

Asset Securitization: Is It Still Secure?

Timur Gök

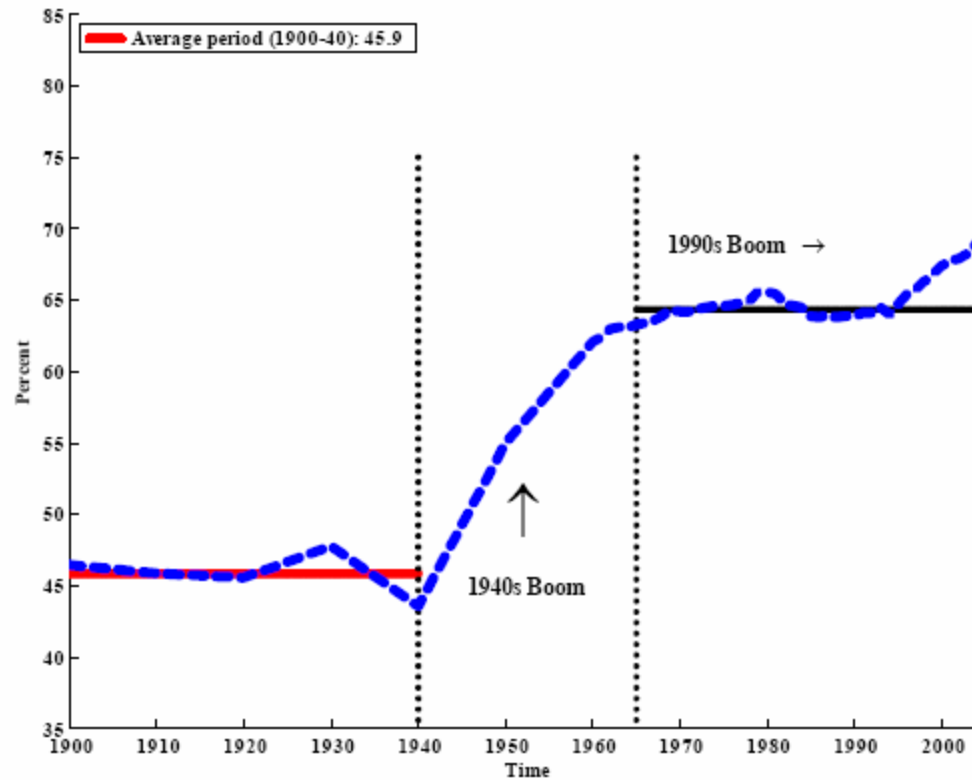
*Audit Committees:
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CAACM
Saint Lucia, June 23rd – 24th, 2008

Asset Securitization

An assessment of asset securitization in the context of the credit crisis and subprime mortgage markets

- Historical context
- Innovations in the 1980s and the 90s
- Disintermediation
- The rise and fall of home prices
- The rise and fall of subprime mortgages
- In the wake of the credit crisis

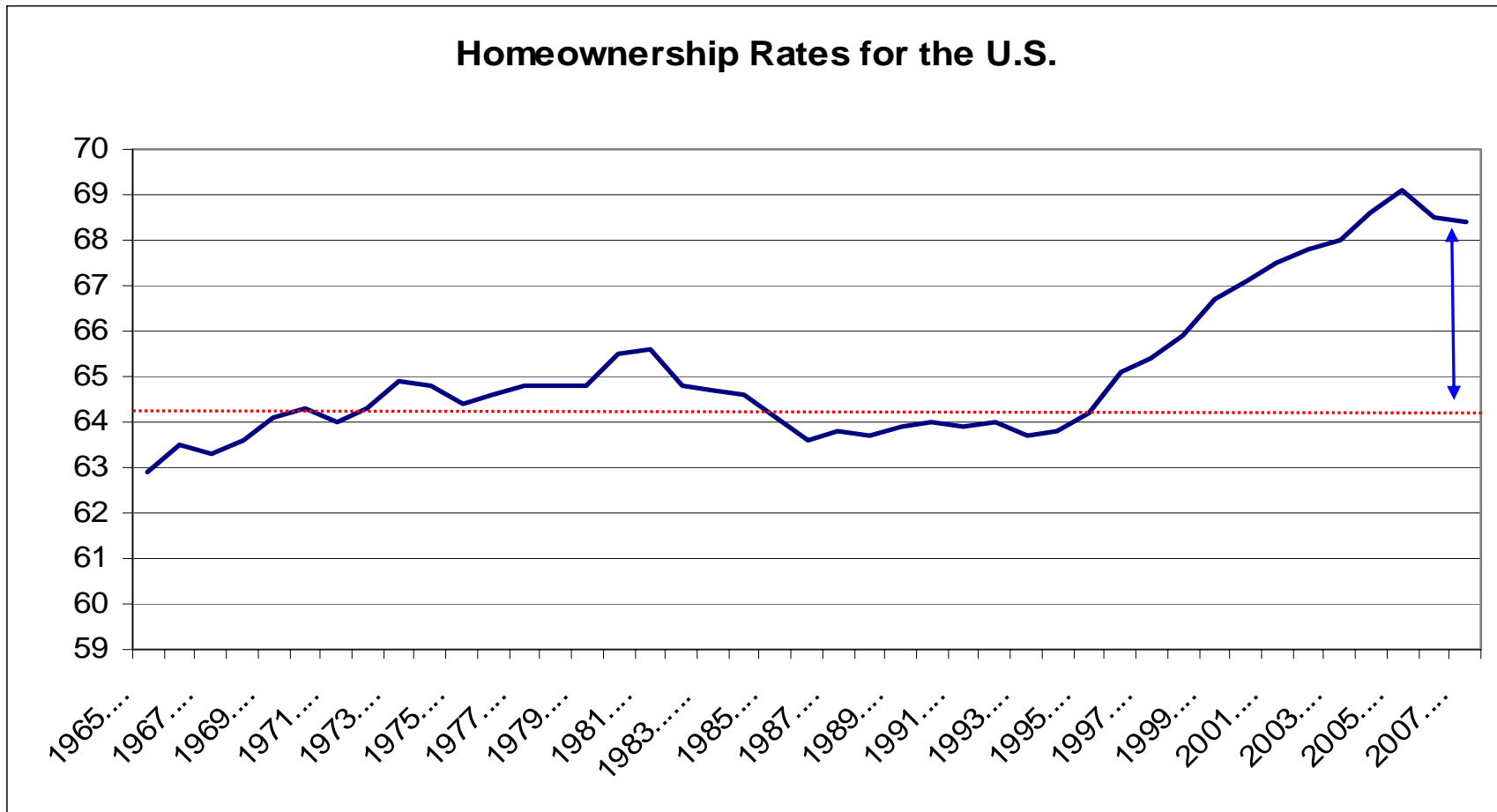
Evolution of U.S. Homeownership



Data Source: United States Statistical Abstract

Chambers, Garriga and Schlagenhauf, "Accounting for Changes in the Homeownership Rate," Federal Reserve Bank of Atlanta, Working Paper 2007-21, September 2007.

Evolution of U.S. Homeownership



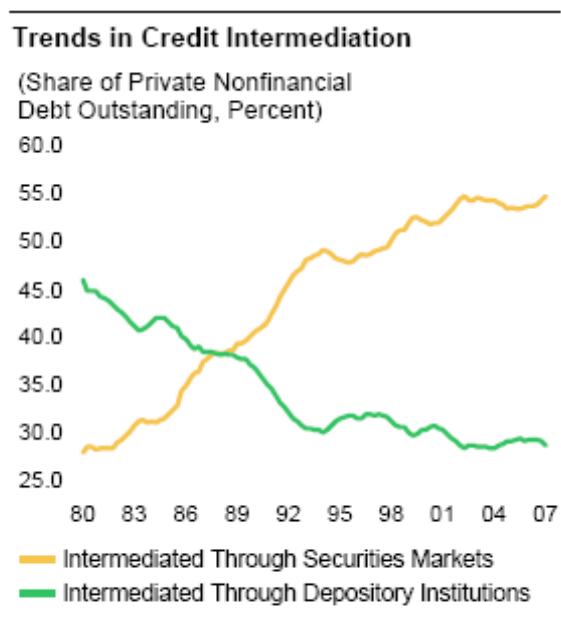
Source Data: United States Statistical Abstract.

Financing the American Dream

A whirlwind tour with a few **highlights** –

- Early history – 1930s
- Institutional developments (1970s to 80s)
- **Disintermediation (aka securitization)**
- Automation/computerization (1990s...)
 - Automated underwriting and credit scoring
- **Subprime mortgages**

Disintermediation



Source: Federal Reserve

Vishy Tiripatur, "State of the Market: ABS CDOs, CLOs and Structured Credit, Morgan Stanley, February 2008.

- “Securitization is the substitution of more efficient public capital markets for less efficient, higher cost, financial intermediaries in the funding of debt instruments.”

John Reed, Chairman, Citicorp

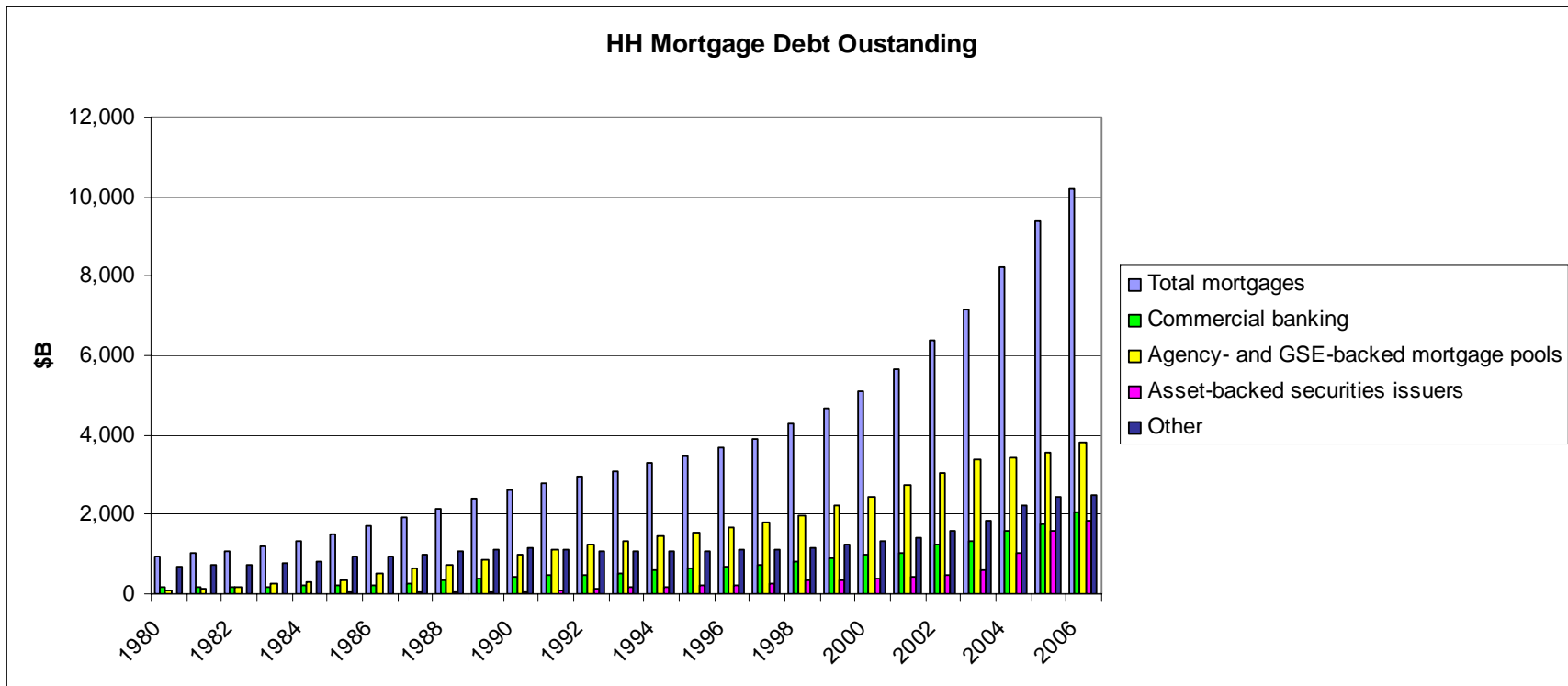
Securitization

- Benefits at a higher-level
 - Risk diversification
 - Lower cost of intermediation
- Benefits at the ground-level
 - “Remove, and sweeten a slice of the lemon”
 - Lower monitoring costs
 - Mitigate asset substitution/underinvestment
 - Lower bankruptcy costs
 - Funding diversification; tax shield benefits;...

Problems in Mortgage Markets

- Originate-to-distribute (OTD) model
 - Misaligned incentives
- Fallacy of ever-increasing house prices
- Poor risk management
 - Liquidity; correlation; strategic risk; “tail risks”
- Product complexity
- Lack of transparency
- Inadequate regulation

Mortgage Debt Outstanding (HH)



Traditional Mortgage Finance

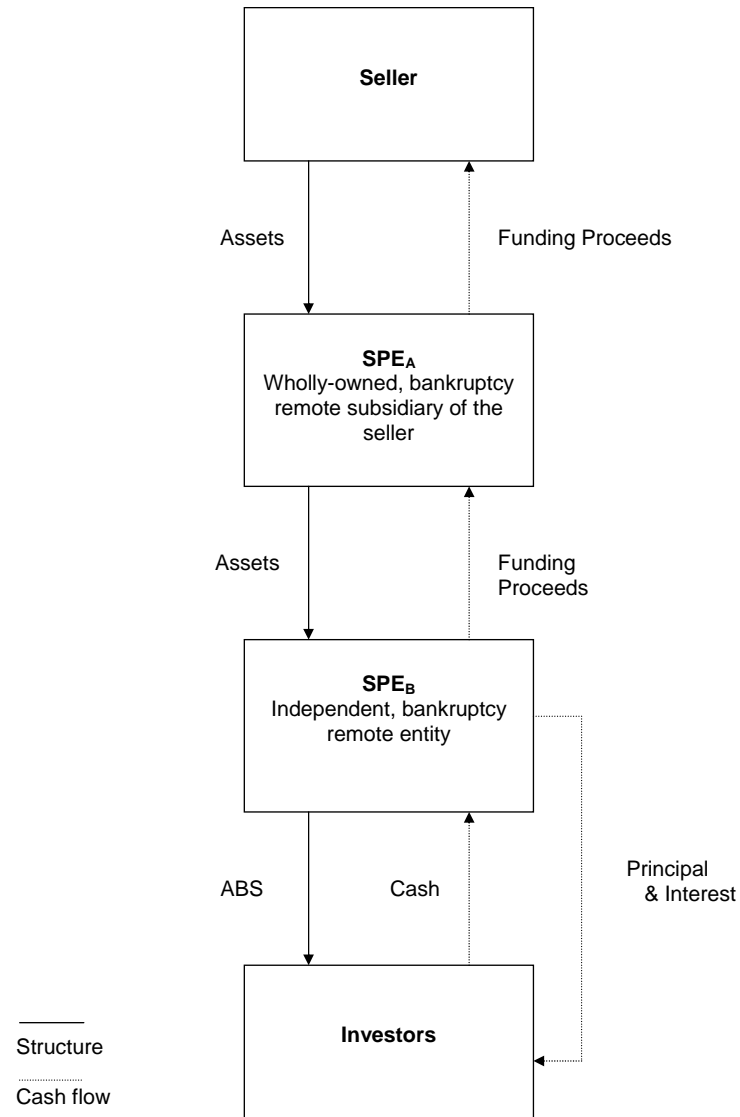


- Banks
 - Collect deposits
 - Make mortgage loans

Traditional Mortgage Finance



- Banks
 - Collect deposits
 - Make mortgage loans
- Securitization
 - Sell mortgage backed securities (MBS)



W. Alexander Roever. 2000. Securitization 101: Understanding and Demystifying Asset Backed Transactions.

CDO



Alarm Device c. 1840, British Museum.

- Collateralized debt obligations (CDOs) are stand-alone special-purpose vehicles (SPVs) that invest in a diversified pool of assets
- Funded by issuing multiple classes of securities

Source: Morgan Stanley

CDO



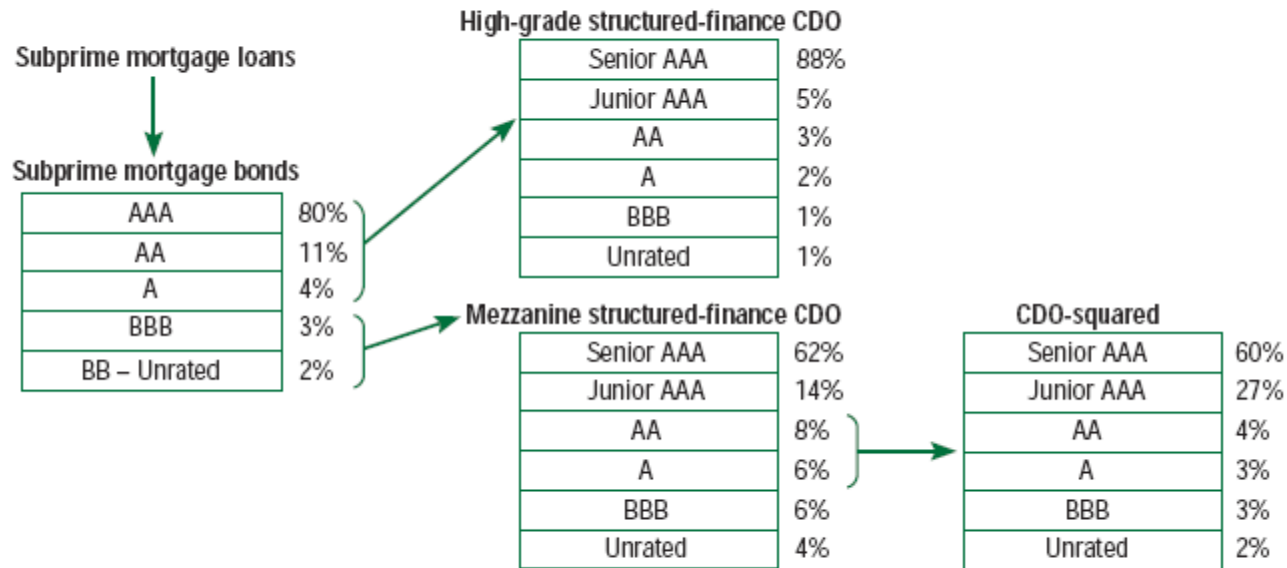
Alarm Device c. 1840, British Museum.

- Repayment on the securities is a function of the performance of the pool of assets that serve as collateral
- Investors in these securities assume risk in order of seniority

Source: Morgan Stanley

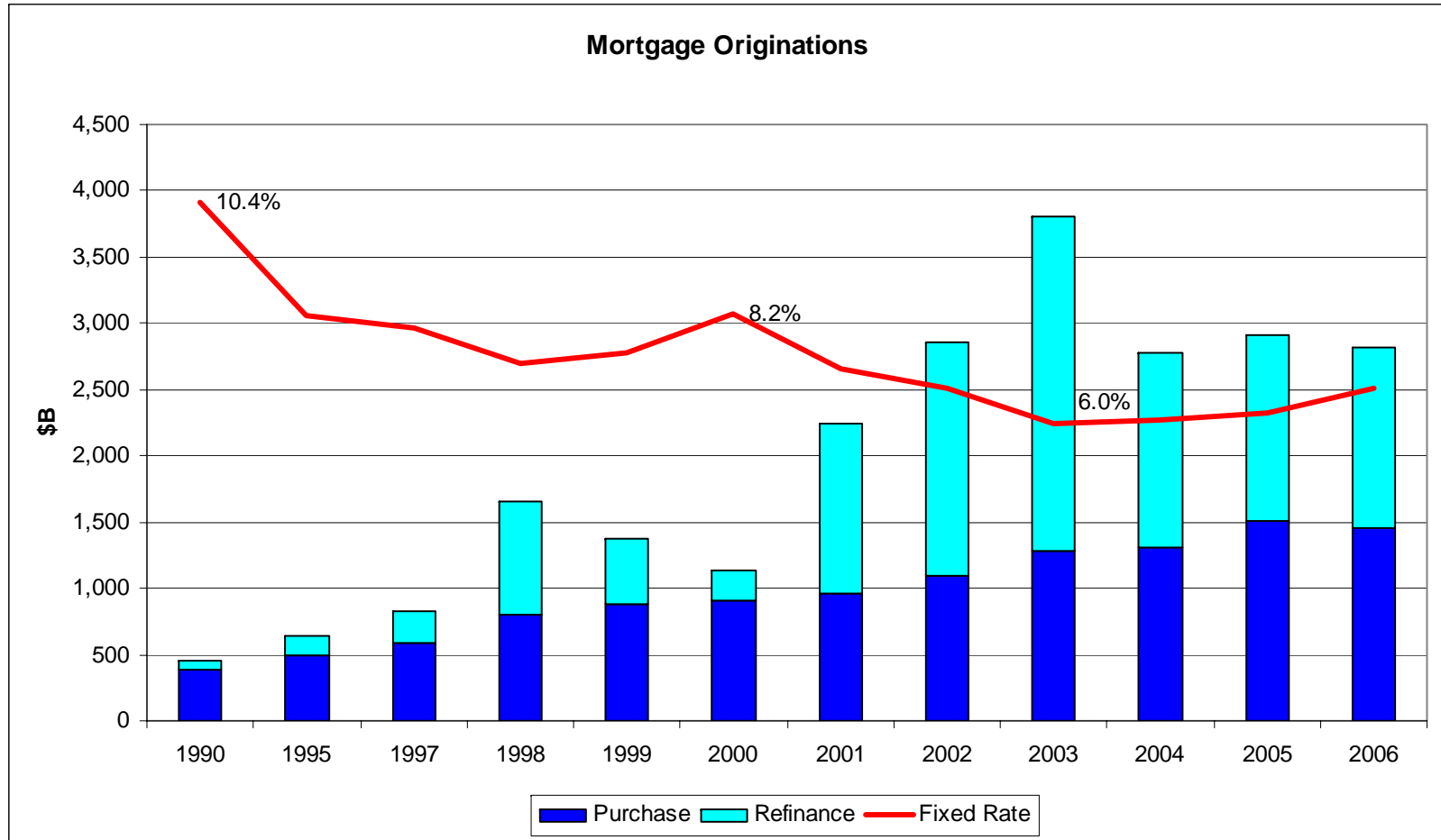
Alchemy of CDOs

Matryoshka — Russian Doll: Multi-Layered Structured Credit Products



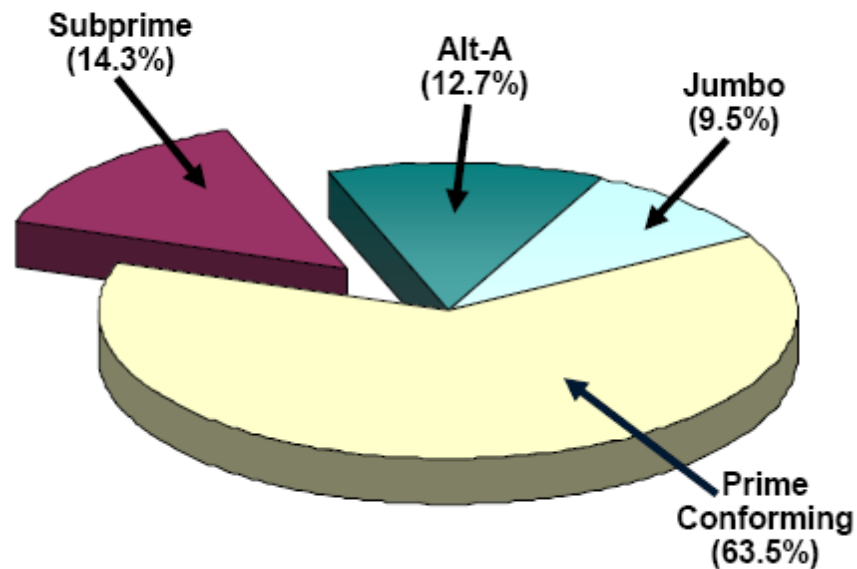
Source: IMF staff estimates.
Note: CDO = collateralized debt obligation.

Mortgage Originations



Subprime Bubble

Securitized Mortgage Debt Outstanding
(March 2007)



\$6.3 trillion total securitized mortgages

Steven Roach, "Subprime: Canary in a Coal Mine, Morgan Stanley, Dec. 10, 2007.

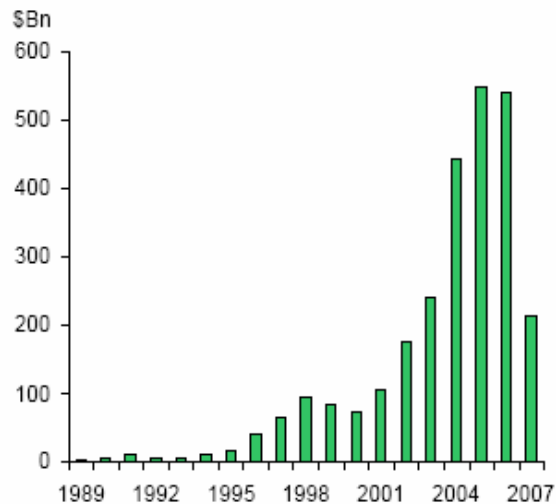
Source: Federal reserve, FDIC, MBA, Morgan Stanley Research.

Mortgage Products

Subprime ABS in Context

Total US mortgage loan origination volume in 2006 was US\$2.5 trillion, of which US\$1.9 trillion was securitised, 25% of which was backed by subprime mortgages

Historical Subprime ABS Issuance



Source: Mortgage Bankers Association

Subprime versus Other Mortgage Products

	Agency	Jumbo	Alt-A	Sub-Prime
Loan size (000s)	200	500	300	200
Credit Score (FICO)	720	740	700	615
LTV (%)	70	65	75	80
Occupancy	Mostly Owner	Owner, Some 2nds	Owner, Investor	Owner, Investor
Documentation	Full	Full	30% Full	50% Full
AAA Enhancement	Agency Wrap	3-4%	4-6%	18-20%
BBB Enhancement	N/A	0.5%	1%	2-4%

Source: Morgan Stanley

Subprime Statistics

Table 1. Mortgage Origination Statistics

	Total Mortgage Originations (Billions)	Subprime Originations (Billions)	Subprime Share in Total Originations (percent of dollar value)	Subprime Mortgage Backed Securities (Billions)	Percent Subprimes Securitized (percent of dollar value)
2001	\$2,215	\$190	8.6	\$95	50.4
2002	\$2,885	\$231	8.0	\$121	52.7
2003	\$3,945	\$335	8.5	\$202	60.5
2004	\$2,920	\$540	18.5	\$401	74.3
2005	\$3,120	\$625	20.0	\$507	81.2
2006	\$2,980	\$600	20.1	\$483	80.5

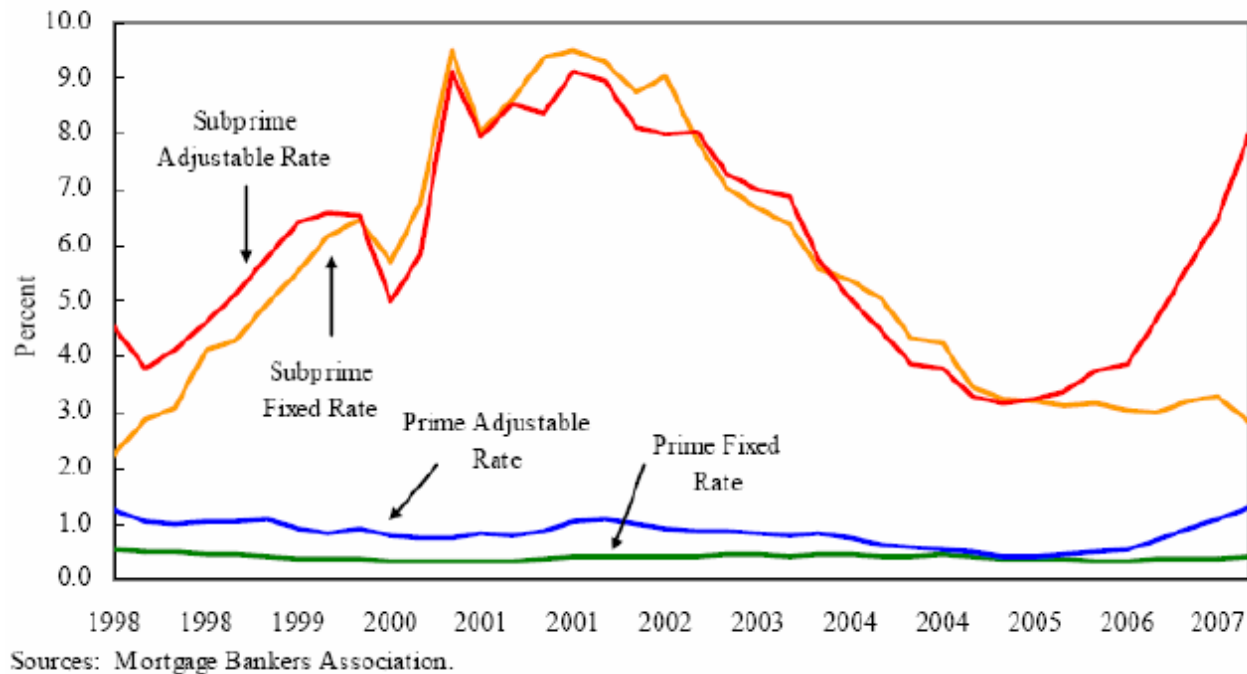
Source: Inside Mortgage Finance, The 2007 Mortgage Market Statistical Annual, Top Subprime Mortgage Market Players and Key Data (2006)

Table 2. Underwriting Standards in Subprime Home-Purchase Loans

	ARM Share	IO Share	Low-No-Doc Share	Debt Payments-to-Income Ratio	Average Loan-to-Value Ratio
2001	73.8%	0.0%	28.5%	39.7%	84.04%
2002	80.0%	2.3%	38.6%	40.1%	84.42%
2003	80.1%	8.6%	42.8%	40.5%	86.09%
2004	89.4%	27.2%	45.2%	41.2%	84.86%
2005	93.3%	37.8%	50.7%	41.8%	83.24%
2006	91.3%	22.8%	50.8%	42.4%	83.35%

Source: Freddie Mac, obtained from the International Monetary Fund
<http://www.imf.org/external/pubs/ft/fmu/eng/2007/charts.pdf>

Subprime Performance



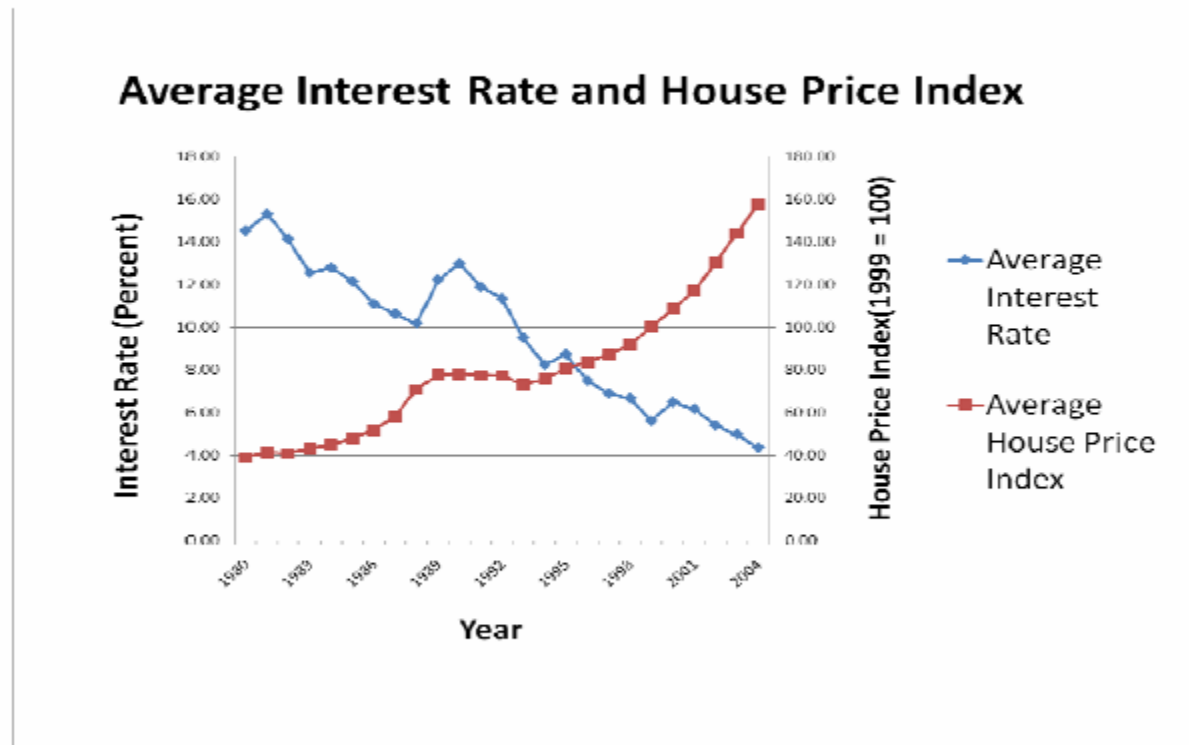
Foreclosure Rates

Seeds of Trouble

- The Great Bifurcation
 - Separation of mortgage origination and financing (OTD)
- The Great Innovation
 - Complex financial products
- The Great Moderation
 - “Easy money” and lower risk premiums

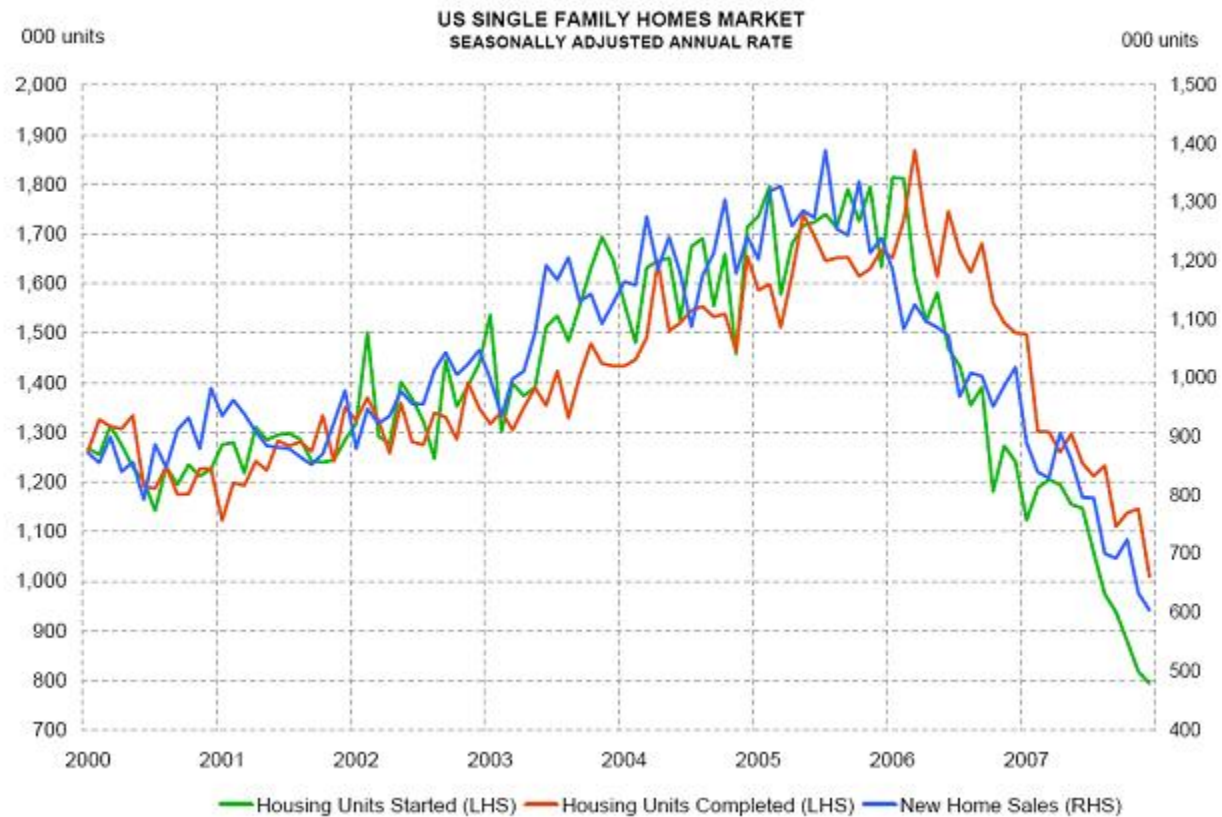
The Global Dream

Exhibit 3
Global Average Interest Rate and House Price Index

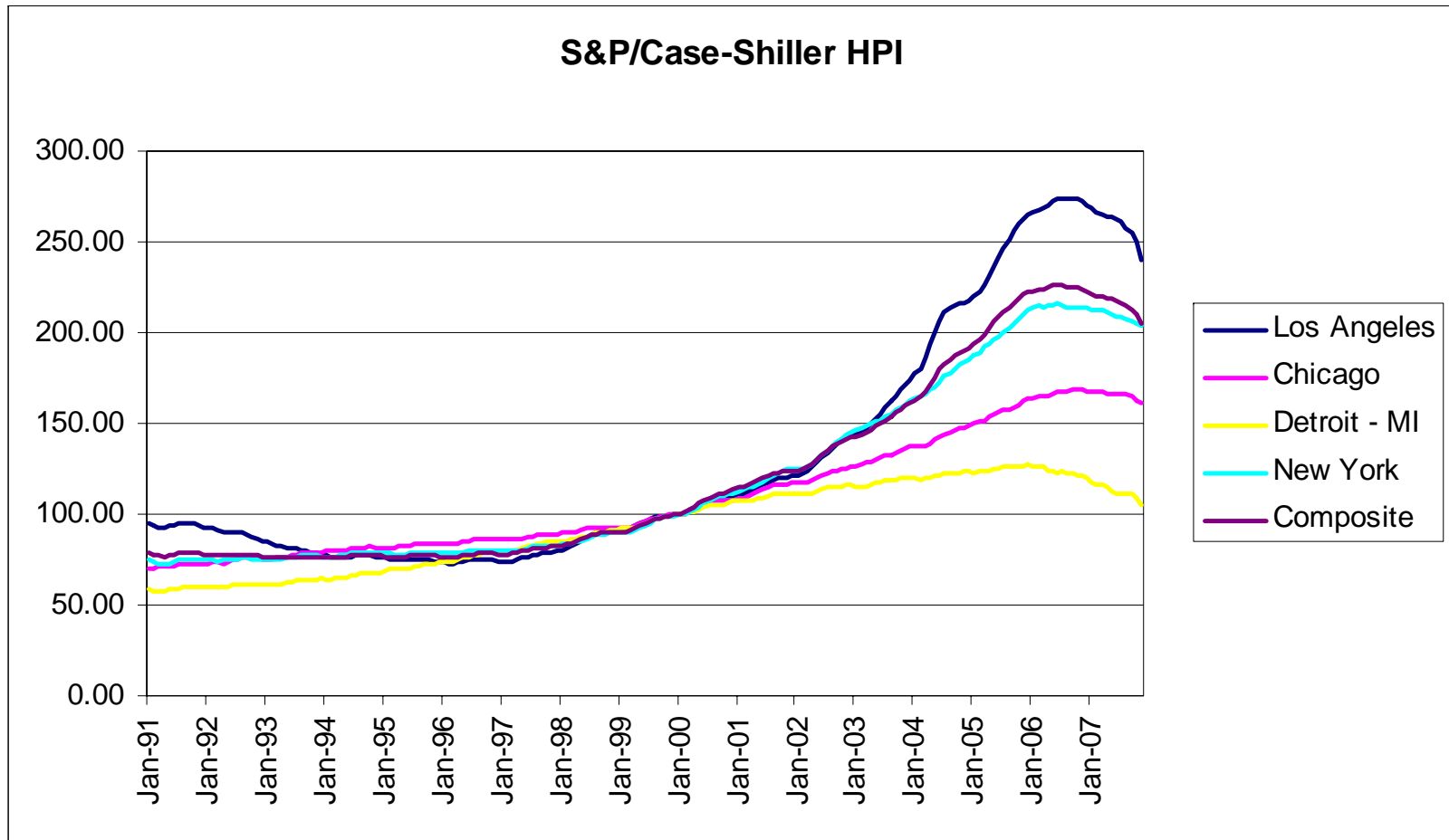


Source: Bank of International Settlements House Price Index
Interest Data from U.N. Statistical Database

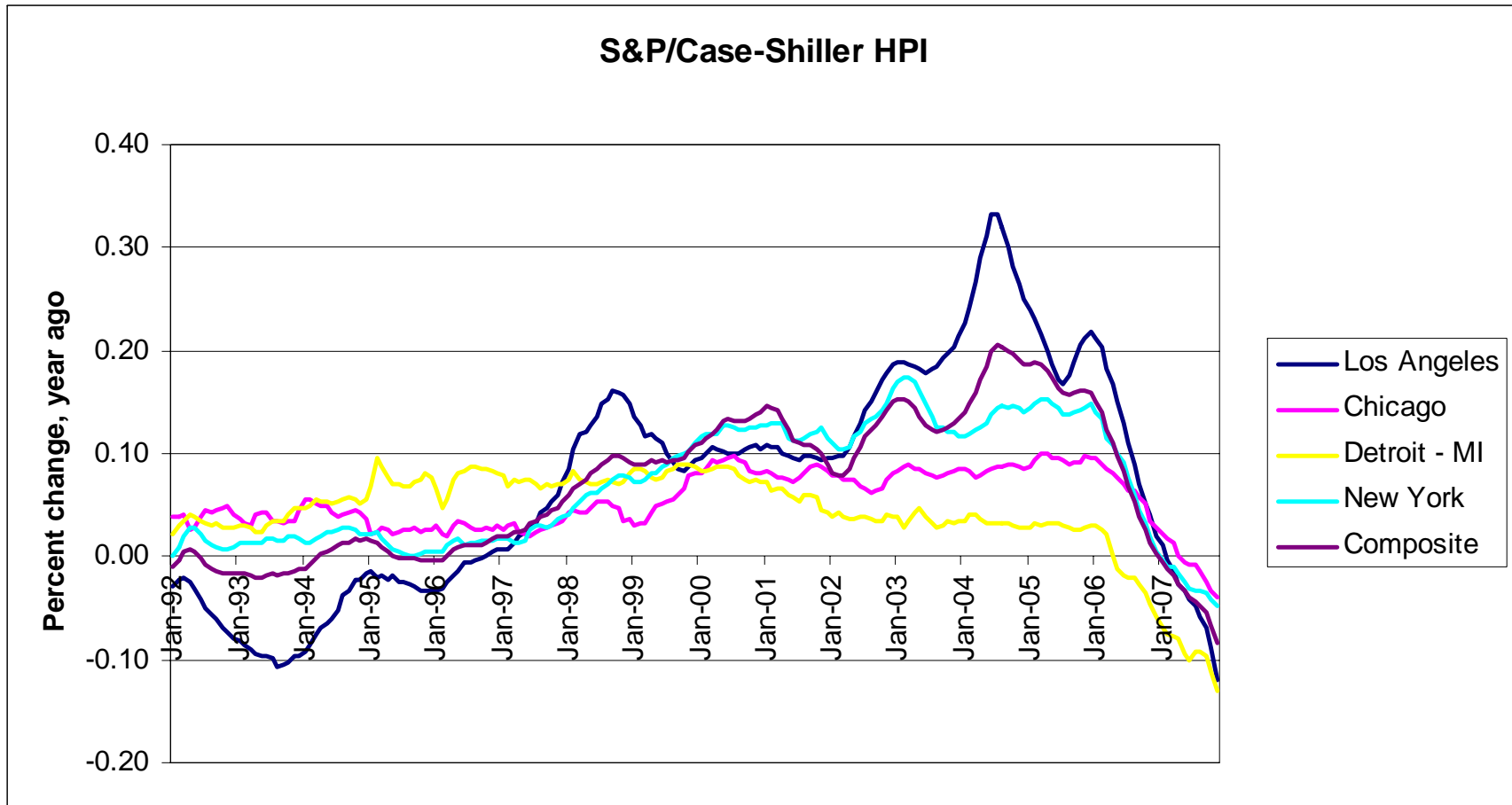
U.S. Housing Collapse



Home Prices



Home Prices



What Went Wrong?

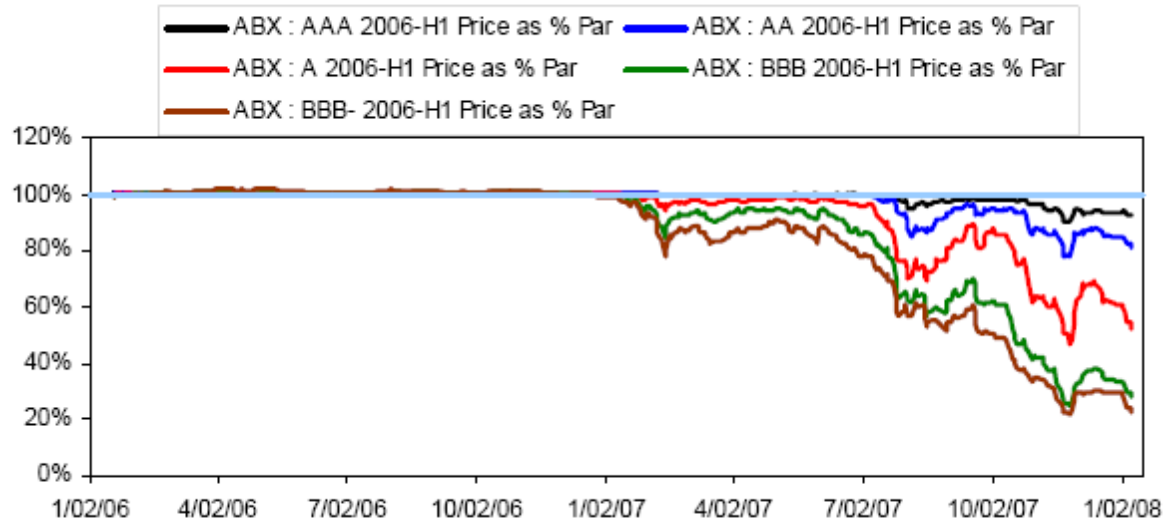
- Higher mortgage rates beginning in summer of 2005
 - Initial weakness in housing market
- Loan quality problems by late 2006 and early 2007
- Tightening of credit standards on mortgages, particularly on newer and riskier products

What Went Wrong?

- Lenders cut back and housing activity faltered again in Spring 2007
- Declining house prices
- Delinquencies and foreclosures

2006 Vintage – Something Rotten

06-01 vintage:



Problems Unfold

- Rising defaults lead to mark downs in valuing the riskier tranches of structured products in Jan/Feb 2007
- Difficulties at a number of U.S. subprime originators
- Losses in highly rated tranches begin to appear in June 2007 – two Bear Stearns hedge funds collapse

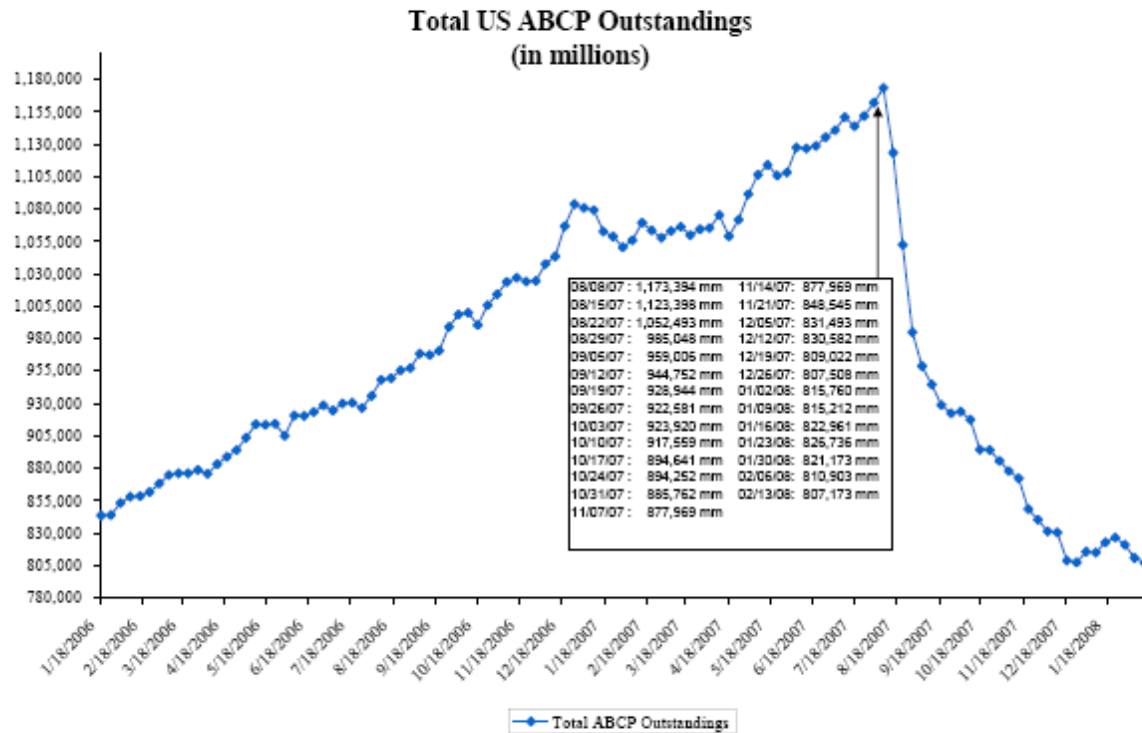
Liquidity Dries Up

- Valuation problems lead BNP Paribas to temporarily suspend redemptions on August 9 from some money market funds
- Rating agencies revisit their approaches
- Investors halt purchases of MBS and ABCP
- Tightening inter-bank markets put funding pressures on banks, including, Northern Rock

ABCP

ABCP Outstandings

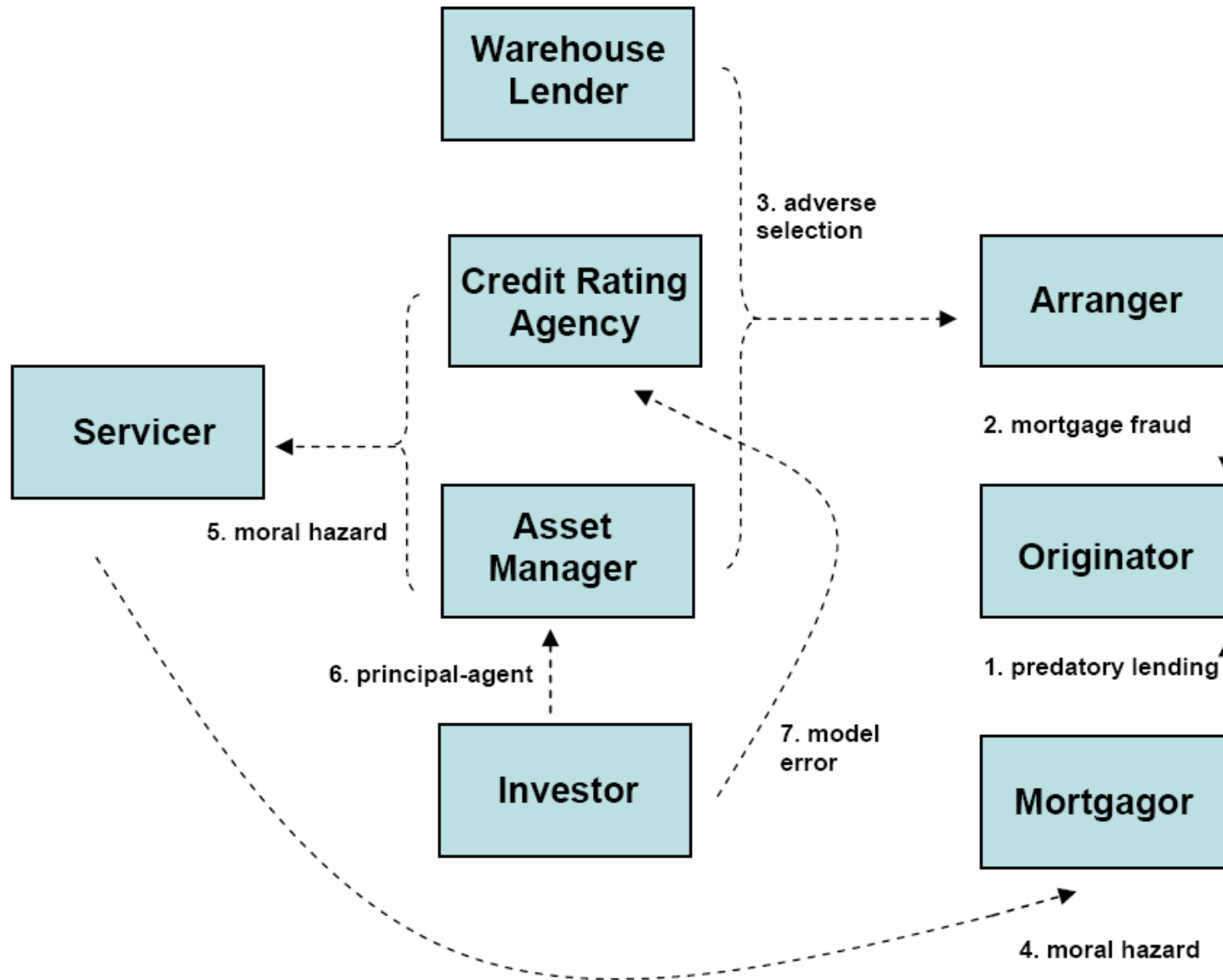
U.S. ABCP Outstandings decreased by \$3.7 billion for the week ending February 13, 2008 to \$807.2 billion outstanding from \$810.9 billion outstanding.



Mistakes Were Made

- Mian and Sufi (2008); Keys et al. (2008)
 - Disintermediation and moral hazard
- Dell'Ariccia, Igan and Luc Laeven (2008)
 - Credit boom gone bad
- Ashcraft and Schuermann (2008)
 - “Seven key informational frictions”
- Shan (2008)
 - Capital gains taxation and home sales

Figure 1: Key Players and Frictions in Subprime Mortgage Credit Securitization



Ashcraft and Schuermann, "Understanding the Securitization of Subprime Mortgage Credit," FRBNY Staff Reports, March 2008.

Green Eggs and CDOs

Broker Joe!
Show me some flow
I need the dough!
I'm Broker Joe!
That Broker Joe!
That Broker Joe!
I do not like
That Broker Joe!
Would you buy my CDO?
I do not like them, Broker Joe
I do not like your CDO!
Would you like it here or there?
I would not like it here or there
I would not like it anywhere
I do not like your CDO
I do not like it, Broker Joe

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