination Failures: risk of "bank runs" in Bank-Intermediated Model and collapse of demand on short-term securities in Market-Intermediated Model and rising risk premia);
- Confidence as a key factor;
- Importance of Information (to mitigate asymmetric information).

➔ Endogeneity of Liquidity: Based on Confidence

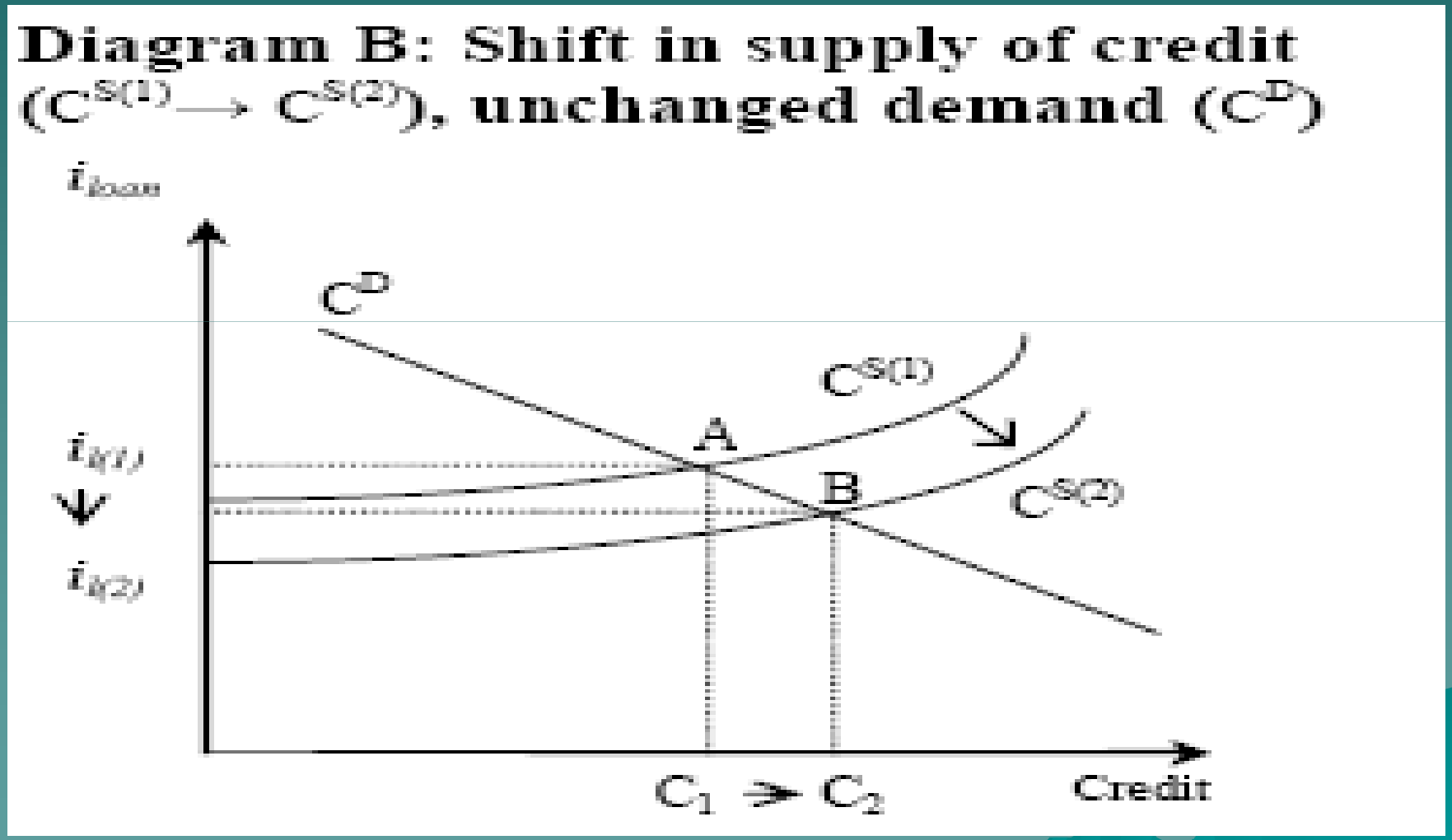
Major Differences

- Asset Valuation: Historic Cost versus Marking to Market or Fair Value (availability of reliable prices and access to liquid markets);
- Intermediation Channels: "Know your client" versus "arms' length, impersonal trades";
- Access to Liquidity: Access for banks to the Central Banks' Lender of Last Resort Facilities versus deep & liquid markets with "fluidity" throughout the system. More difficult for Central Banks to provide liquidity.

Exhibit 2.6 Share of Intermediation through Banks and Securities Markets



1.Technology Shock: Transferable Assets Brought new NBFIs Increasing the Supply of Credit

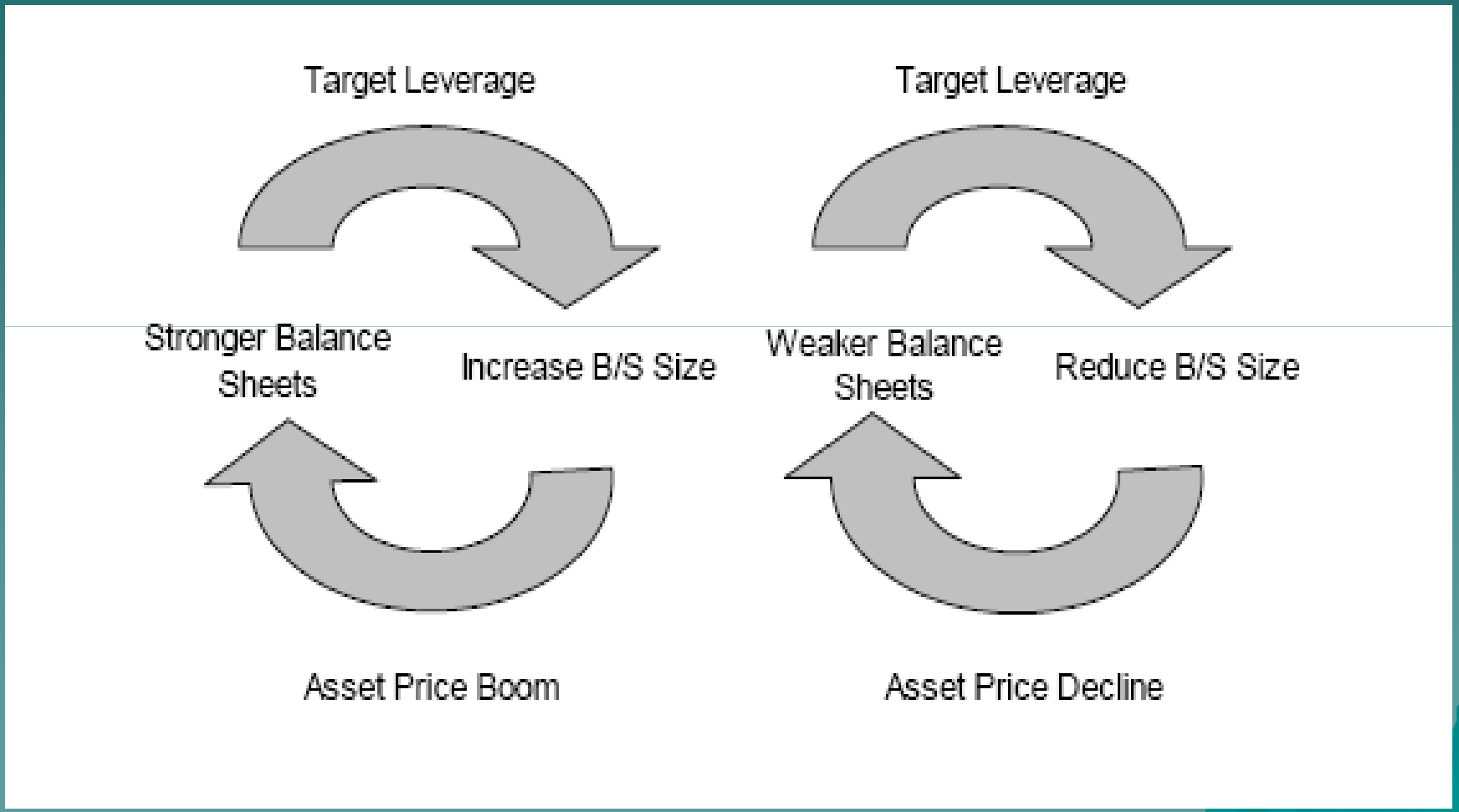


2. Additional Implications

- **Entry of highly leveraged institutions *:**US-Commercial Banks with L= 10; Investment Banks w/L=20-25; Brokers & Hedge Funds w/L= 32; => Equity is a small proportion of assets ➔ credit losses deplete capital very fast! and precipitate a "credit crunch".
- **Leverage (L) is highly pro-cyclical,** reflecting the counter-cyclical nature of VaR.
- Investment Banks w/short-term claims **must mark-to-market underlying securities.**

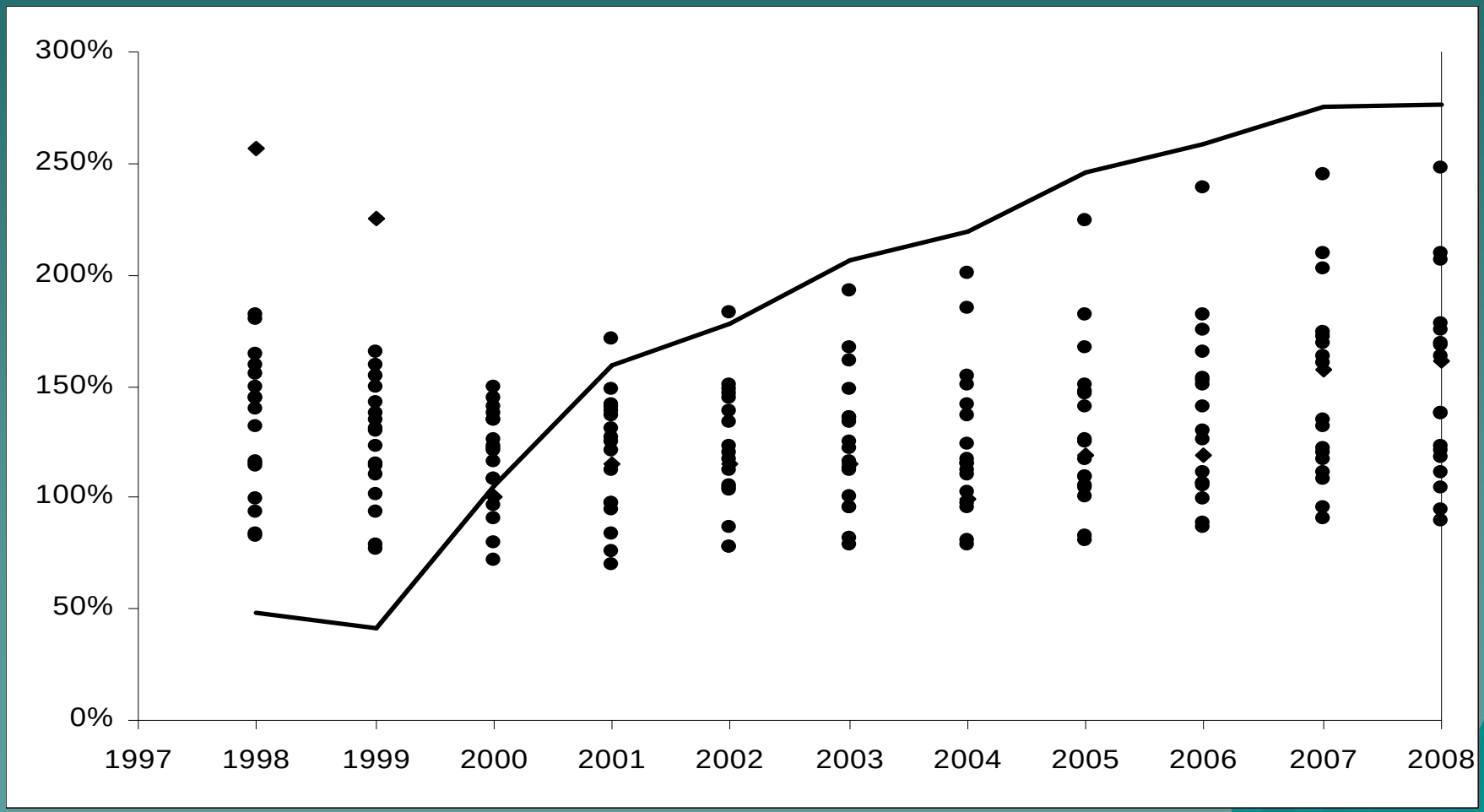
* L=(Assets/Equity)=(1/ Value at Risk, V), since E= (V x A).

The Leverage Cycle: Boom & Bust



Rising Bank Leverage: (Loan/Deposit) Ratios for Selected ECA Countries (1998-2008)

(Line shows trend by simple regression)



Many Facets of Liquidity

- Bank Liquidity: Ability of a bank to meet its immediate commitments;
- Balance Sheet Liquidity: percentage of liquid assets on the balance sheets of non-financial institutions;
- Funding Liquidity : ability of economic agents to access external financing;
- Market Liquidity: market's ability to trade a given volume of assets or securities without significantly affecting their prices;

Many Facets of Liquidity

- Financial Instruments Liquidity: easiness with which they can be exchanged for money without loss of value;
- Monetary Liquidity: quantity of fully liquid assets circulating in the economy.

Valuation & Liquidity

- Increasing leverage of intermediaries and higher dependence on market liquidity (i.e.; credit extended to each other among banking & non-banking financial intermediaries): banks provide but also use market liquidity;
- Close linkages between valuation and liquidity: mark-to-market accounting => change in prices & net worth => Liquidity;
- New contagion channels: fluctuations in market liquidity trigger change in asset prices. Leverage tends to be pro-cyclical amplifying shocks.

Three Vicious Cycles: Dangerous "twisters"

- "A liquidity vicious cycle- in which asset prices fall, people sell and therefore prices fall more;
- A Keynesian vicious cycle- where people's incomes go down, so they spend less, so other people's income falls and they spend less; and a
- Credit accelerator, where economic losses cause financial problems that cause more real economic problems".

Larry Summers

"Fed believes US will avoid deep recession", FT, March 13, 2008

Valuation, Solvency & Liquidity

Liquidity & Solvency Shocks

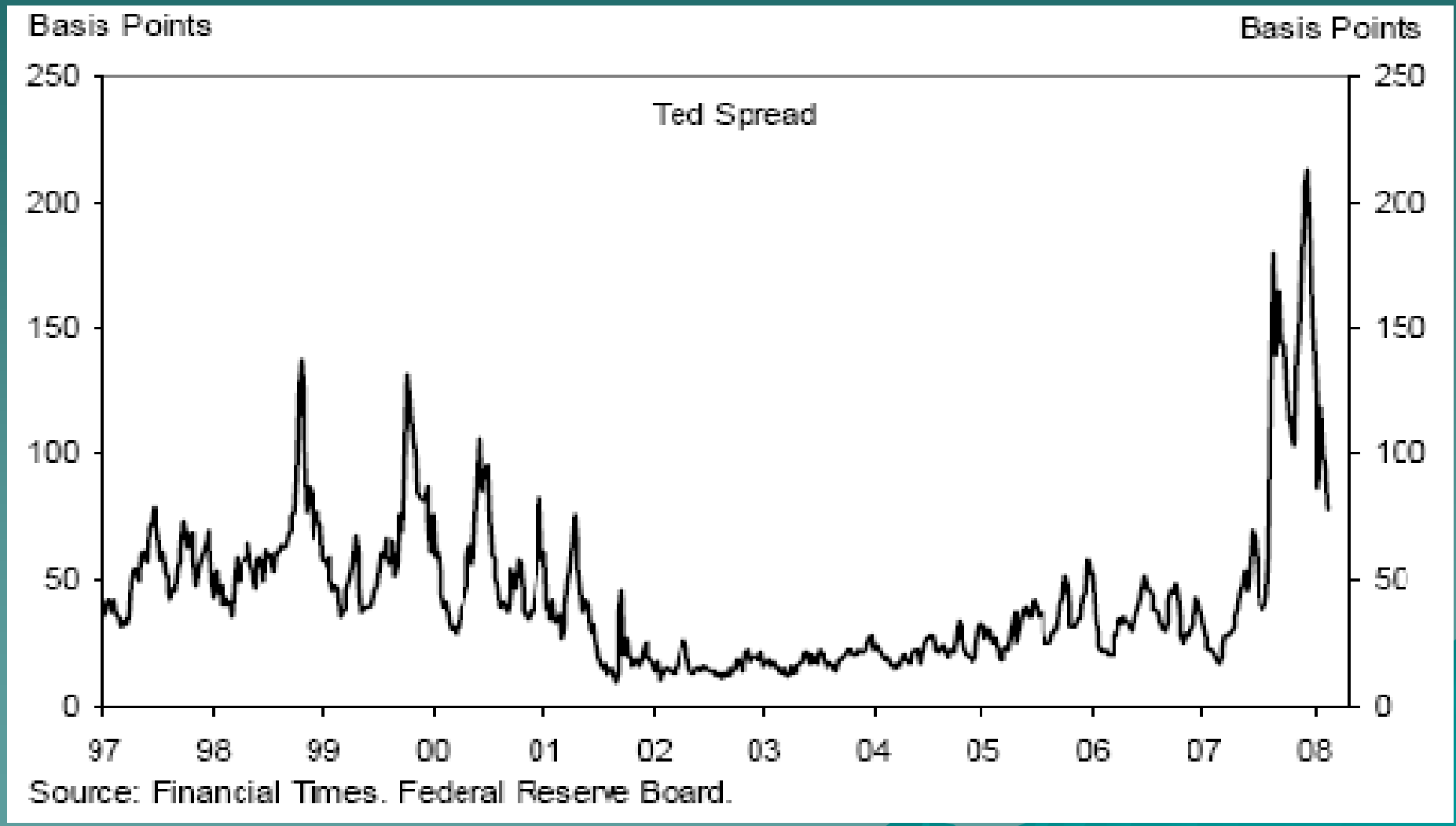
- Liquidity movements changes equity base of financial intermediaries;
- Liquidity shocks can become solvency shocks, preventing normal management of risky positions.

=> Danger of self-reinforcing spirals!

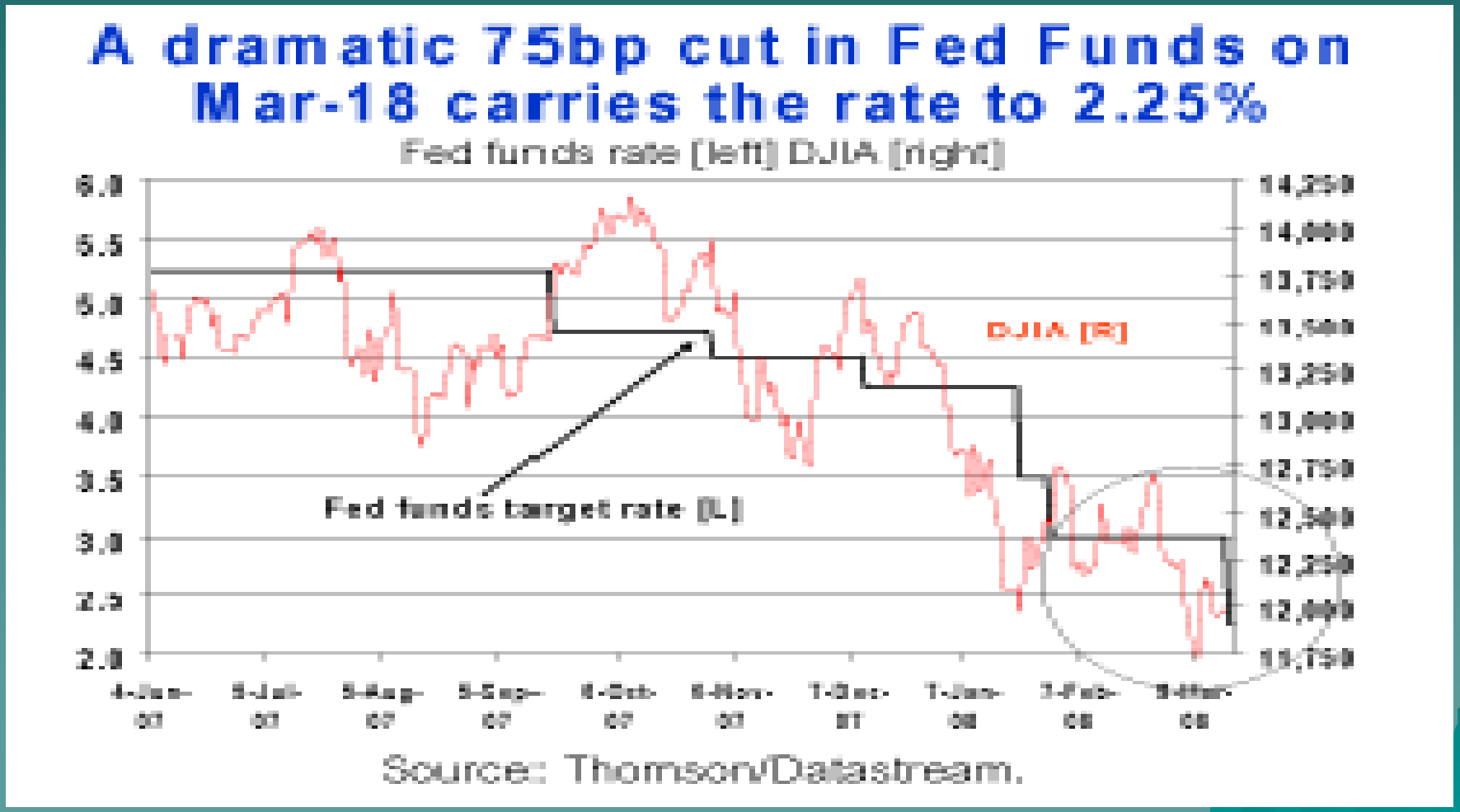
Information & Trust at the core of the crisis

- Margin calls on hedge funds are forcing asset sales and further forcing down asset prices.
- More liquidity offered by central banks is not increasing "fluidity" in the market due to lack of trust.
- From an initial liquidity crisis to a crisis of confidence.

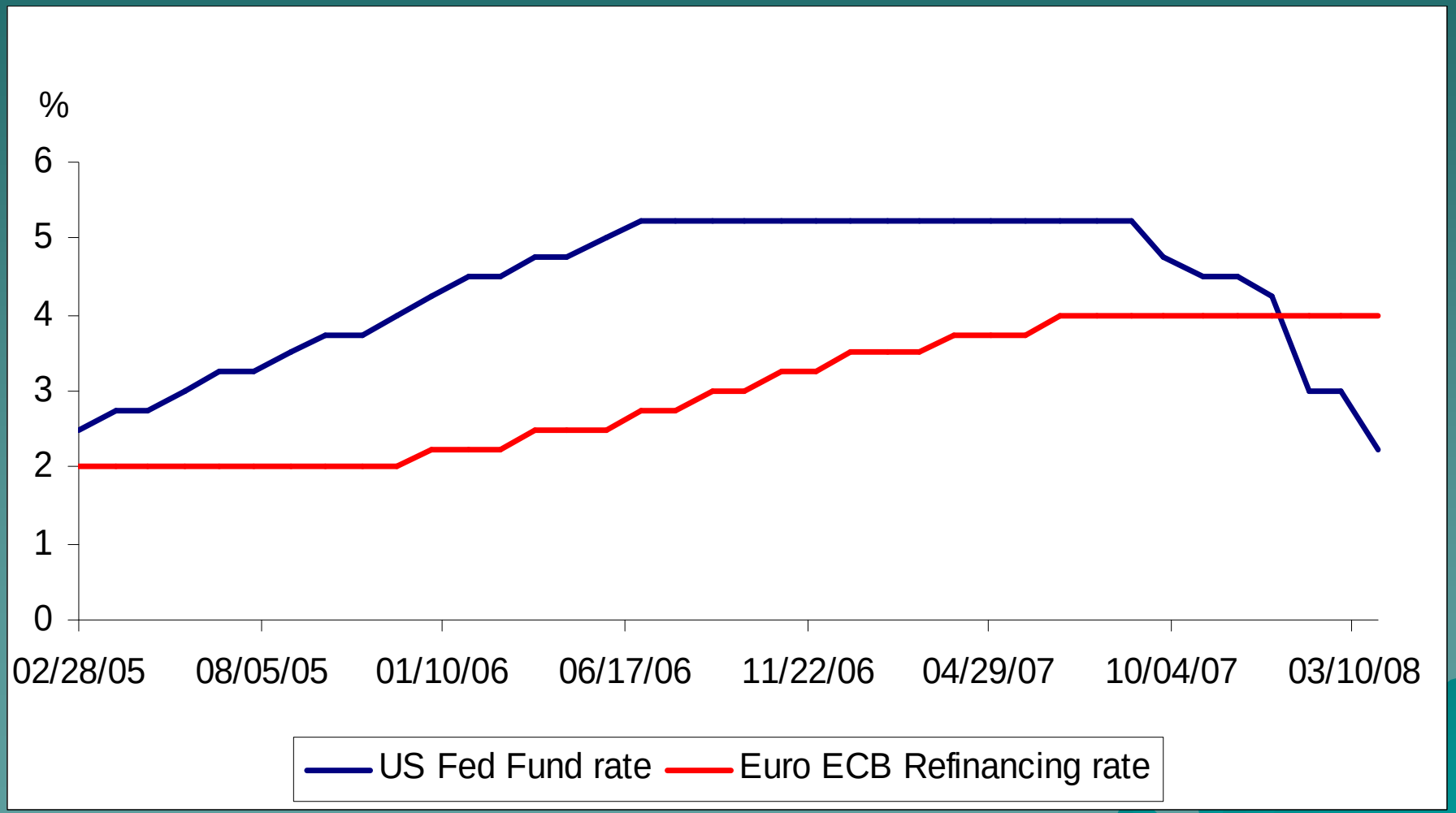
Treasury-Euro Dollar (TED)=> (3 mo. Eurodollar Deposit Rate – yield on 3 mo. Treasury Bills)



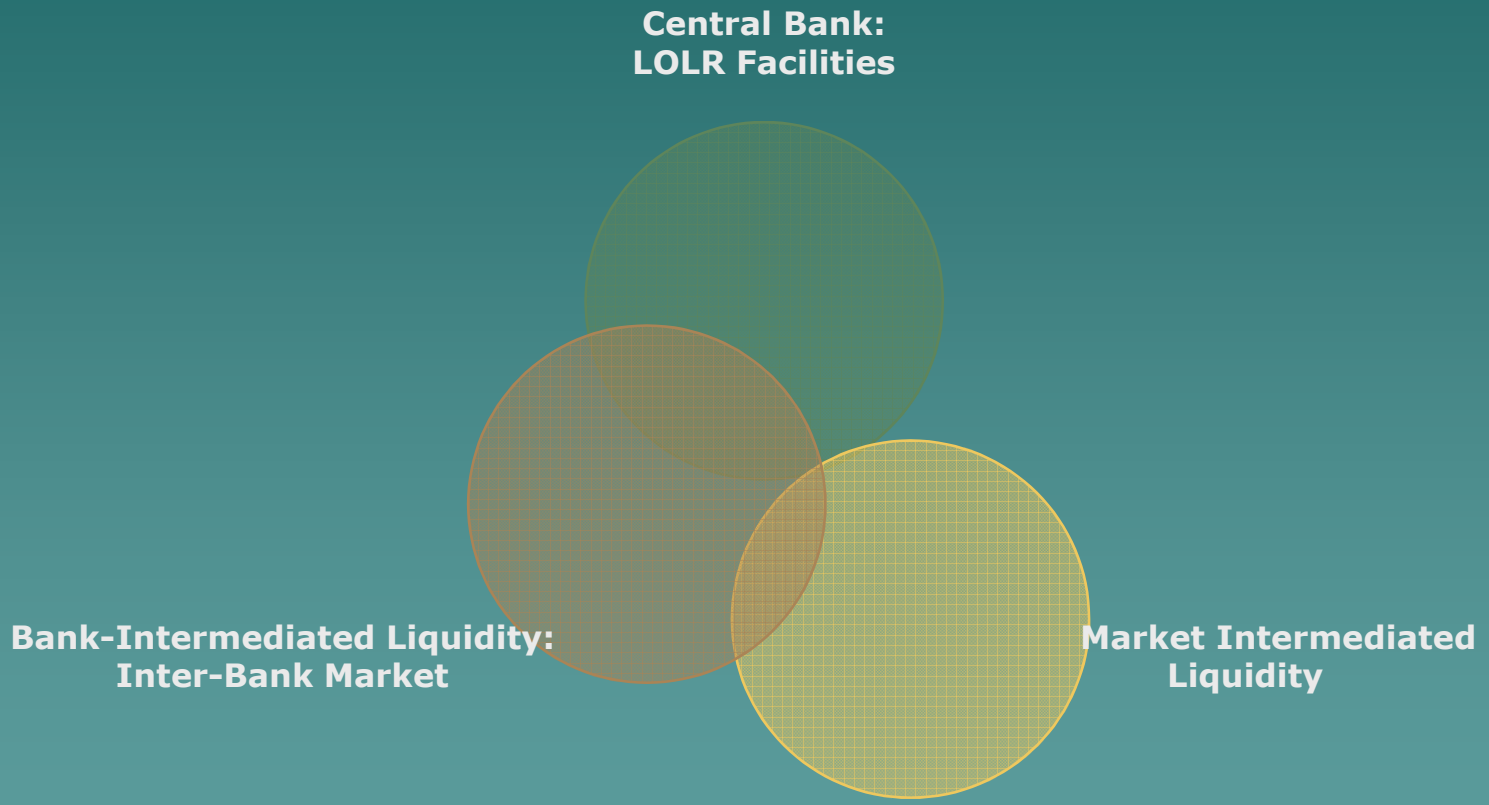
Rapid Reduction of the US Fed Funds Rate



Fed Fund and ECB Refinancing Rates (January 2005- March 2008)



Traditional Market Liquidity Creation



Monetary Policy Implications

- The effectiveness of Monetary Policy is reduced when the worries are more about insolvency than liquidity.
- Equally such effectiveness is further constrained when lower short-term interest rates do not lead to lower long-term rates, partly because of worries about future inflation.

Securitization seeks to convert illiquid bank loans into liquid securities held by a disperse group of investors

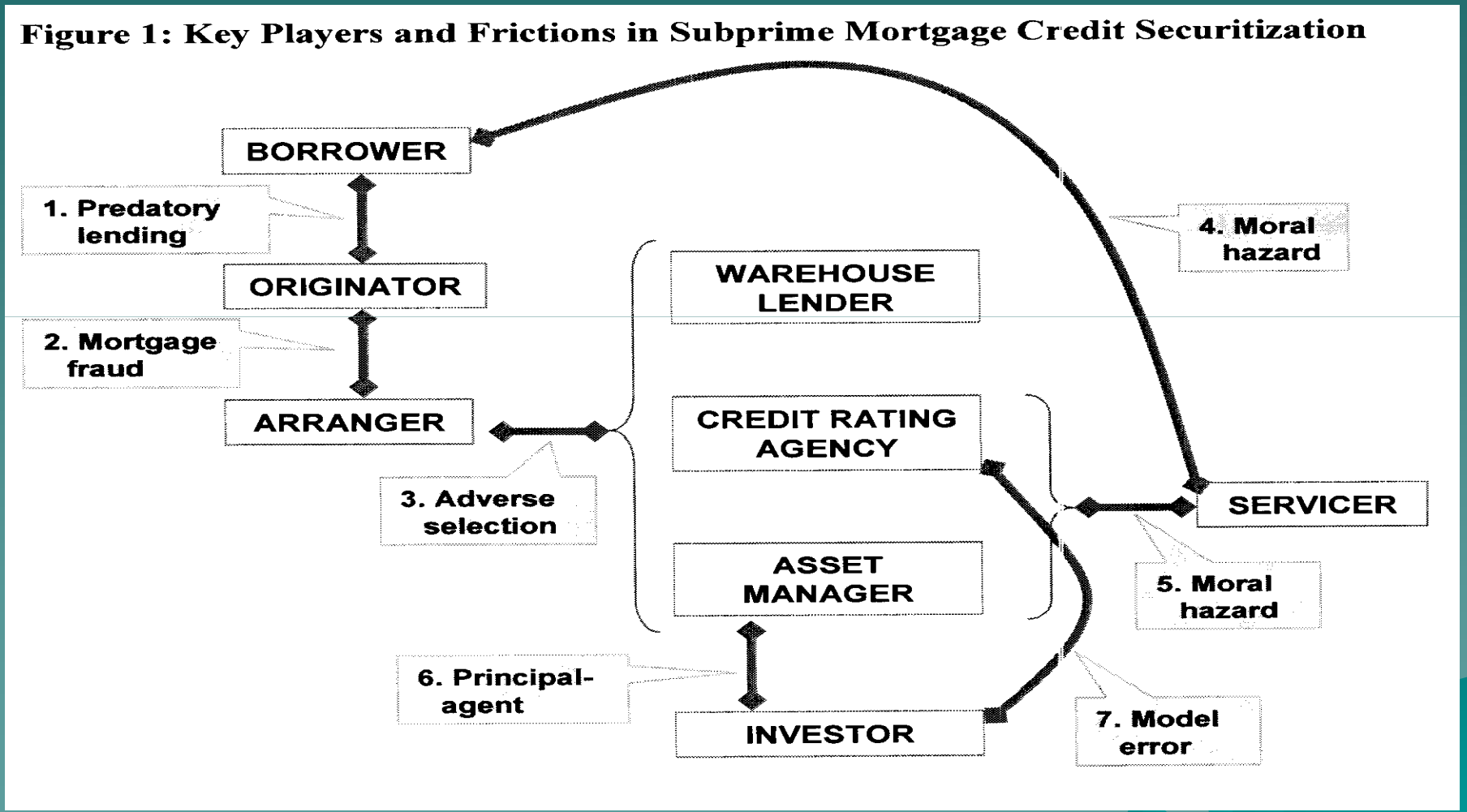
PROS:

- Improves risk sharing
- Lowers cost of capital
- Improves Access

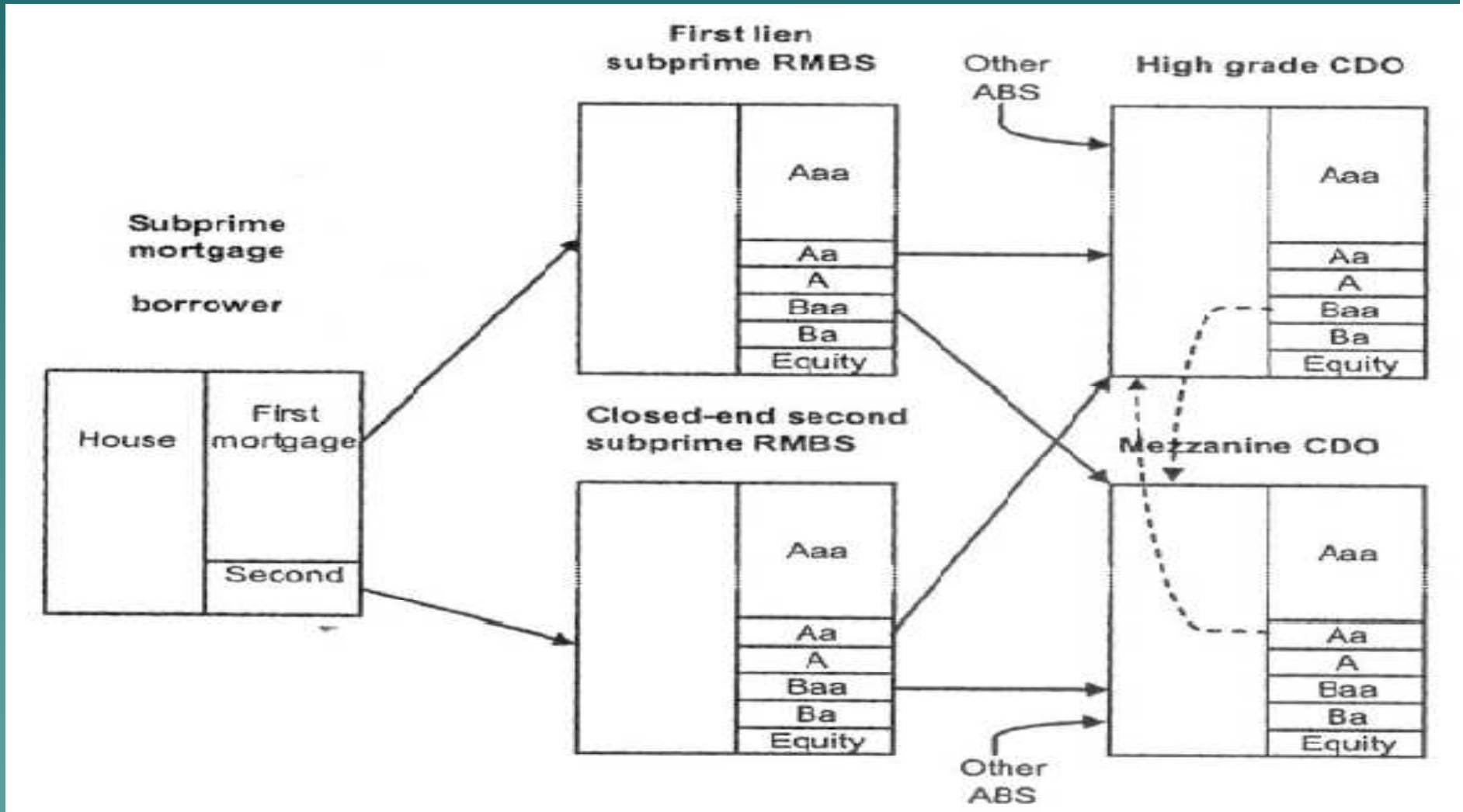
CONS:

- Reduces transparency
- Increases complexity (CDO Sr./ Jr.tranches)
- Weakens bank incentives to screen & monitor borrowers
- Worsens information asymmetry

US Sub-Prime Crisis: Wrong Incentives & Fraud



Why "Toxic Waste" is Hard to Detect: Structure of a Collateralized Debt Obligation (CDO) – Multiple Layers of Structure



Securitizations & Lax Screening

- Evidence shows that securitization does reduce lenders' incentives to screen and monitor borrowers:

  "Conditional on being securitized, the portfolio that is more likely to be securitized defaults by around 20% more than a similar risk profile group with a lower probability of securitization" Crucially, these two portfolio have similar observable risk characteristics and loan terms". B. Keys

- Importance of aligning incentives: require the underwriter/originator to retain a minimum equity tranche?

Securitizations Add but also Demand Liquidity

- Some forms of financial engineering were not tested "through-the-cycle" and from being sources of liquidity, in the upper phase of the cycle, via securitizations, they became a "drag" on liquidity as markets unraveled or became more risk averse. Examples include Off-Balance Sheet Entities (OBSEs), including Structured Investment Vehicles (SIVs) and conduits.

Structured Finance Role in the Crisis

" It is important to note that securitization, per se, was not the problem – it was a combination of lax underwriting standards in the US mortgage market, the concomitant extension of securitization into increasingly complex and difficult to understand structures, collateralized by increasingly lower quality assets, and a favorable financial environment in which risks were insufficiently appreciated".

IMF, GFSR (Executive Summary), 2008

Regulatory Reform

"For financial regulation in general, competition in regulatory laxity cannot be a tolerable approach".

Paul Volcker

The Economic Club of New York,
April 8, 2008

Regulatory Implications (1)

Shortcomings	Mitigation
◆ Agency Problems: lead bank managers to take risks inconsistent w/shareholders' value maximization.	◆ Drastic change in bankers' compensation systems.
◆ Moral Hazard for mortgage originators.	◆ Force originator to keep part of the credit risk via CDO equity tranche and allocate more capital.
◆ Regulatory Arbitrage: leading to a systemically important, highly leveraged, "shadow" financial system.	◆ Regulate NBFIs more like banks - particularly those systemically important.
◆ Limited or no consolidation of off-balance sheet transactions (SIVs, conduits,..) under-stating risks and required K.	◆ Force proper consolidation and capital charges.

Regulatory Implications (2)

Shortcomings	Mitigation
◆ Deficient liquidity risk management.	◆ Better control of maturity & duration gaps, lengthening of NBFIs' liabilities.
◆ Fractured Basle II regulatory regime.	◆ Principle-based regulation needs to be complemented by clearer rules & enforcement.
◆ Flawed Basle II Rules (?): – **Pro-cyclical CARs;** – **Low emphasis on liquidity risks;** – **Excessively low risk-adjusted capital;** – **Excessive role given to conflicted Rating Agencies**	◆ Amendments: – **Anti-cyclical K & provisions;** – **Min. liquidity ratios;** –**More capital;** – **Drop semi-official role of Rating Agencies in Basle II, more competition, ratings paid by investors, limit conflicts of interest.**

Regulatory Implications (3)

Shortcomings	Mitigation
◆ Increasing complexity and opaqueness of instruments and Intermediaries.	◆ Greater standardization of instruments and more trading through exchanges to reduce counter-party risks.
◆ Most appropriate Regulatory Model: centralized vs. decentralized?	◆ Not clear, but Central Banks likely to play a more important role. Better coordination and exchange of information.
◆ International Regulatory arbitrage: raise to the bottom?	◆ Closer cross-border coordination of regulation and Supervision: Principles + Rules.

Conclusions: Extent of the Crisis

- Different from previous crisis because it has affected simultaneously financial markets and the banking system.
- Complexity, opaqueness and mis-information about CDOs: major sources of loss of trust and drying up of liquidity.
- The triple-A tranche of a sub-prime MBS will not act as a triple-A corporate bond.
- Lax underwriting [high (loan/value) ratios, negative amortization, deficient documentation, and misleading ratings) as major contributing factors.

Conclusions: What to do?

- Financial institutions should raise more capital and cut their dividends.
- Many Casualties:
  - Risk valuation systems;
  - Basle II (?);
  - Economic forecasting models;
  - Assumptions about asset correlations;
  - Regulatory model

“Life is lived forward, but understood backwards”.

Kierkegaard

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