Comment on Franke & Krahnen: *The Future of Securitization*

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A Problem of Huge Dimensions

	Outstanding (in billions)
ABS	$1,100
ABS CDOs	$400
Prime MBS	$3,800
Subprime MBS	$780
CMBS	$940
Consumer ABS	$650
High-grade corporate debt	$3,00
High-yield corporate debt	$600
CLOs	$350
Total	**$11,920**

Contrast Traditional Lending: Buy & Hold

- ✓Bank originates loan
- ✓Bank underwrites loan
- ✓Bank funds loan
- ✓Bank services loan
- ✓Bank holds loan on b/s until repaid
- ✓Performs workout if necessary

With New Model: Originate & Distribute

- ✓Bank may originate (but so may another entity)
- ✓Bank may underwrite (but so may another entity)
- ✓Bank may assess credit risk and/or rating agency
- ✓Bank may fund or may sell to a Trust
- ✓Bank may hold or may buy & sell a securitized tranche
- ✓Bank may service (but so may another

Raise important questions re:

- ✓ Diseconomies of specialization
- ✓ Increasing agency costs
- ✓ Diminished transparency of risk-sharing
- ✓ Diminished transparency of incentives for risk-taking
- ✓ Diminished transparency of risks

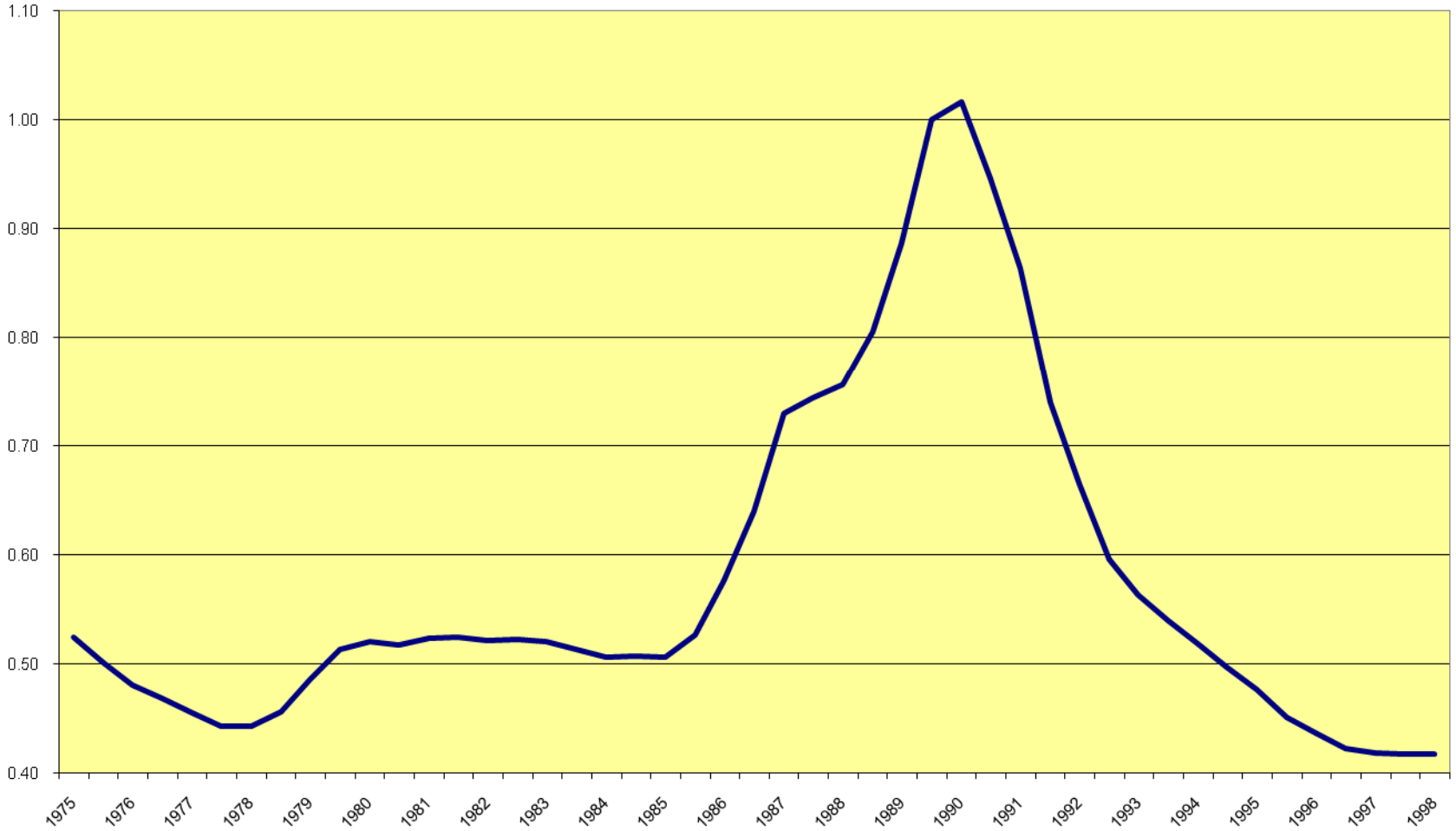
My focus

- ✓ Why problems in a relatively minor sector of the $70 trillion world-wide fixed income market caused systemic crisis
  - Role of US housing bubble
  - How disaster myopia contributed to problem
- ✓ Financial Alchemy: How subprime mortgages were transformed into investment grade debt
- ✓ How the surge in delinquency rates led to the collapse of the 3 pillars of private securitization
  - Statistical Models
  - Ratings
  - Monoline Insurance
- ✓ Franke/Krahnen proposals

Definition

- ✓A “bubble” is a sustained departure from long-run equilibrium (fundamental) prices
- ✓Bubbles occur when people are willing to pay unrealistically high prices today ***mainly because*** they expect that can obtain even higher prices when they sell in the future
  - Often have an aspect of mania – “I must buy now…”
  - More cynically: bubbles may arise when market participants apply a “greater fool” theory of asset valuation
- ✓Unfortunately, it’s difficult to identify a bubble ex ante

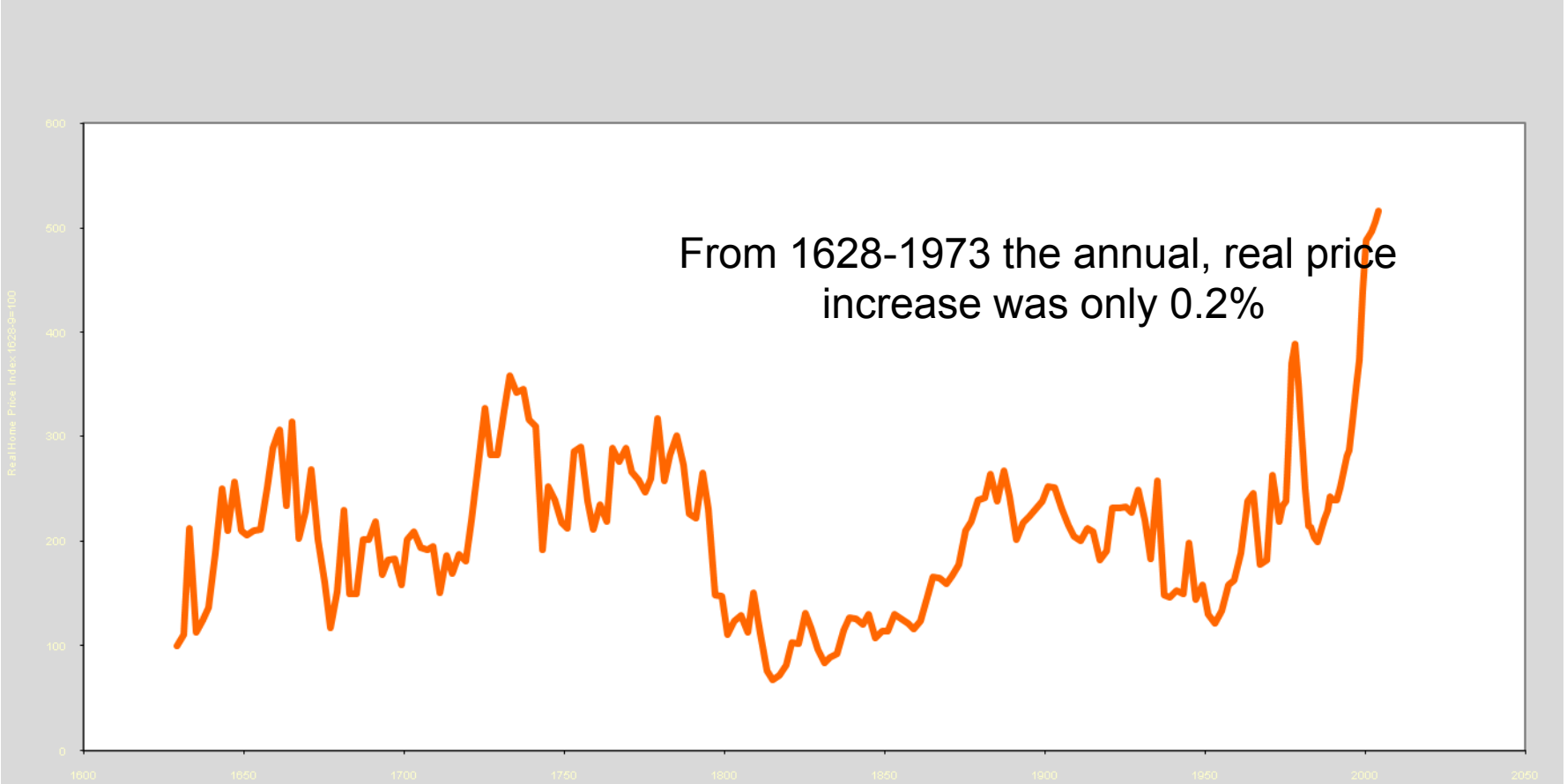
Index of Japanese Commercial Land Prices, 1975-1998



Housing Bubbles Happen at Infrequent & Unpredictable Intervals

Example: 400 years of Amsterdam history

Amsterdam, Herengracht
Real Home Price Index 1628-2004 (Eichholtz)



Source: Piet Eichholtz, with updates from Robert Shiller

What's unusual about the current crisis is the role played by securitization & global capital markets

Securitizations Began with the GSEs

- ✓Securitization of residential mortgages
  - Improved transparency
  - Enhanced diversification
  - Increased liquidity
  - Lowered costs
  - Permitted banks to use capital more efficiently, in an originate and distribute approach
- ✓Relied on guarantees from GSEs to protect against credit risk

Private Securitizations

- ✓ Replaced GSE guarantee with
  1. Statistical models that determine the adequacy of
     1. Excess servicing
     2. Over-collateralization
     3. Subordination and residual tranching
     4. Performance triggers
  2. Ratings from SROs
  3. Monoline insurance
- ✓ Resulted in alphabet soup of innovations
  - RMBS,CDOs, CDO^2, ABCP, SIVs, SIV-Lites & CLOs
- ✓ Became an off-balance sheet banking system, but lost transparency of original model

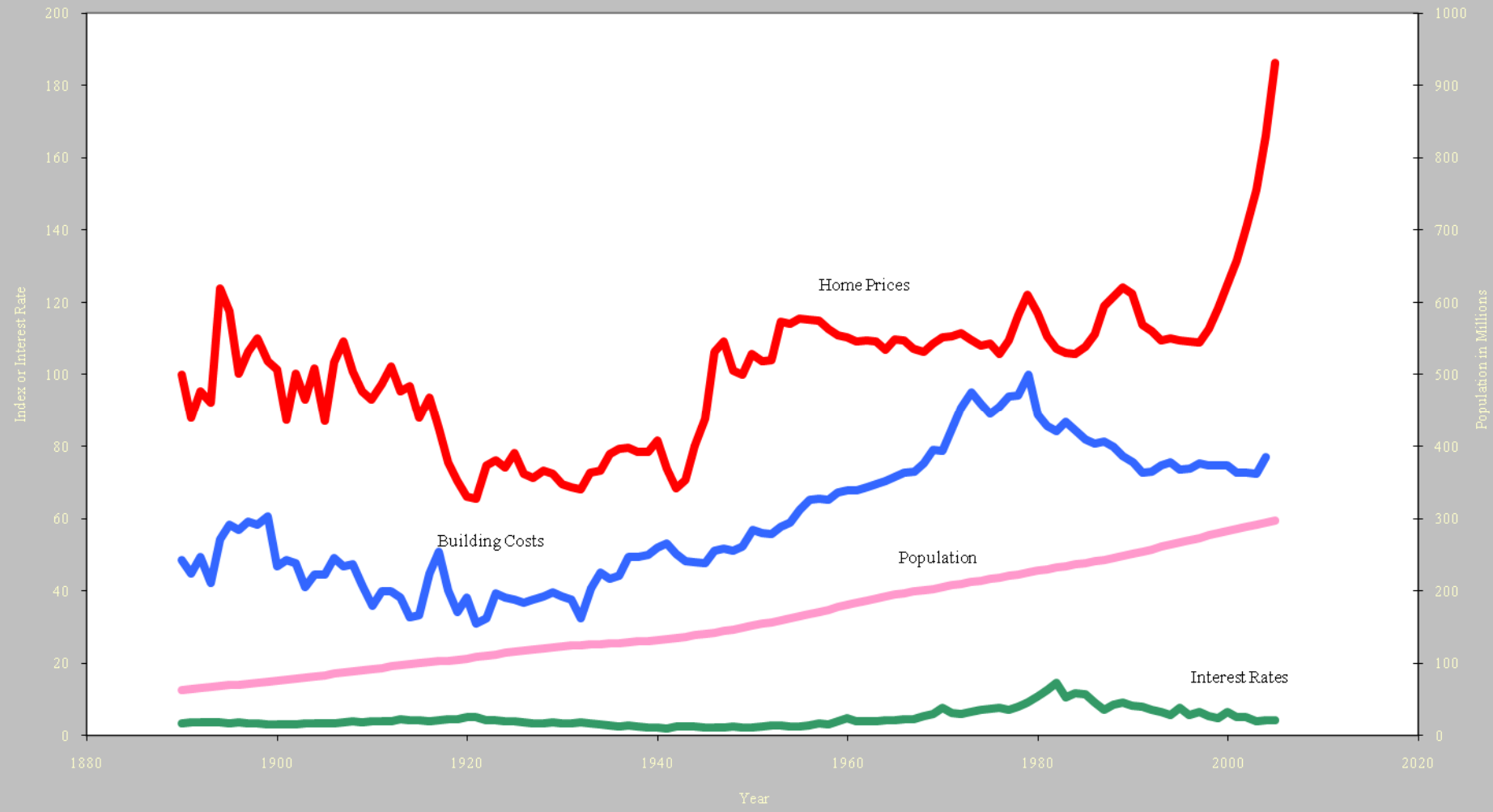
Helped Feed the Demand for High Quality Assets

- ✓Demand for investment-grade assets, much higher than supply from investment grade issuers
  - Portfolio regulations insurers, pensions funds and some mutual funds establish minimum acceptable ratings
  - Banks could reduce capital requirements by holding higher-rated debt
- ✓Ability to synthesize investment grade securities helped fill the gap

Technique applied even to nonprime mortgages

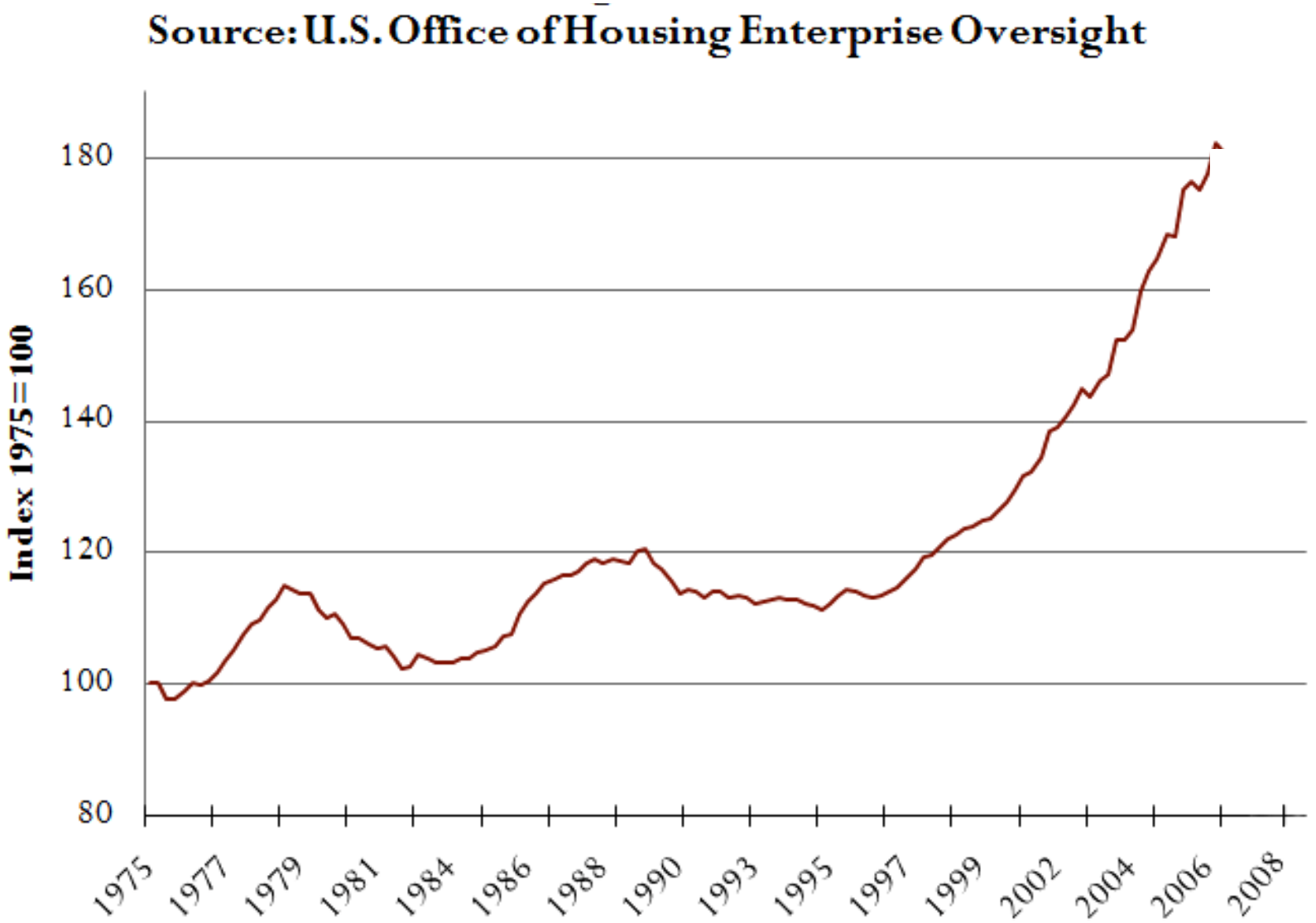
- ✓ Subprime: mortgages to borrowers with weak
  - Credit histories
  - Credit scores (repayment capacity)
  - Or incomplete credit histories
    - Low doc loans
    - No doc loans
    - Liar loans
- ✓ Alt-A: mortgages to borrowers w. non-standard features re:
  - Borrower,
  - Property or
  - Loan

Long-Term Trends in Single-Family Homes 1890-2005 in the US

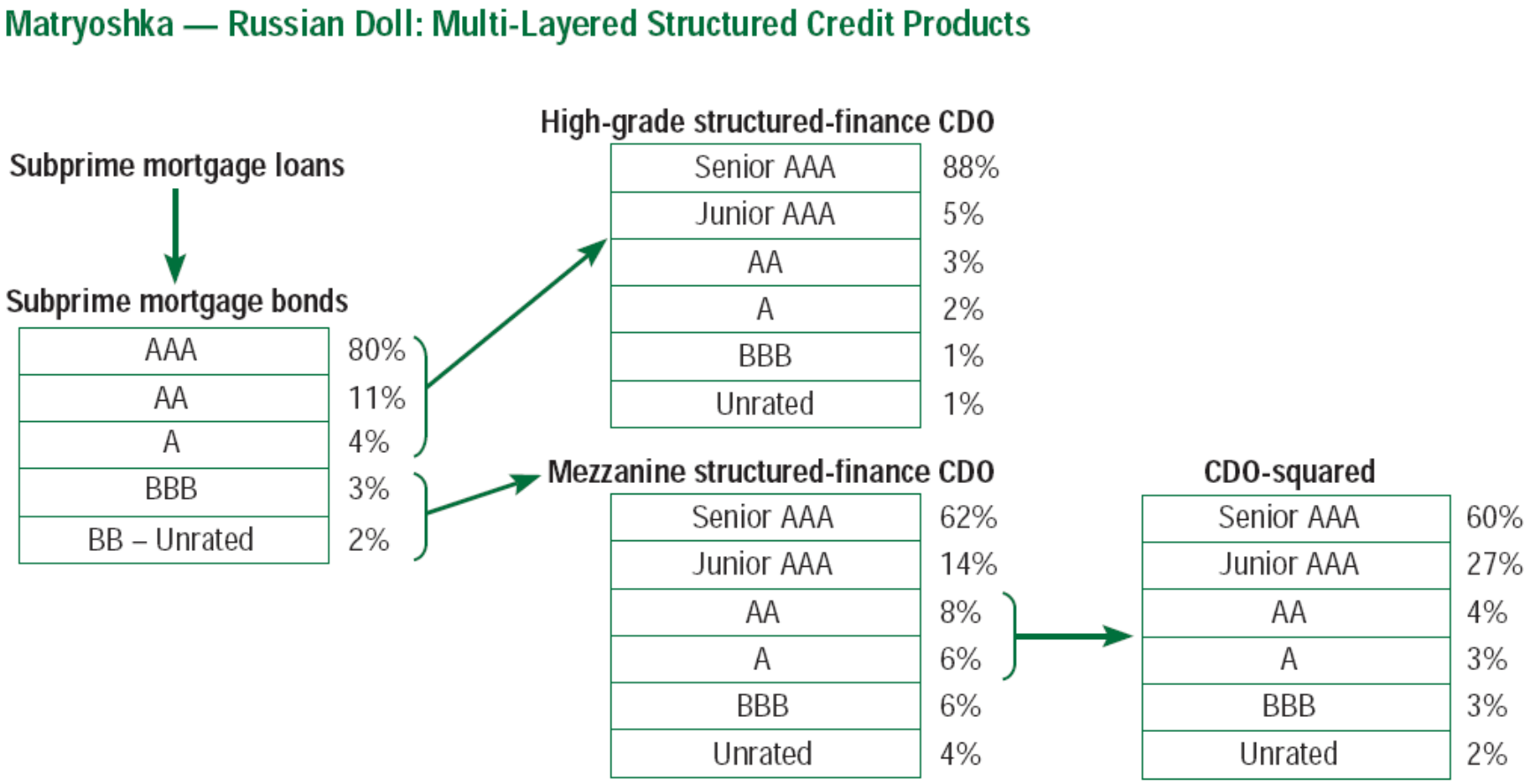


Source: Robert Shiller, Irrational Exuberance, 2nd edition, p.13.

Real Housing Prices, 1975-2006



Subprime Mortgage into AAA Credits



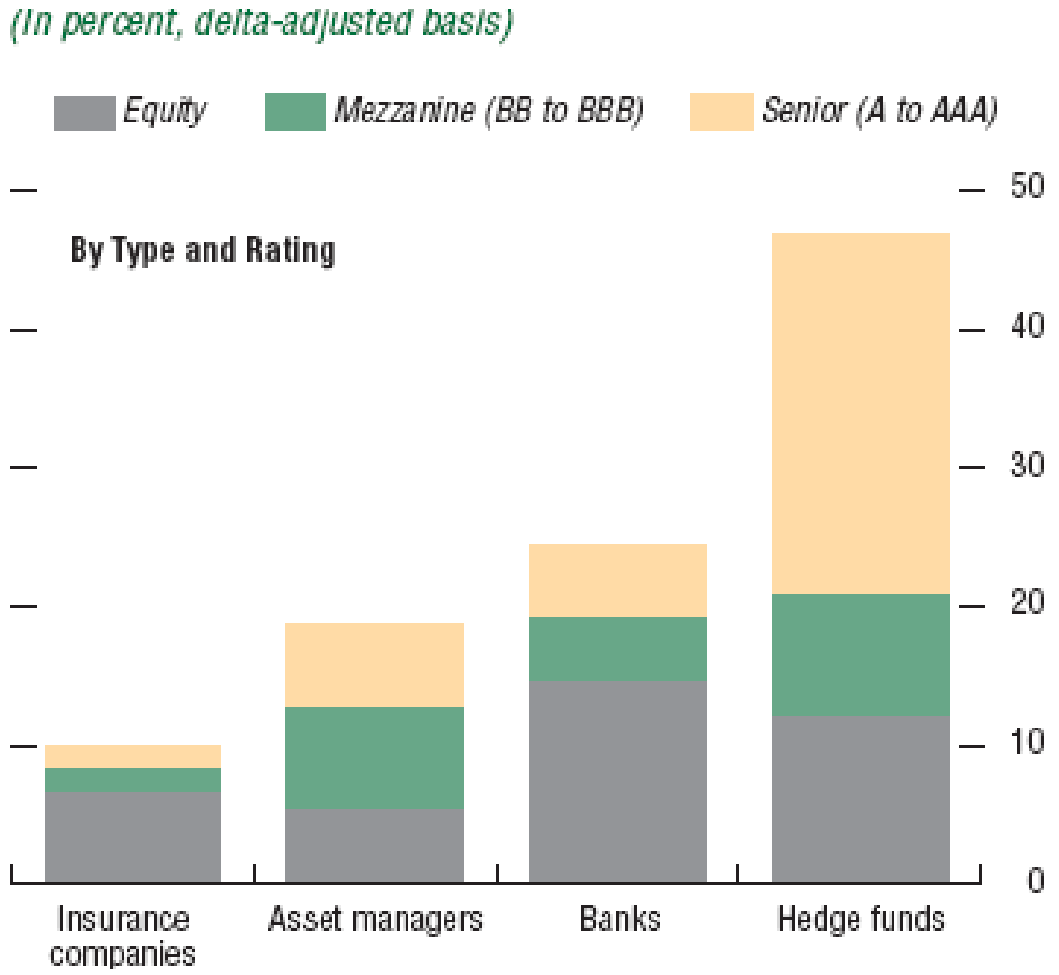
Source: IMF staff estimates.
Note: CDO = collateralized debt obligation.

Source: IMF Global Financial Stability Report (IMFGFSR), 4/08, Box 2.2.,p. 60

Credit Enhancements

- ✓ Excess servicing
- ✓ Over-collateralization
- ✓ Subordination and residual tranching
- ✓ Performance triggers
- ✓ Monoline insurance
- ✓ Credit Default Swaps
  - CDOs are Synthetic if backed by CDSs

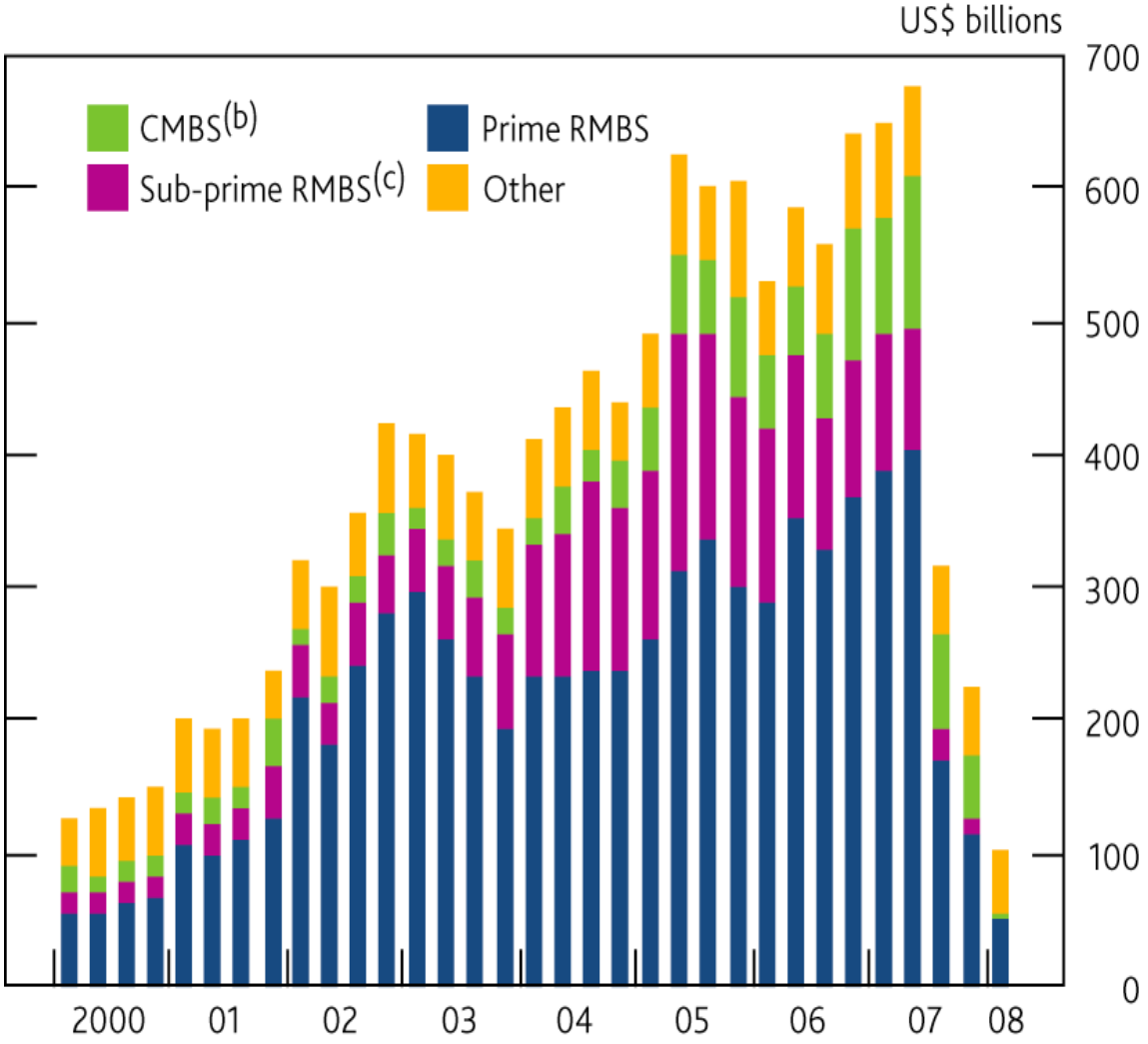
Who bought ABSs & CDOs?



Source: Citigroup.
Note: ABS = asset-backed security; CDO = collateralized debt obligation. Delta adjustment multiplies the holdings by the delta (i.e., leverage) of the tranche. Hence, it magnifies more junior tranches (i.e., equity) and thus gives a better picture of risk appetite.

Source: IMF Global Financial Stability Report, October 2007 , p.15

Very Rapid Growth in Global issuance of Asset-Backed Securities(a)



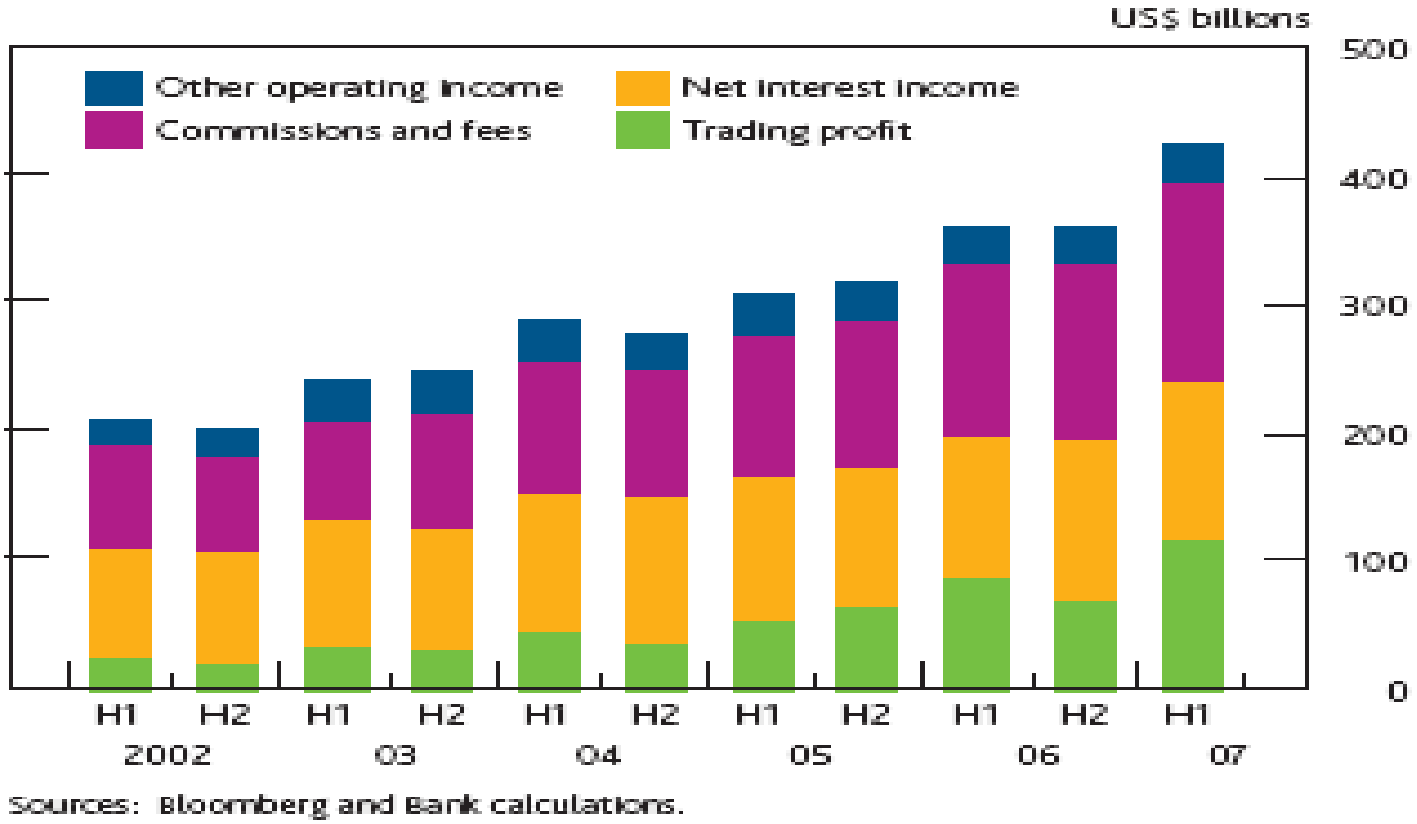
Source: Dealogic.

Source: Bank of England Financial Stability Report, 1 may 2008

(a) Quarterly issuance. 'Other' includes auto, credit card and student loan ABS.
(b) Commercial mortgage-backed securities.
(c) Residential mortgage-backed securities.

Became a dominant source of revenue for most LCFIs

Growth in Trading Profits, Commissions & Fees Largely Reflects Growth in Structured Credits



Source: Bank of England Financial Stability Review, October 2007, p. 38.

Because busts in real estate prices are subject to considerable uncertainty and may occur at long, unpredictable intervals

- ✓ Banks and borrowers may
  - *underestimate*,
  - *ignore* or
  - simply *fail to comprehend* the risks in real estate investment

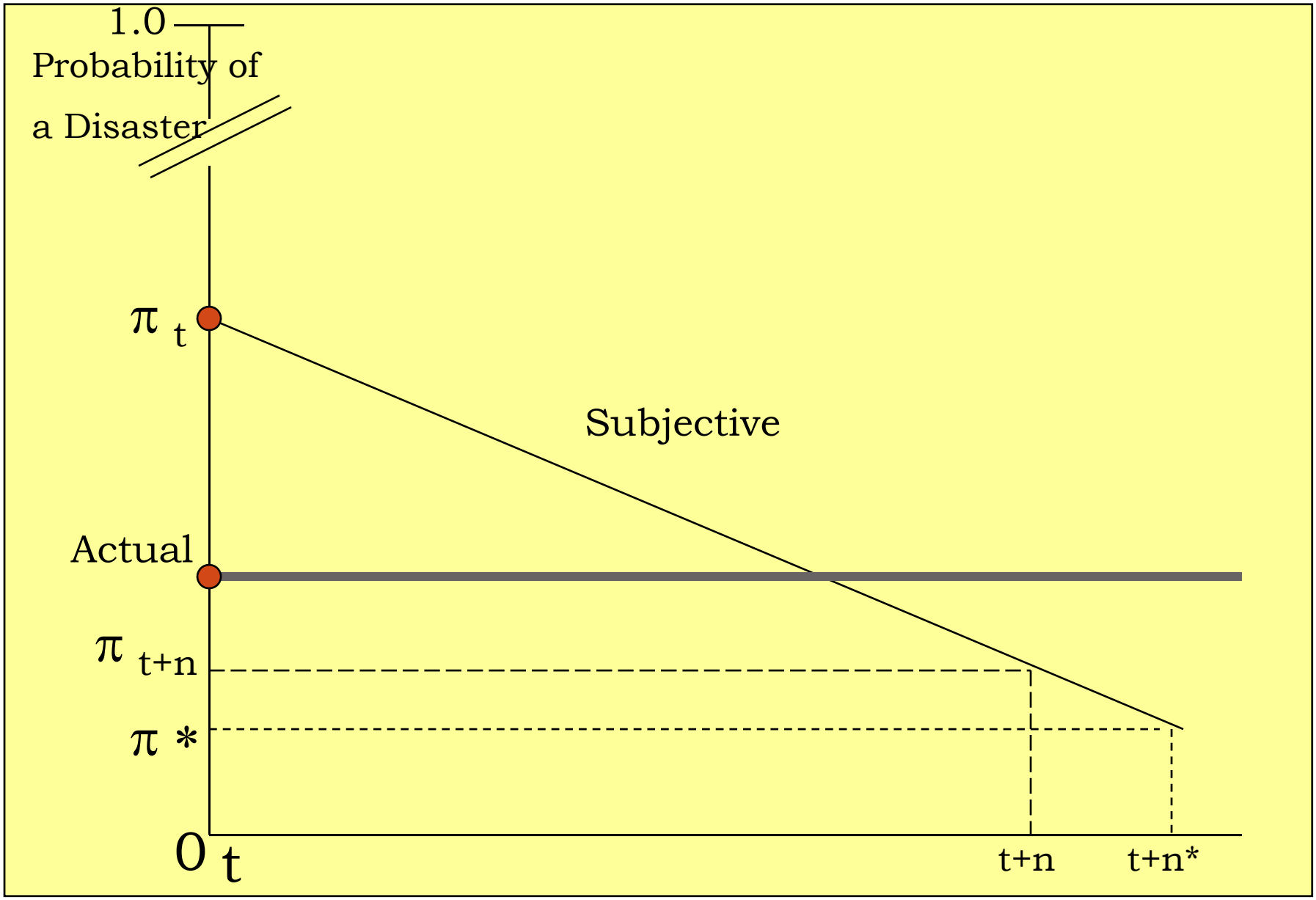
Why have financial institutions been willing to assume such heavy concentrations of exposure to sub-prime related securitizations?

1. Disaster myopia
2. Perverse incentives
3. Lack of transparency & inadequate analysis

1. Disaster Myopia

- ✓Low-frequency shocks of unknown probability
  - Inadequate a priori knowledge
  - Inadequate empirical evidence
- ✓Subjective probabilities depend on
  - Availability heuristic
    - Availability bias: a declining function of period since last shock
  - Threshold heuristic
  - Cognitive dissonance

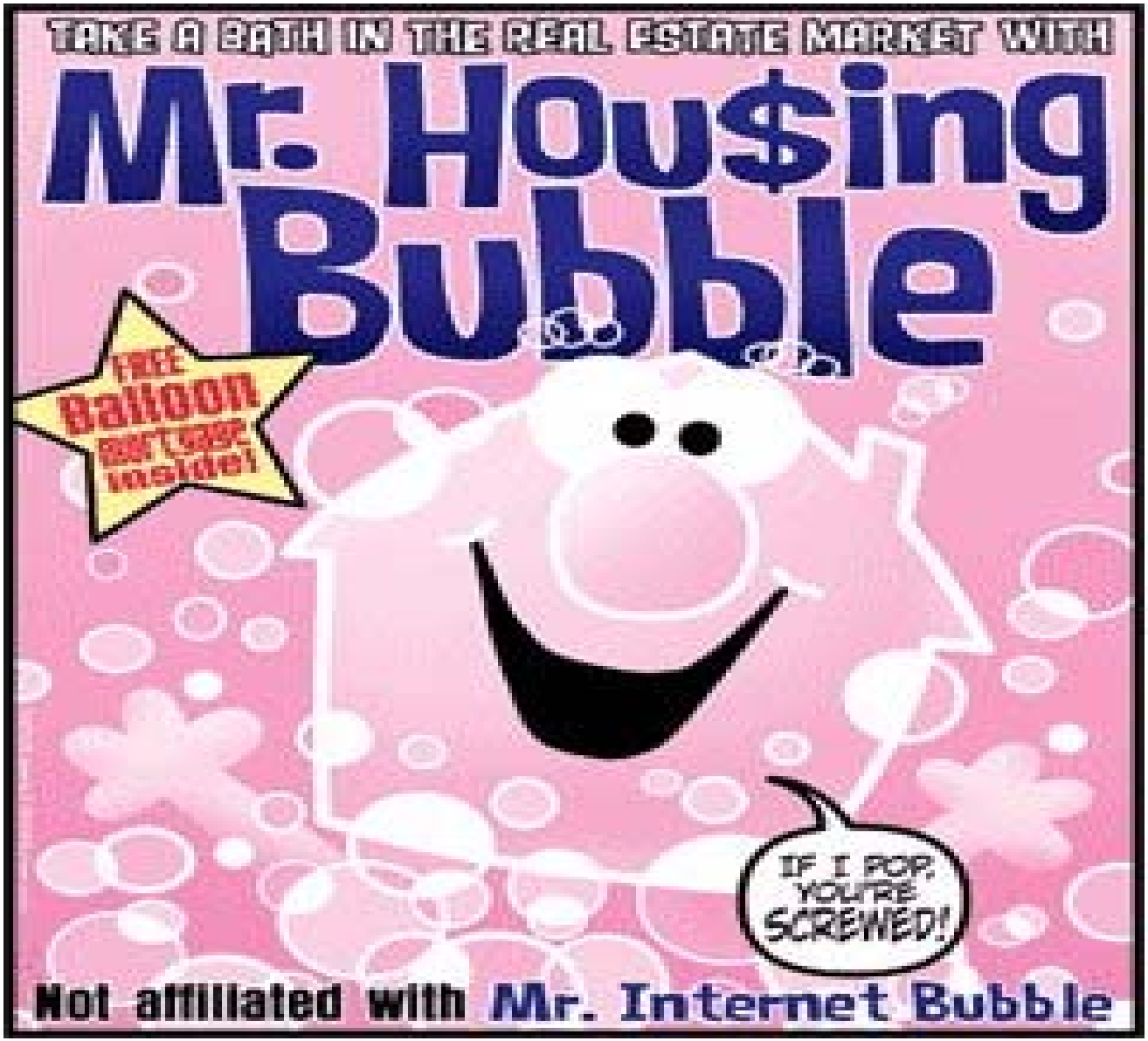
Disaster Myopia



Institutional factors that encourage disaster myopia

- ✓ Managerial accounting systems that favor activities subject to low-frequency losses
- ✓ Recognition of fees upfront as income
- ✓ Bonuses tied to current revenues
- ✓ High job mobility among risk takers
- ✓ Intense competition in financial markets
  - Drives out participants who are not disaster myopic
  - Appearance of high profitability attracts new entrants

Media usually emphasizes returns, not risks



2.Perverse Incentives: Examples of Law of Unintended Consequences

- ✓High leverage and risk shifting
- ✓Explicit deposit insurance
- ✓Implicit deposit insurance
  - State-owned banks
  - Lender of last resort operations
  - Purchase and assumption transactions
- ✓Pressure on Fannie Mae & Freddie Mac to increase flow of funding to low income housing

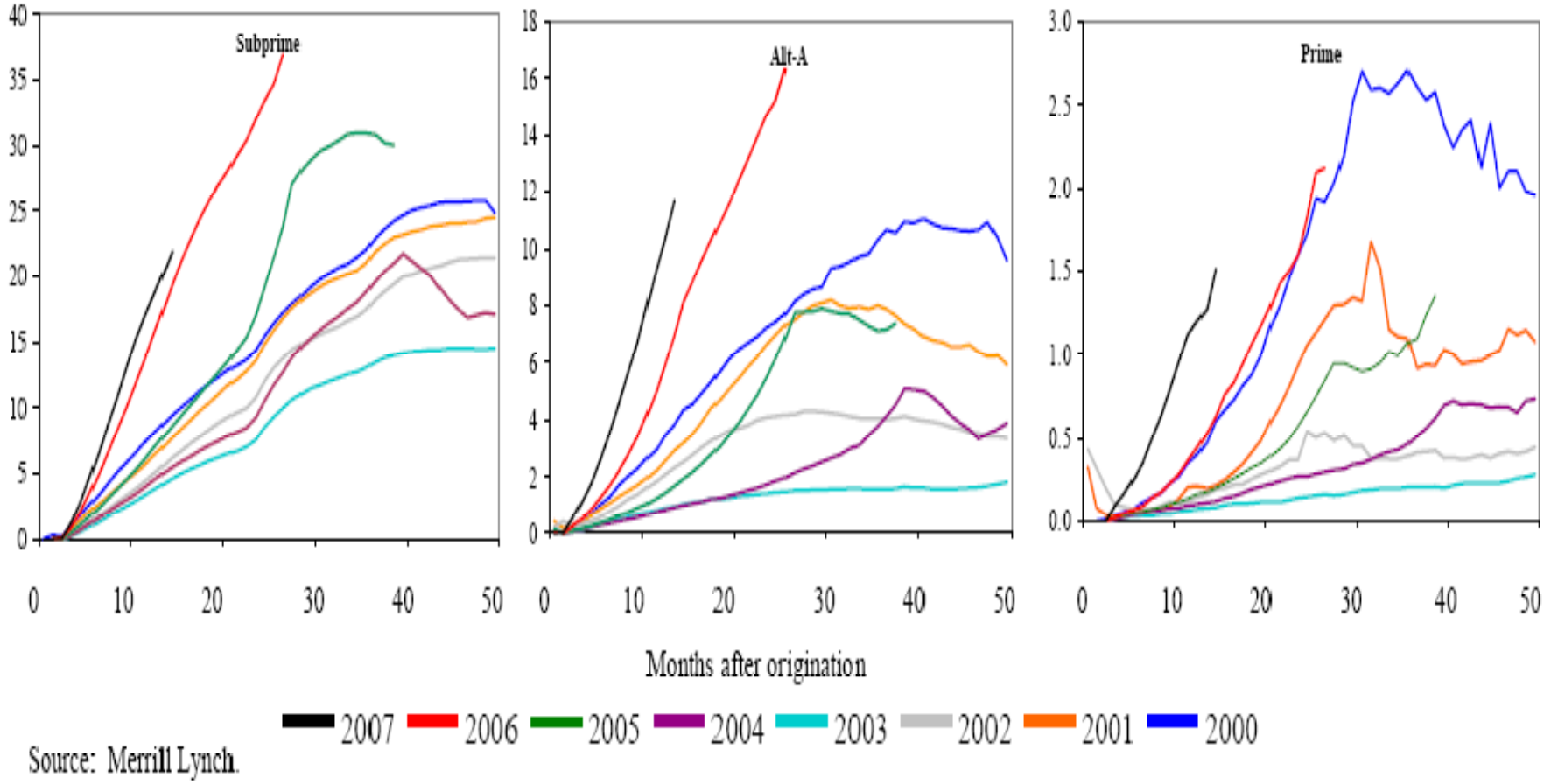
Analysis

- ✓Baroque financial structures
- ✓Reliance on rising housing prices to protect against default
- ✓Ability to transfer credit risk through CDS market
- ✓Inadequate appraisal techniques
- ✓Inadequate measures of exposure

Deterioration in Subprime Raised Alarm

(Alt-A & Prime Also Troubling)

(60+ day delinquencies by Vintage Year



Source: Merrill Lynch.

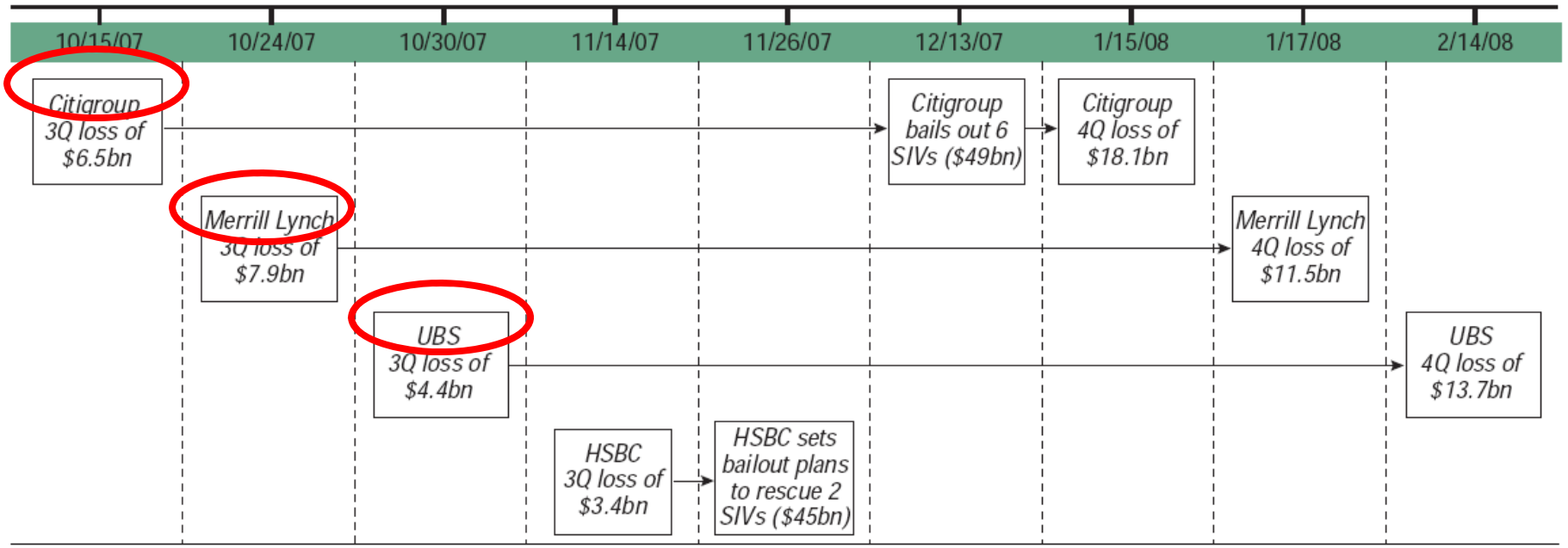
Undermined Confidence in the 3 principal supports for private securitizations

1. Statistical Models
   - Excess servicing requirements
   - Over-collateralization
   - Subordination & residual tranching
   - Performance triggers
2. Ratings
3. Monoline Insurance

Players Cast Doubt on Validity of Models

After two Bear Stearns Hedge Funds Blew-Up in June 2007…

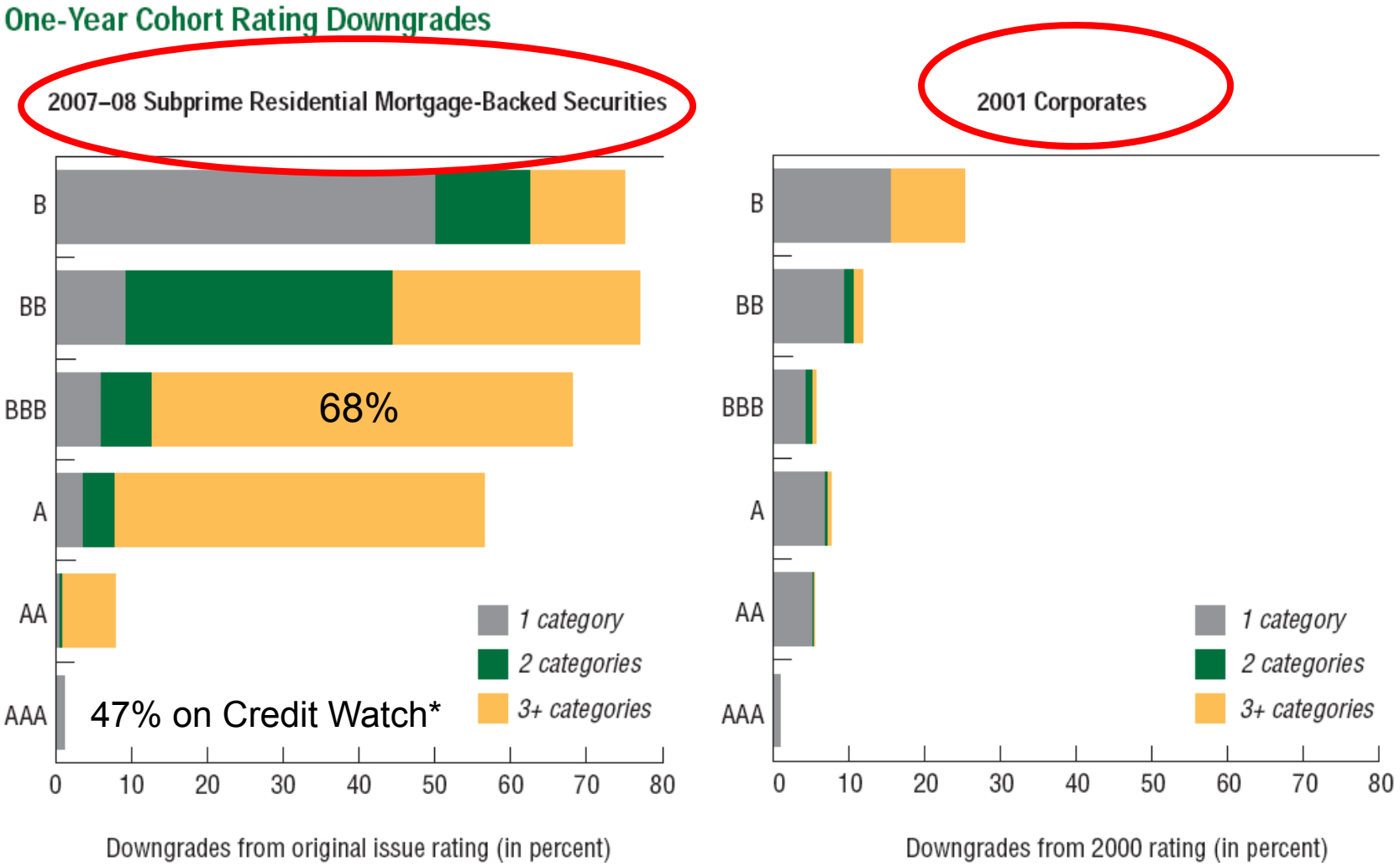
F Writedowns of Selected Financial Institutions, October 15, 2007–February 14, 2008



Source: Bank press releases.
Note: SIV = structured investment vehicle.

Source: IMFGFSR, 4/08, Figure 2.2, p. 68.

Undermined Confidence in Ratings



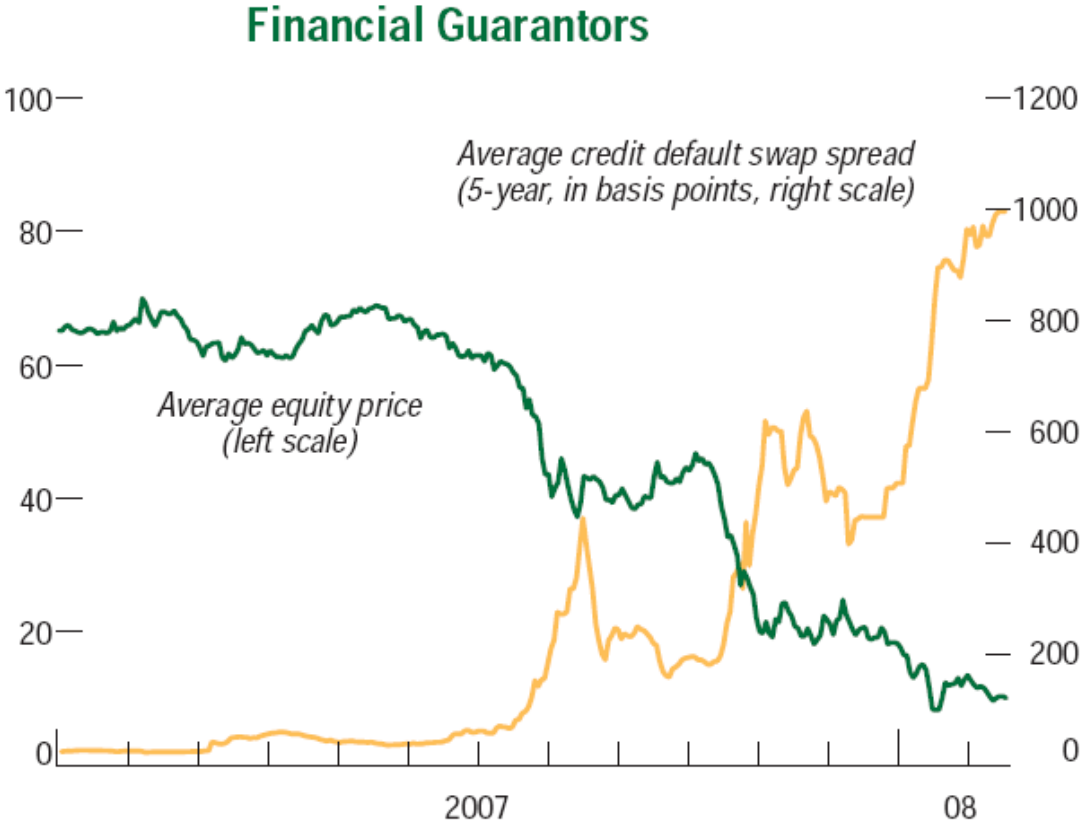
Source: Standard & Poor's.

*As of 1/31/08

Source: IMFGFSR, 4/08, Box 2.3, p. 61.

Losses Threatened Solvency of Monoline Insurers

- ✓ At yearend 2006 Monoline insurers supported about $800 bn in structured finance obligations



Source: IMFGFSR, 4/08, Figure 1.14, p.17.

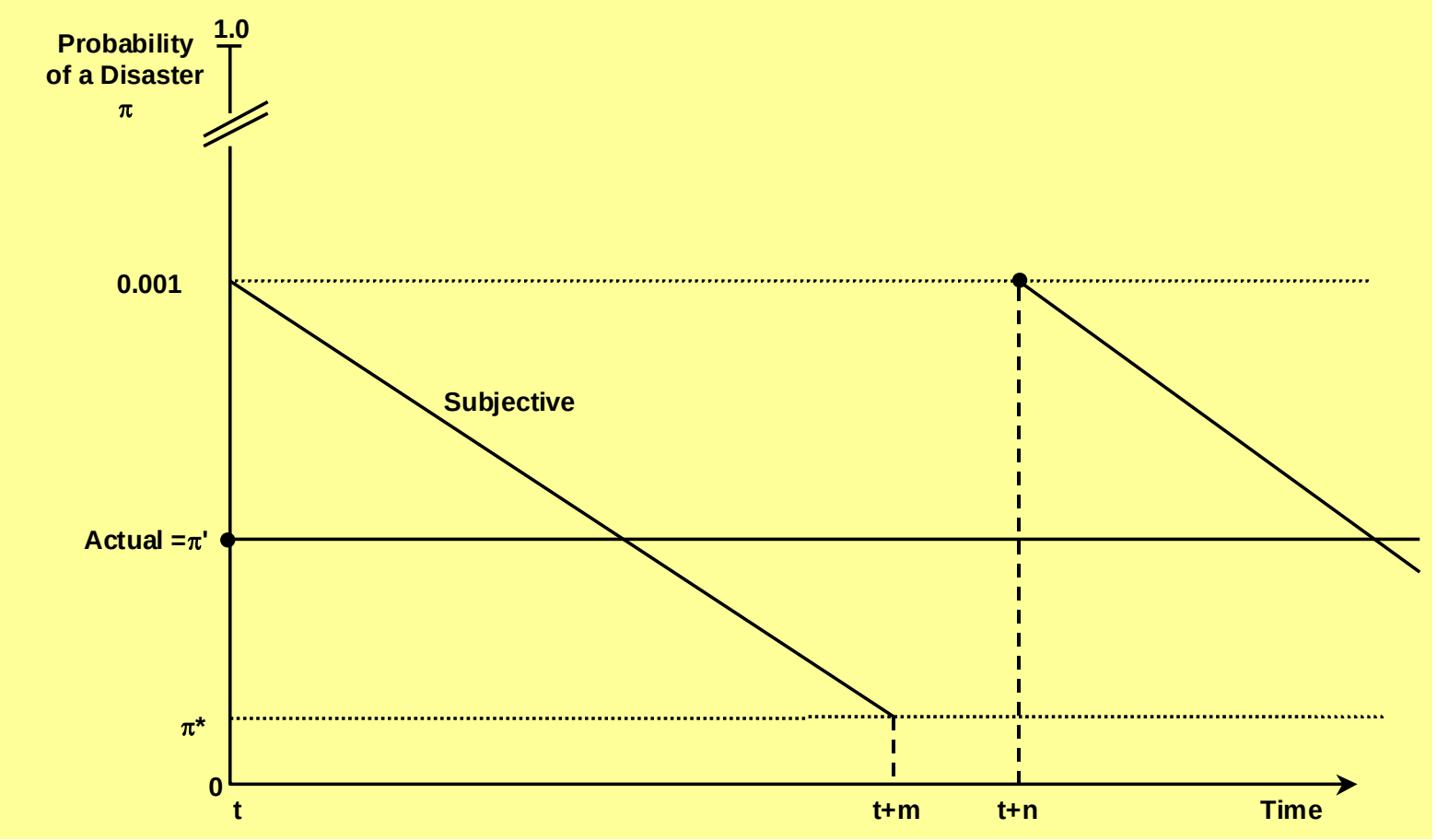
Problem,
Crisis Decapitalized Key Institutions

- ✓ Direct losses from holdings of downgraded securities
- ✓ Losses from honoring implicit guarantees backing-up off b/s vehicles
  - Extensions of liquidity
  - Purchases of securities
- ✓ Losses from pipeline of assets that can no longer be securitized
- ✓ Loss of important continuing source of bank revenue
- ✓ Capital challenge
  - Replace lost capital
  - Stockpile capital as a precaution against loss of access to funding
  - Unknown: How much new capital to bring part of off-balance sheet banking system back onto the b/s

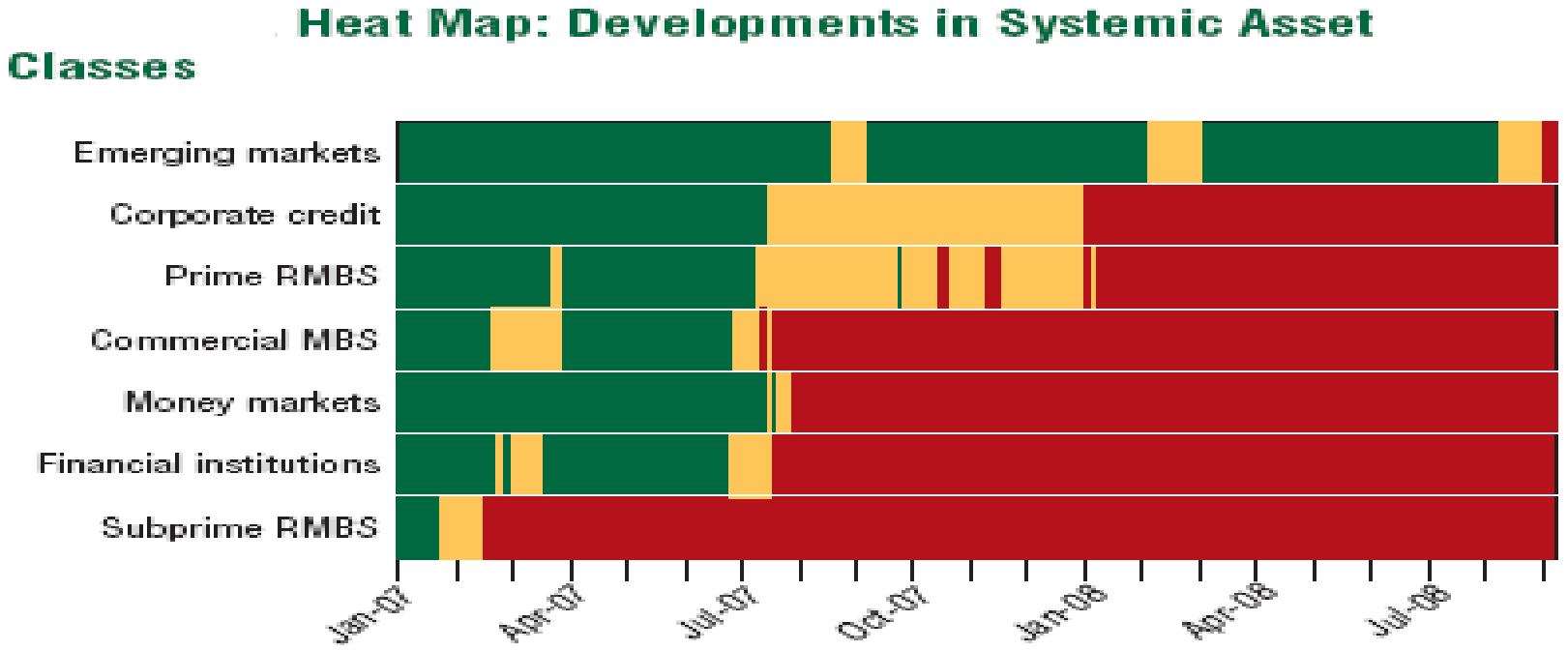
Uncertainty about size and location of losses raised concerns about credit & counterparty risk

Markets that relied on statistical models, ratings or monoline insurance ceased to function effectively

Disaster myopia becomes disaster magnification when a shock jars perceptions



Volatility Spread from Subprime in '07II to Emerging Markets



Source: IMF staff estimates.

Note: The heat map measures both the level and 1-month volatility of the spreads, prices, and total returns of each asset class relative to the average during 2004–06 (i.e., wider spreads, lower prices and total returns, and higher volatility). That deviation is expressed in terms of standard deviations. Green signifies a standard deviation under 1, yellow signifies 1 to 4 standard deviations, and red signifies greater than 4 standard deviations. MBS = mortgage-backed security; RMBS = residential mortgage-backed security.

Based on both the level and 1-month volatility of the spreads, prices and total returns of each asset class in terms of deviation relative to the average during 2004-2006. Wider spreads, lower prices and total returns mean higher volatility. Focus on standard deviation. Green→$\sigma<1$; yellow→$1\leq\sigma\leq4$; red→$\sigma>4$

Injections As of October 15, 2008

Global Writedowns	Capital infusions
$592.1	$442.3

Policy interventions appeared *ad hoc* and increasingly desperate

We may have witnessed a genuine attempt to implement constructive ambiguity, but lack of predictability undermined market confidence

Destructive ambiguity

Markets reacted sharply to uncertainty

- ✓ Massive flight to quality
  - Treasury bill rate became negative for a brief period
  - Differential between 3-month LIBOR and 3-month T-Bill reached 3.47%
  - 2-year swap spread between LIBOR and Treasuries reached record high of 1.66%
- ✓ Huge outflows from institutional money market mutual funds
  - Normally liquid markets seized up
  - Fears that problems at Reserve Primary Fund and Putnam would spread to retail market

A loss of confidence in the financial system

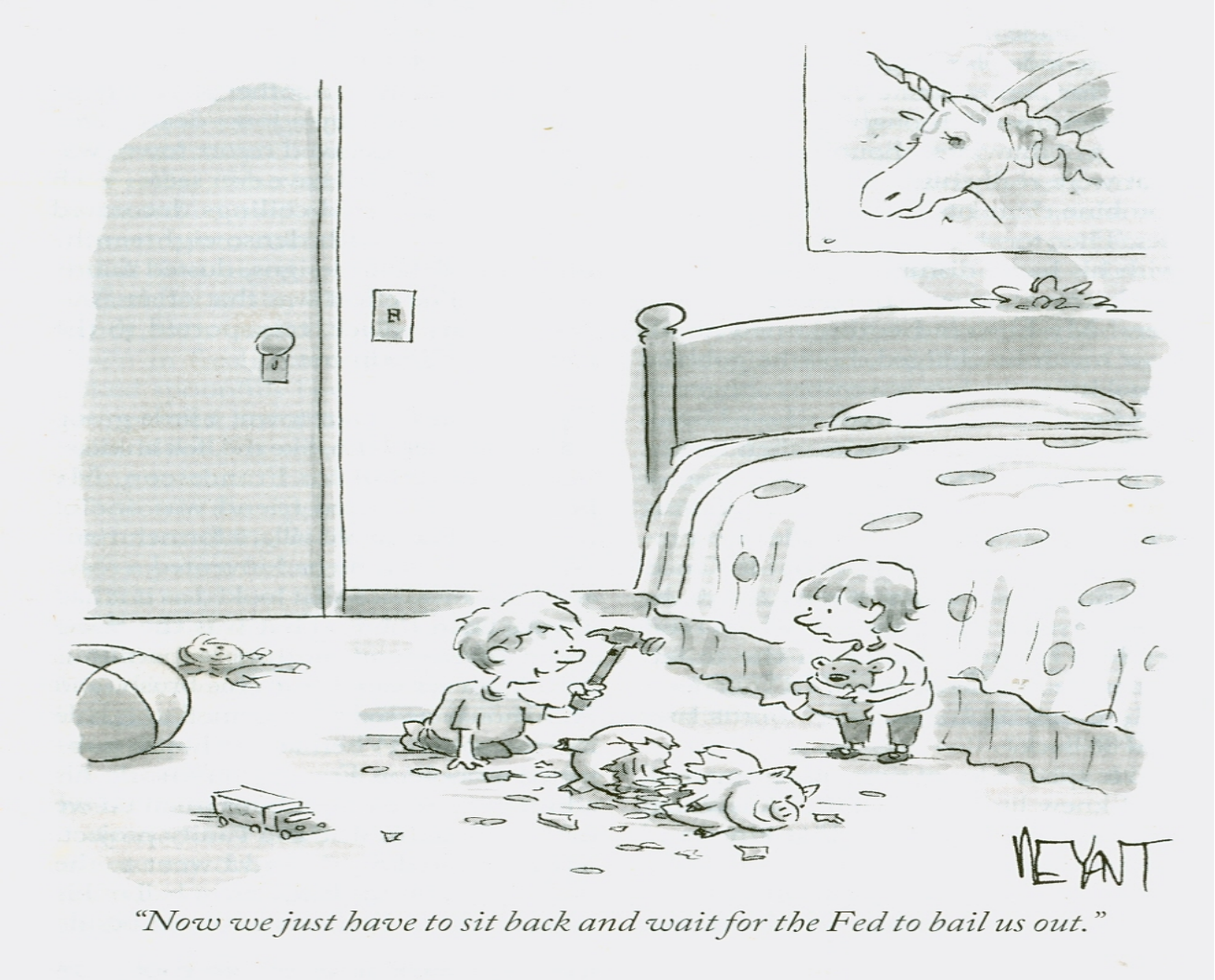
"Can I interest you in a faith-based account?"

Which began to show signs of panic

More broadly, problem is excessive leverage

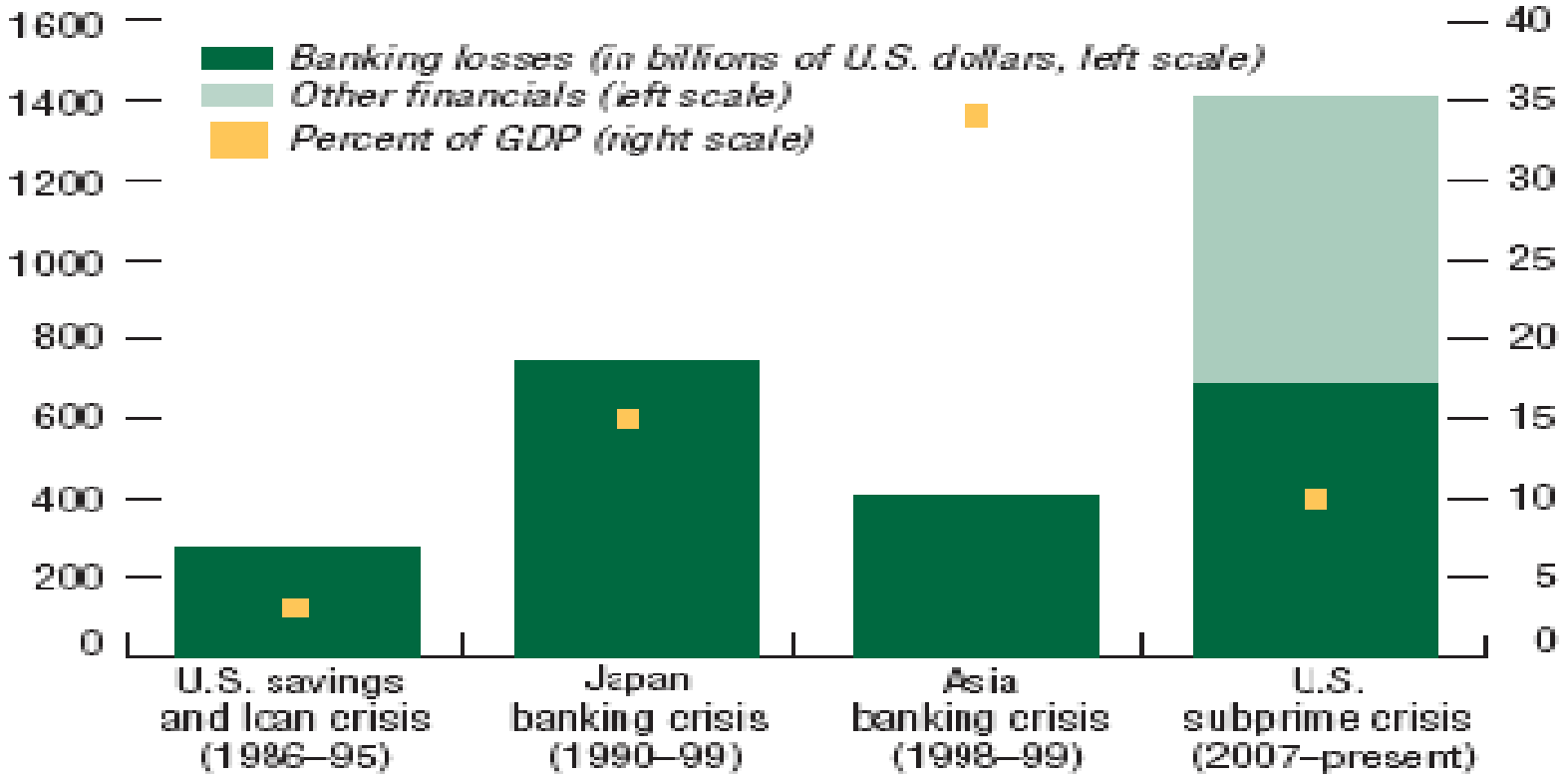
- ✓ Aggregate debt rose from 163% of GDP in 1980 to 346% of GDP in 2007
  - Household debt rose from 50% in 1980 to 100% in 2007
  - Financial sector debt rose from 21% in 1980 to 116% in 2007
    - This does not include leverage embedded in derivatives
- ✓ With almost 1 year's inventory of unsold homes, further downward pressure on prices is inevitable, leading to larger losses and greater needs for additional capital
- ✓ Deleveraging is never pleasant, but trying to dismiss it as a liquidity problem is an unhelpful act

With Latest Round of “Coordinated” Government Guarantees and Subsidies, Moral Hazard is Rampant



“Now we just have to sit back and wait for the Fed to bail us out.”

IMF Comparison with Past Crises



Sources: World Bank; and IMF staff estimates.

Note: U.S. subprime costs represent staff estimates of losses on banks and other financial institutions from Table 1.2. All costs are in real 2007 dollars. Asia includes Indonesia, Malaysia, Korea, the Philippines, and Thailand.

How to Restore Faith in Ratings Agencies

Undermined Credibility of CROs

- ✓ Old questions about conflicts of interest heightened
  - Played active role in facilitating origination of structured products
  - Revenue from securitizations accounted for roughly half of CRO's fees
  - Reputation constraints not sufficiently strong
- ✓ Ratings slow to reflect deterioration in underlying pools of securities
- ✓ Past errors individual corporates or

Stu's Views

Rating Agencies

"Bribe" sounds felonious. Let's call it a "fee".

Reliance on Ratings in Regulatory Process Contributed to Grade Inflation

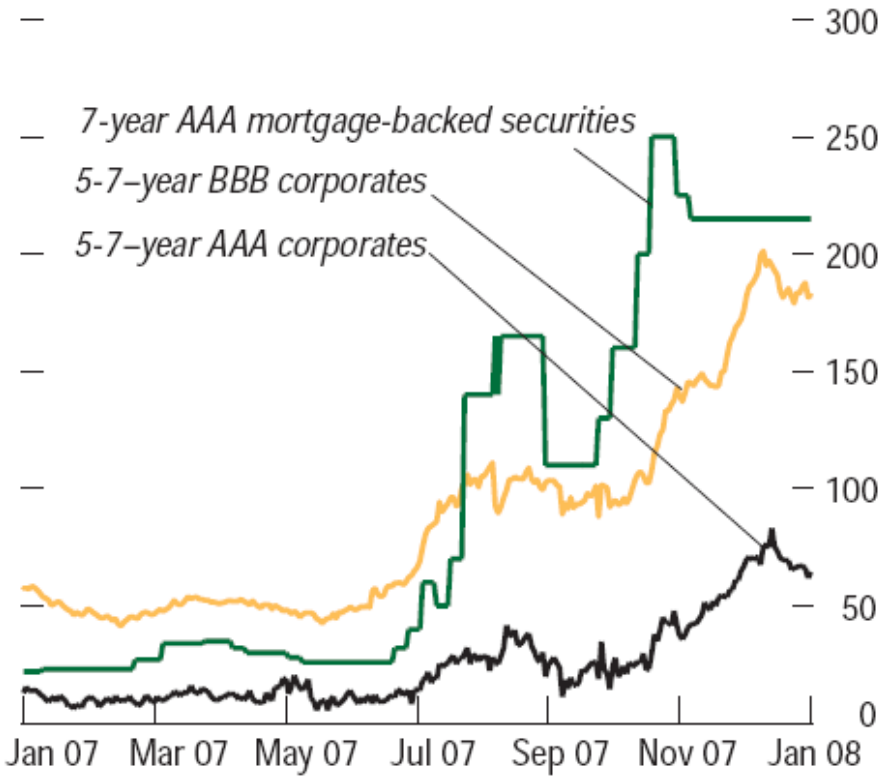
- ✓ A sort of wink/wink, nod/nod equilibrium emerged at the expense of regulators & unsophisticated investors
  - Sophisticated market participants knew that ratings were not equivalent for corporate or sovereign debt and structured credits and profited thereby
    - Ratings not consistent across instruments*
    - Corporate bonds rated Baa, 2.2% 5-year default rate (’83-2005)
    - CDOs rated Baa, 24% 5-year default rate (’93-2005)
    - Market perceived differences
    - 200 bp spread on AAA-rated CDOs vs. 10/20 bp spread on AAA-rated corporates

Source: Example cited by Calomiris (2007) from Bloomberg Markets (July 2007, p. 52)

Market Perceived Differences

Credit Spreads on AAA Mortgage-Backed Securities Versus AAA and BBB U.S. Corporate Bonds

(In basis points)



Source: JPMorgan Chase & Co.

Source: IMFGFSR, 4/08, Box 2.3, p.62.

How far will house prices fall?

- Average home equity has fallen to 50%
- May see a 3rd wave of defaults on prime mortgages and home equity loans
- And then the effects on the real economy set in

How can confidence in securitization process be restored? How long will it take?

Franke/Krahnen Remedies

1. Transparency with regard to tranche allocation, especially first loss tranche
2. Transparency regarding compensation systems
3. External validation of agency ratings by supervisors
4. Opacity-related capital charges
5. Aggregation of risk exposure