

Suspects in the Subprime Crisis (and its aftermath)



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"I THOUGHT WE WERE JUST BUYING A HOUSE!"



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- **The views and opinions expressed in the following presentations are those of the author.**
- **They do not represent an official position of the Federal Reserve Bank of Richmond or the Federal Reserve System.**





Lots of ground to cover today

- Two big things to cover today
- The main suspects in the subprime crisis
- How home mortgages are used to construct different kinds of financial assets.
 - How defaults on mortgages affect the value of those assets and caused the problems in *mortgage* markets to spread to *financial* markets





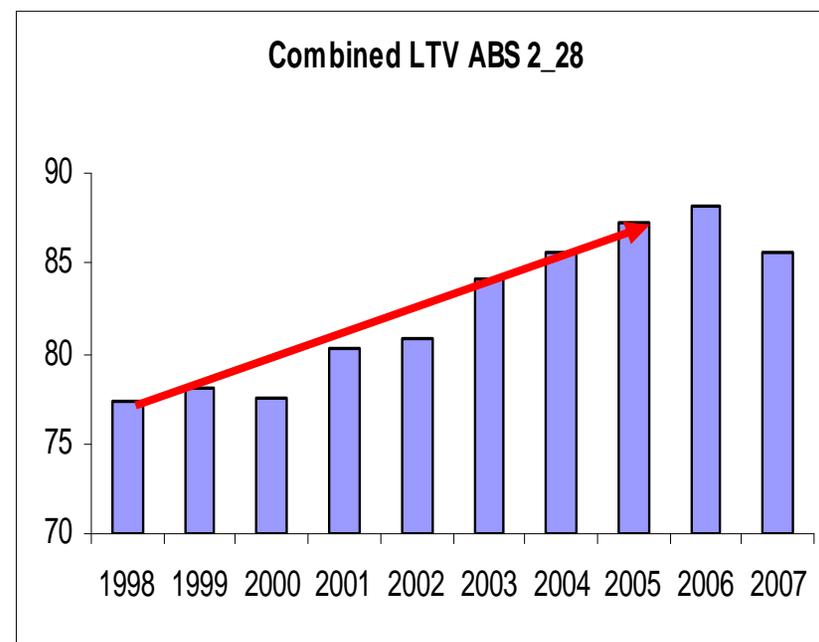
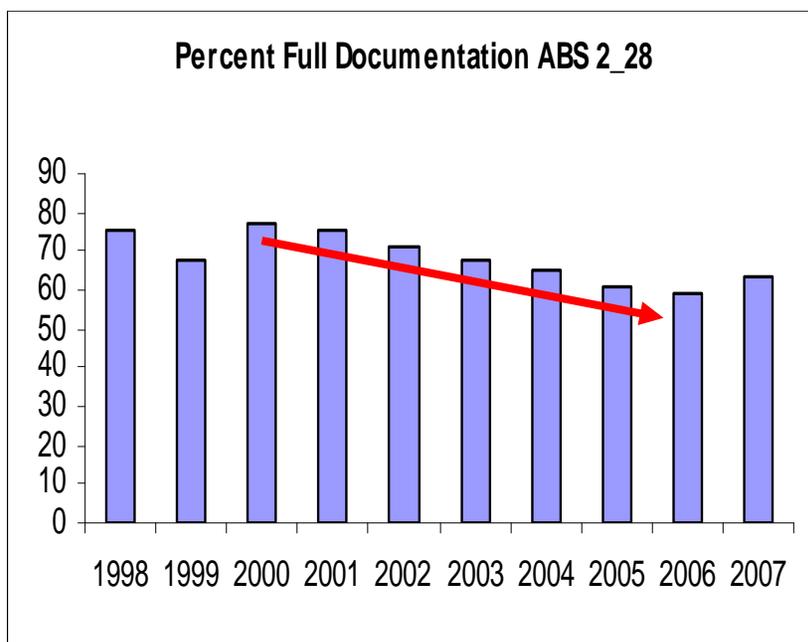
Suspects in the subprime crisis

- Technological innovation in the delivery of credit
 - Modeling approaches allowed lenders to more finely differentiate and pool riskier borrowers...borrowers who had trouble getting credit in the past
- **Did lenders overshoot?**





Underwriting standards slipped steadily



Source: Federal Reserve Board calculations using Loan Performance data

Increasingly riskier loans. In 2006, 40% of loans had CLTV > 95%





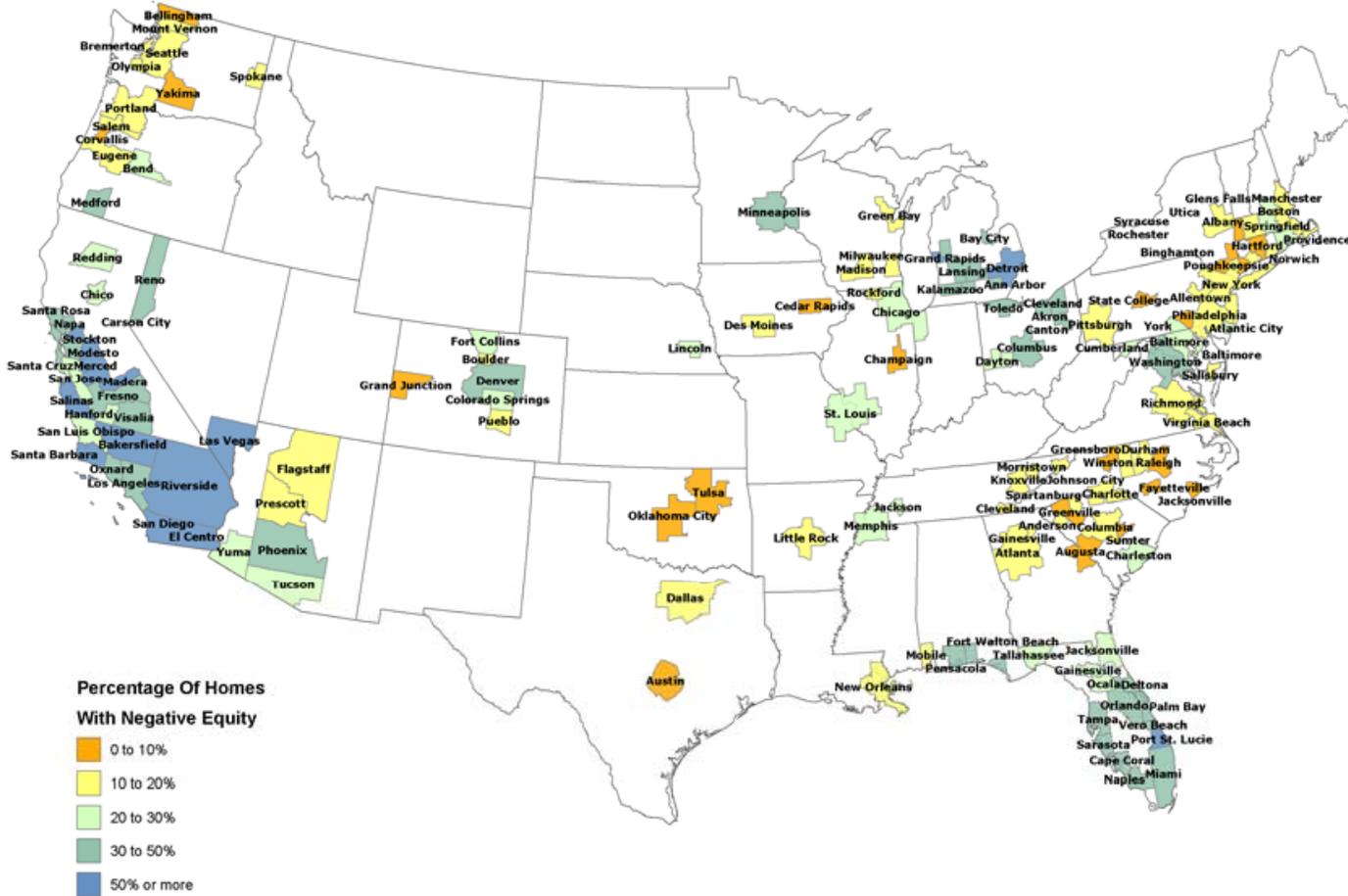
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- Did lenders overshoot?
- **High CLTV means thin equity for homeowners.**
 - **Doesn't take much of a decline in prices to put homeowners "under water"**
 - **Lenders might have underestimated the probability of a broad housing shock**





Percentage of homes purchased between 2003 and Q3-2008 with Negative Equity Currently Zillow.com® US Home Value Report - Q3 2008



See more data at: <http://www.zillow.com/reports/RealEstateMarketReports.htm>





Suspects in the subprime crisis

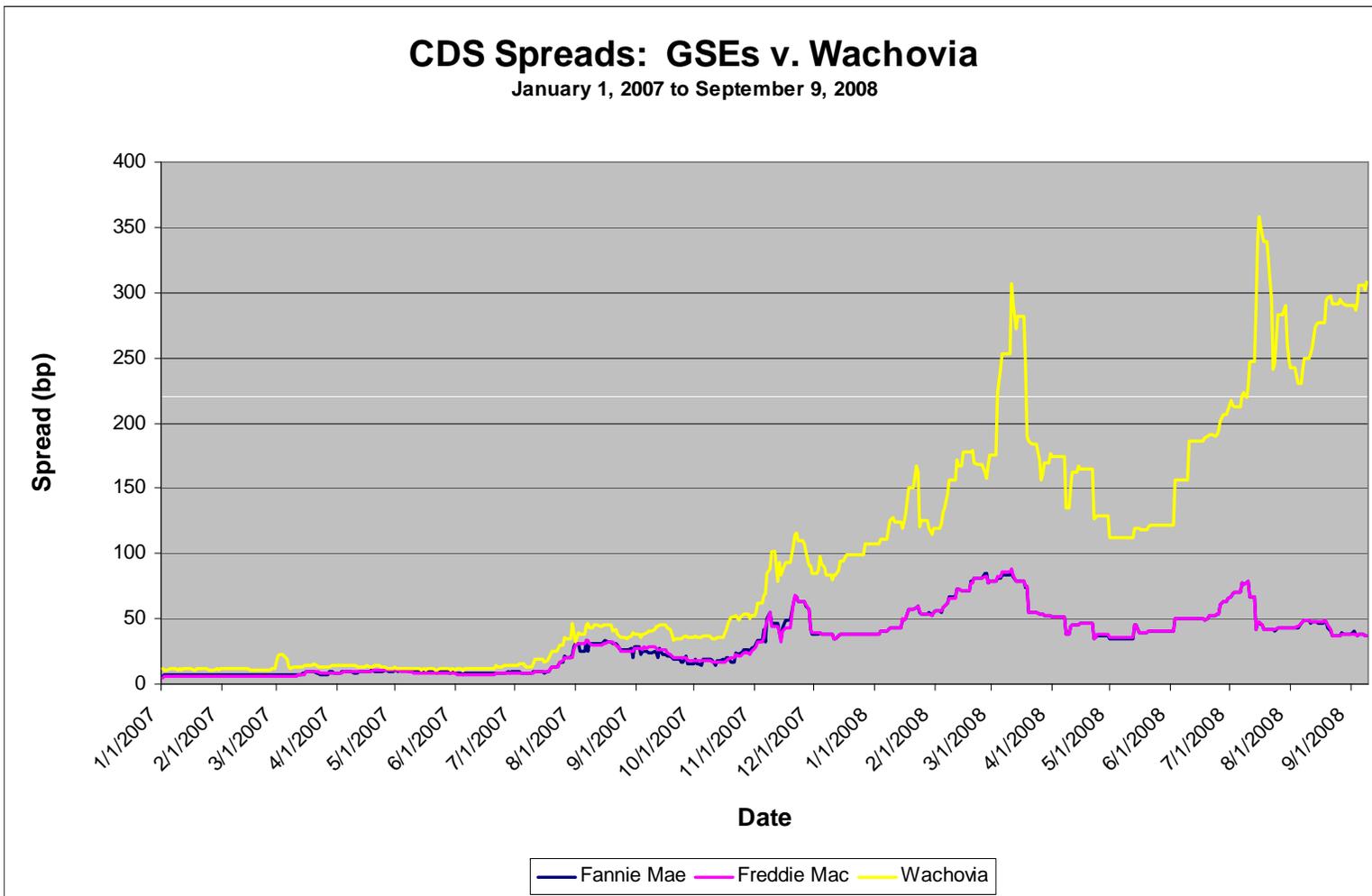
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- Did lenders overshoot?
- High CLTV means thin equity for homeowners.
- **Some observers pointed to a regulatory and supervisory framework “insufficiently prepared” for a big shock**
 - **Private sector incentives to protect dampened by implicit support for Freddie and Fannie?**
 - Official policies to increase homeownership induced some risk taking in housing finance?
 - Unscrupulous and fraudulent practices of some mortgage brokers outside the banking sector?





CDS Spreads: GSEs v. Wachovia

January 1, 2007 to September 9, 2008

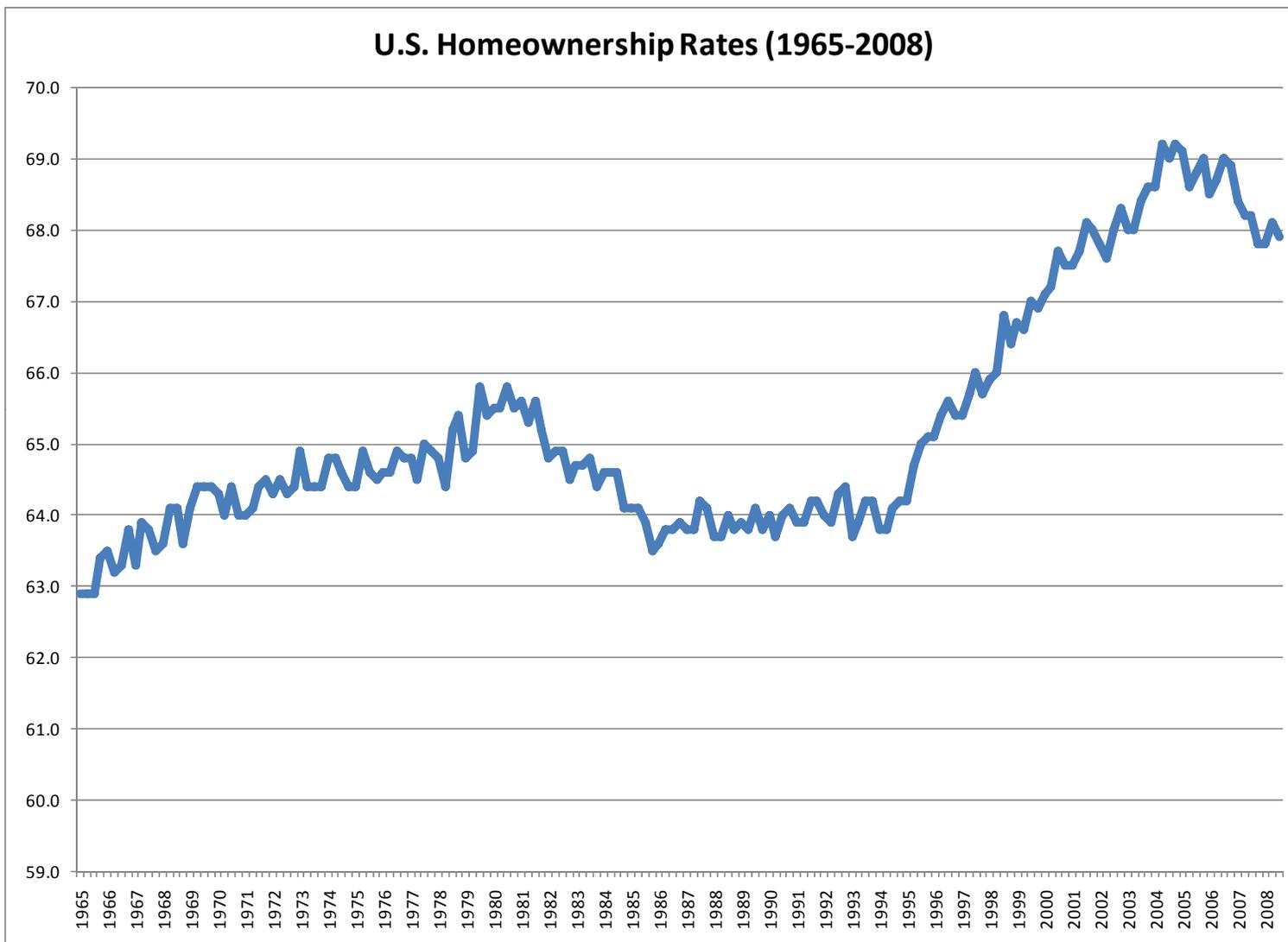




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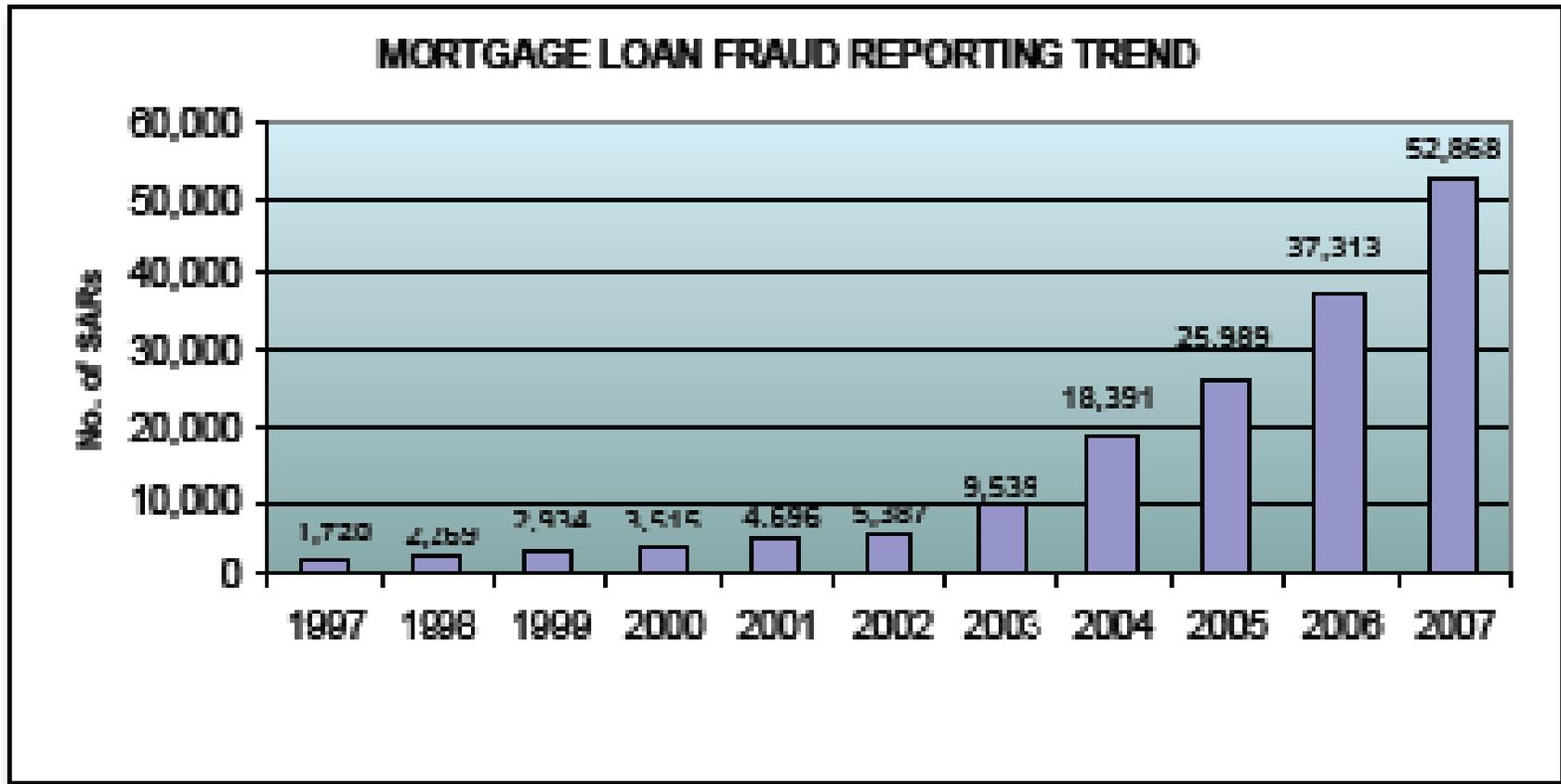




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Source: Dept. of Treasury: Financial Crimes Enforcement Network





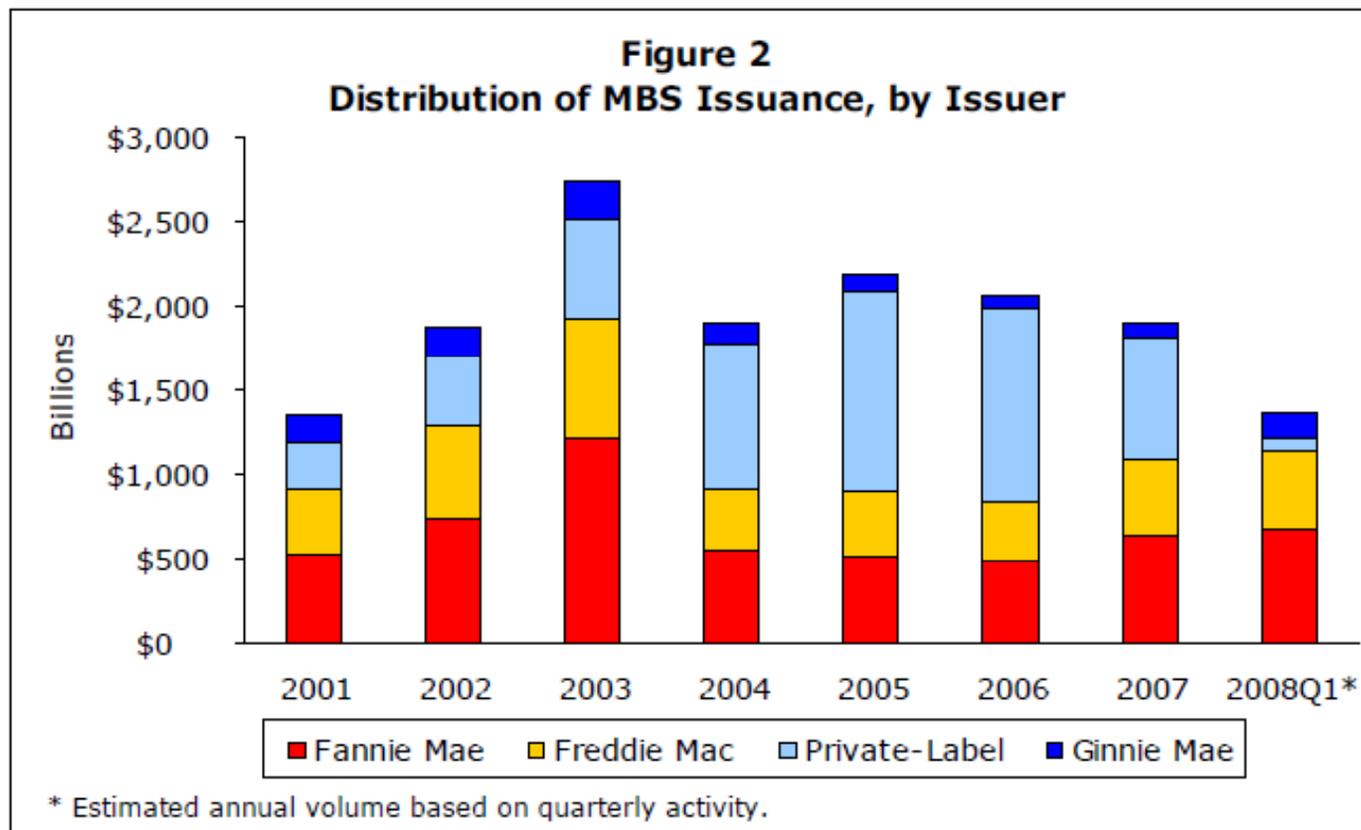
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- **Other incentive problems with off balance sheet lending?**
 - **The “originate to distribute” model for financing home mortgages**
 - **Rating agencies were both hitting coach and umpire**





Private label MBS increased market share



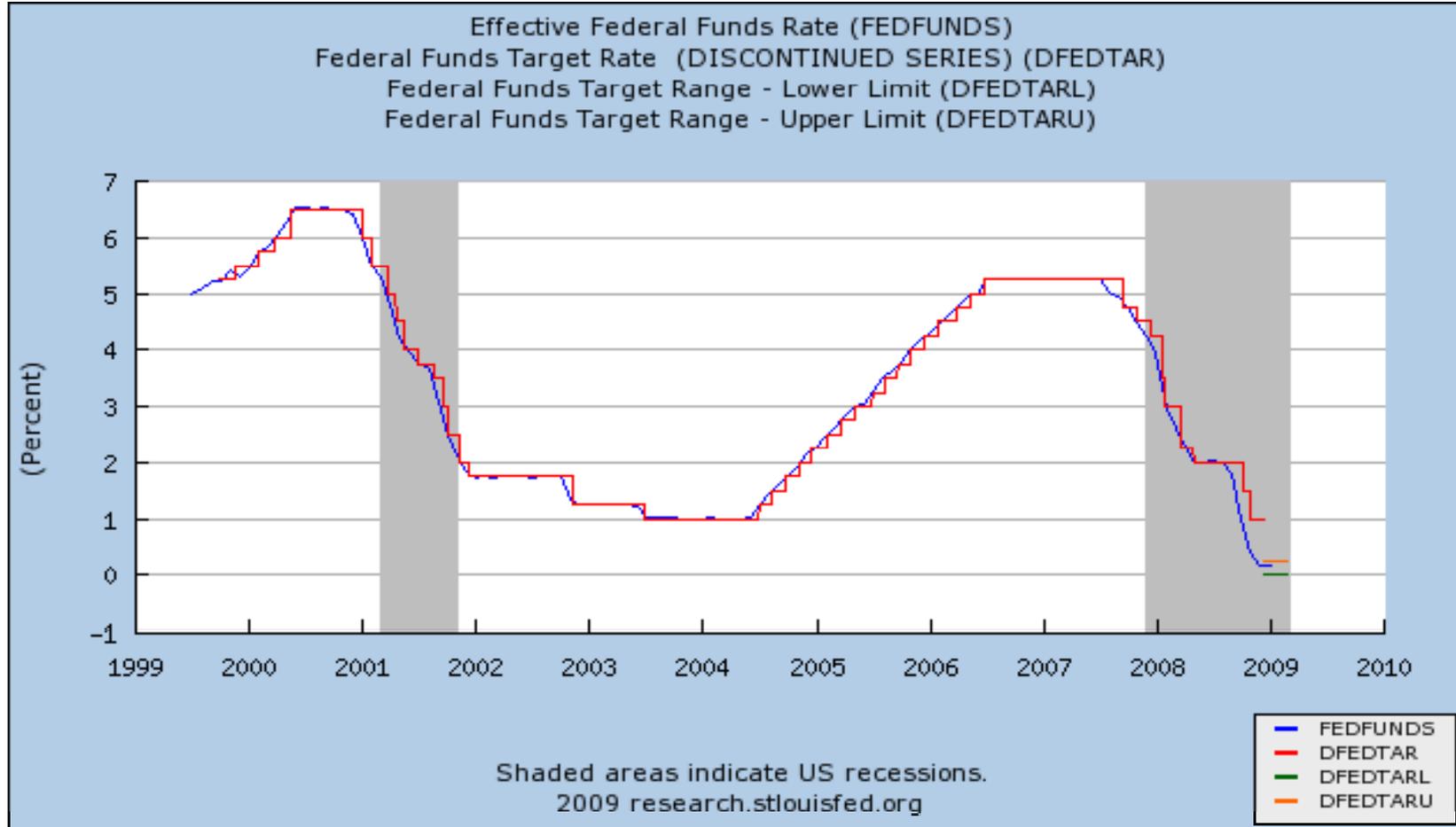
Source: Fannie Mae, Freddie Mac, Inside Mortgage Finance Publications



Suspects in the subprime crisis

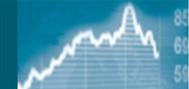
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- Incentive problems with off balance sheet lending?
- **Some observers have also pointed to monetary policy that kept interest rates low after the 2001 recession**



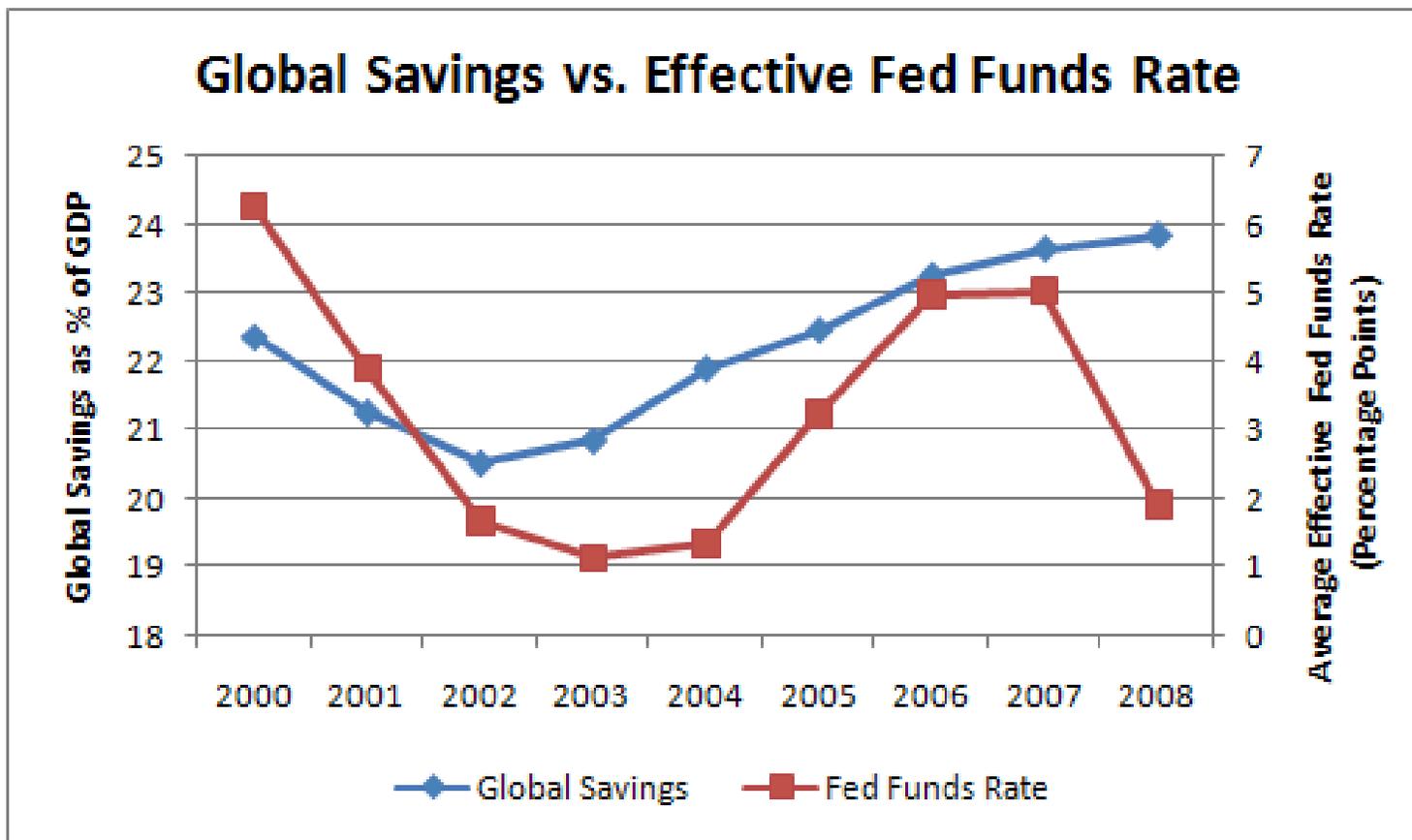


- The easy money story: low interest rates made mortgages more affordable, increased demand for houses, raising prices. Low rates also led investors to chase yields & increase supply of capital to MBS





But there was also a “global savings glut”



Global savings increasing the same time the fed funds rate was falling. Which, or both, were drivers will take much research.





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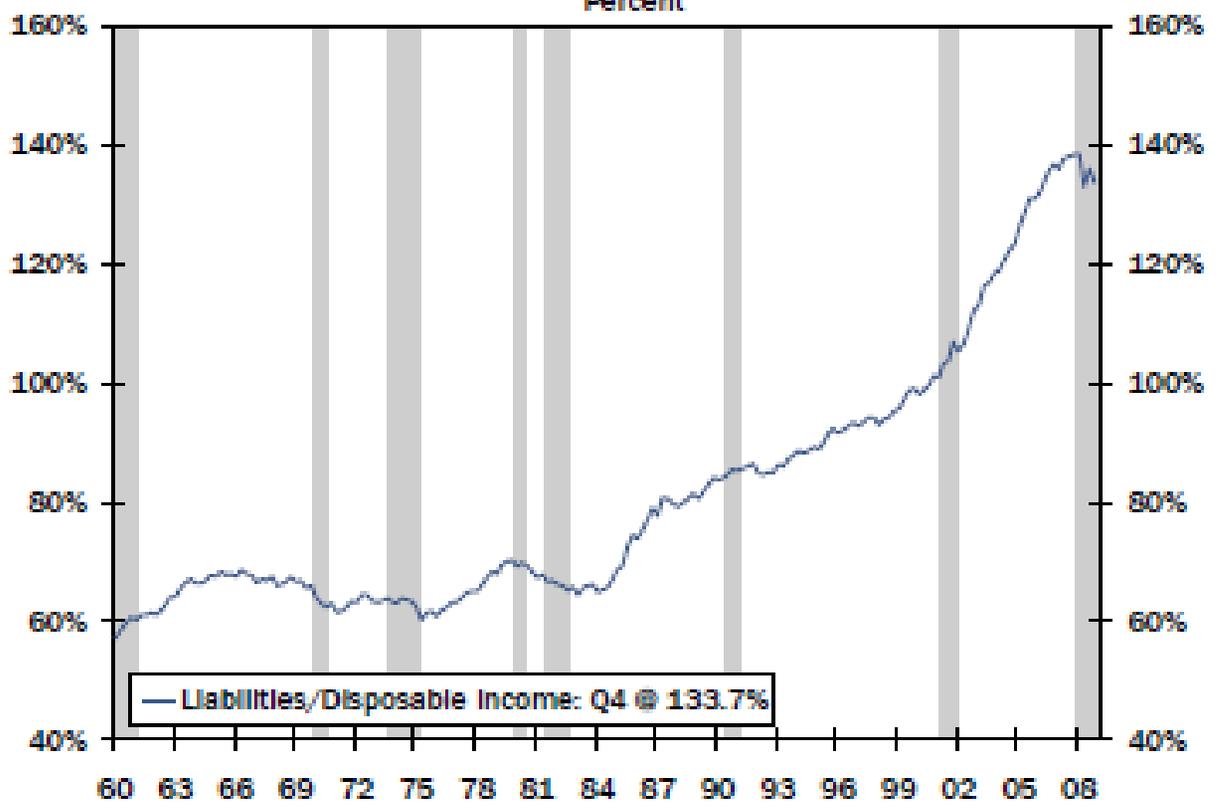
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- Some observers have also pointed to monetary policy that kept interest rates low after the 2001 recession
- **Lastly...you**





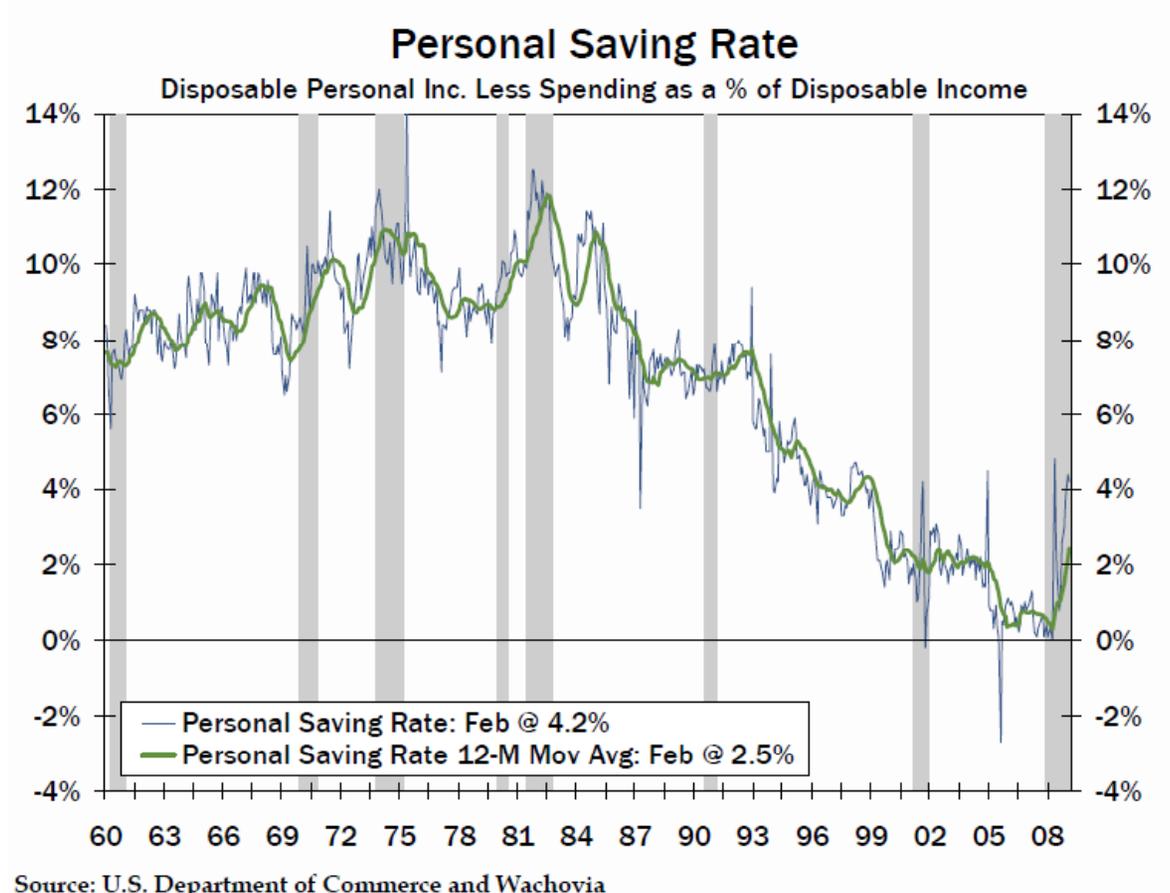
Consumers were leveraging up

Liabilities/Disposable Personal Income
Percent



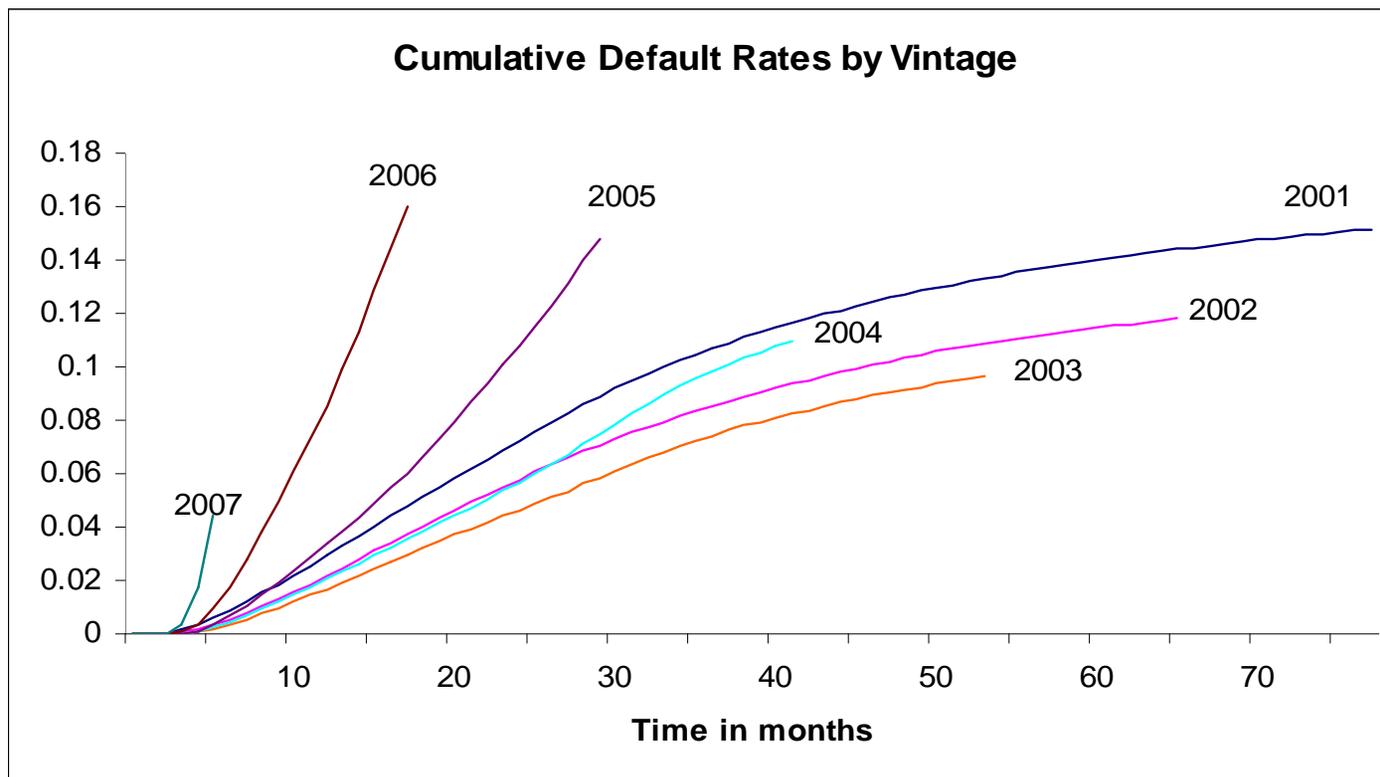


And saving less

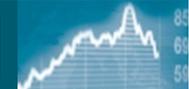




Away we go...



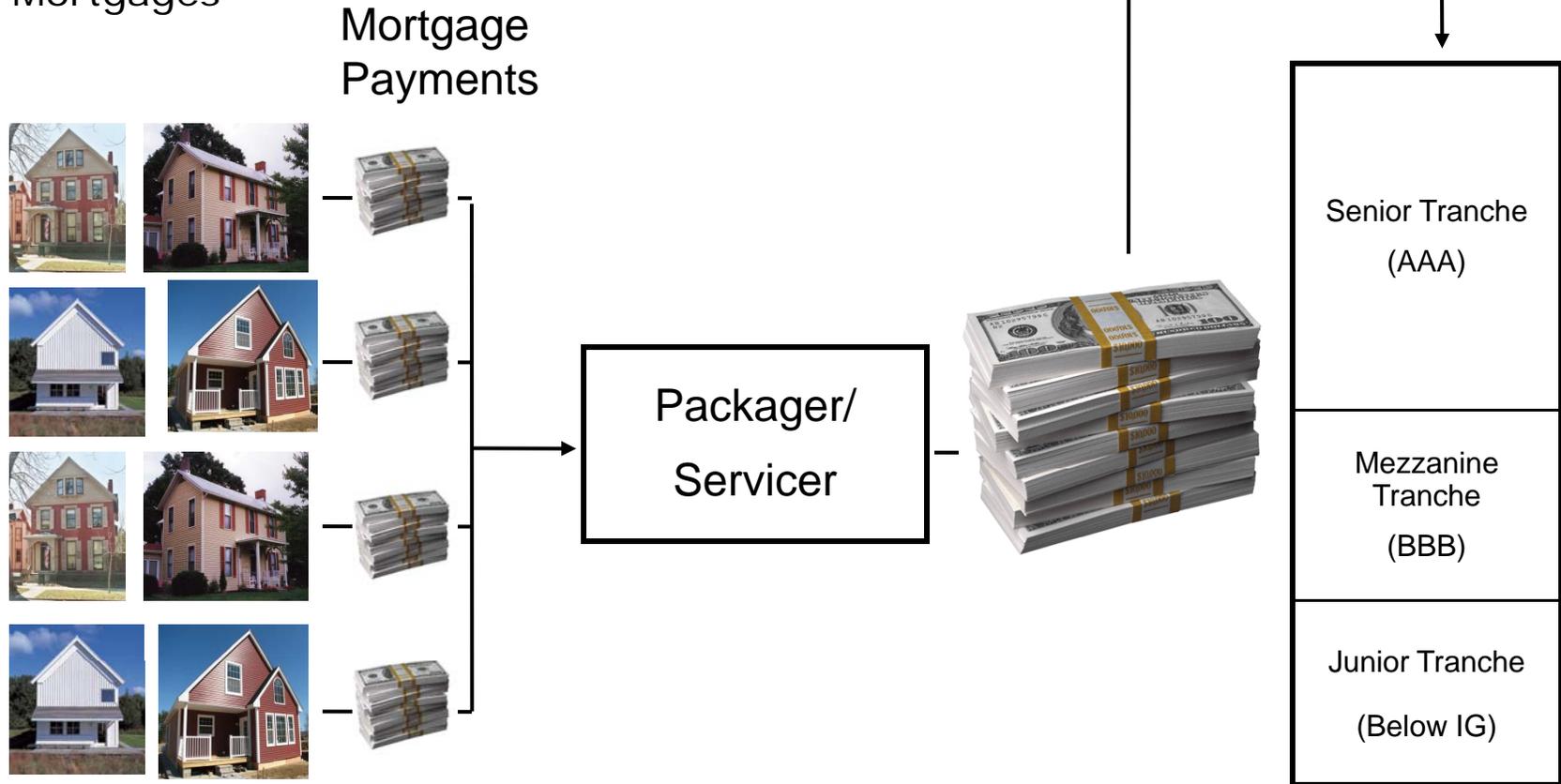
Source: Federal Reserve Board calculations using Loan Performance data



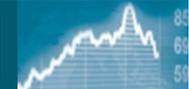
From housing to finance: securitization in a nutshell

Pool of Residential Mortgages

Mortgage Backed Security



Mortgages are pooled & create a set of mortgage backed securities (MBS). MBS are bonds. Mortgage payments become interest payments to bondholders



The “waterfall” when everyone pays

Pool of Residential Mortgages



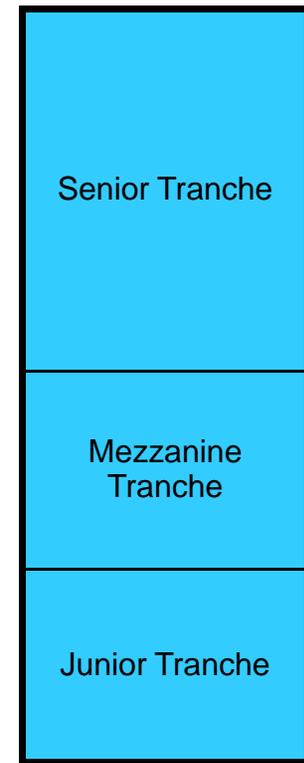
Mortgage Payments



Packager/
Servicer



Mortgage Backed Security



Senior bonds (with the highest credit rating) must be fully paid before subordinate bonds get anything. Called a “cash waterfall.”



When some properties default

Pool of Residential Mortgages



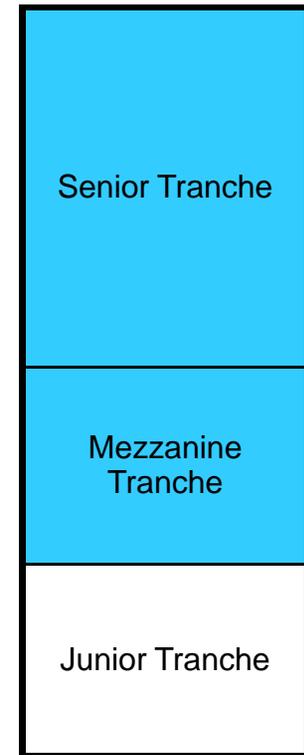
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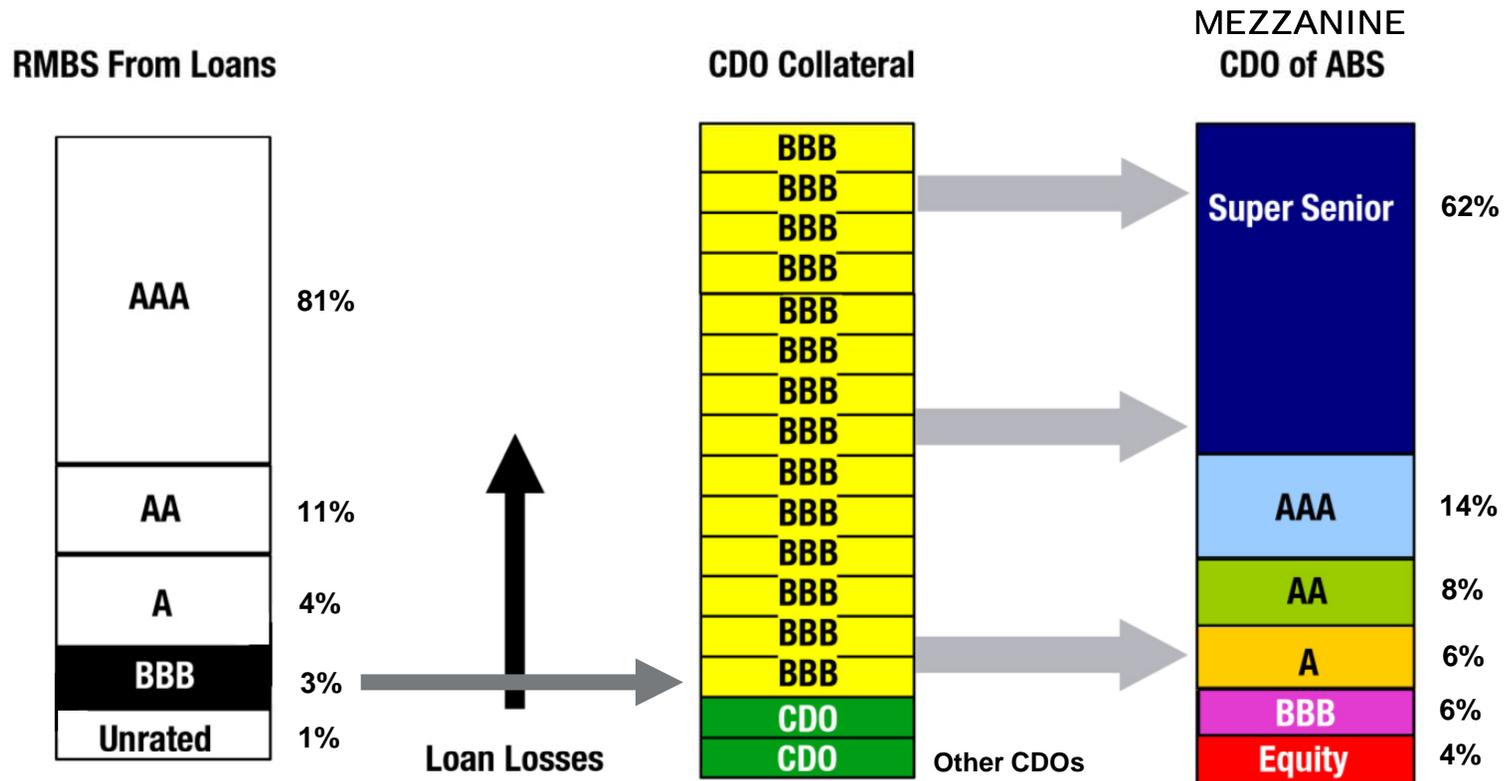
Mortgage Backed Security



When properties default, less cash goes into the top of the waterfall. Losses felt first at the bottom of the waterfall & work upwards.



CDOs (Collateralized Debt Obligations) in a nutshell

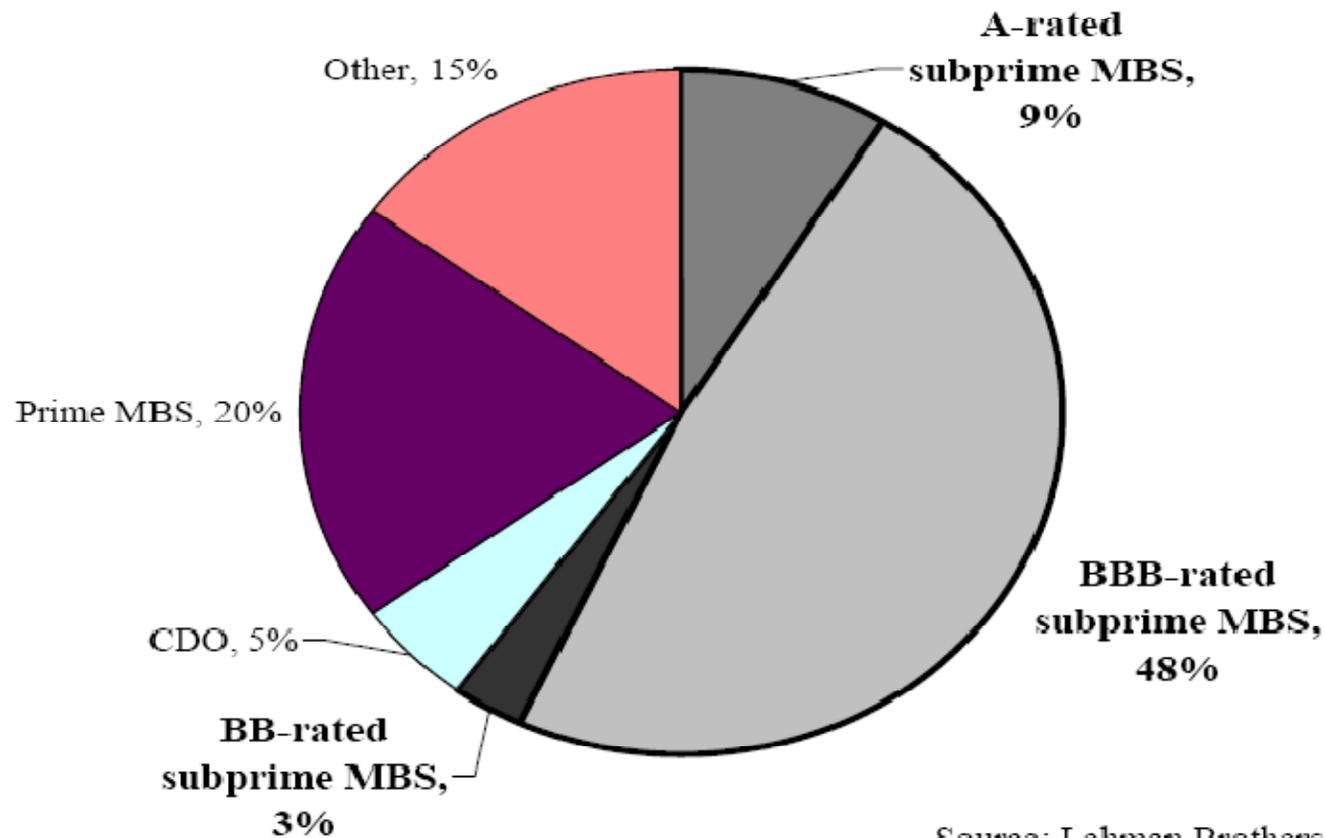


Sources: Intex and Citi.

**CDOs were heavy investors in mortgage backed securities.
Lots of embedded leverage.**

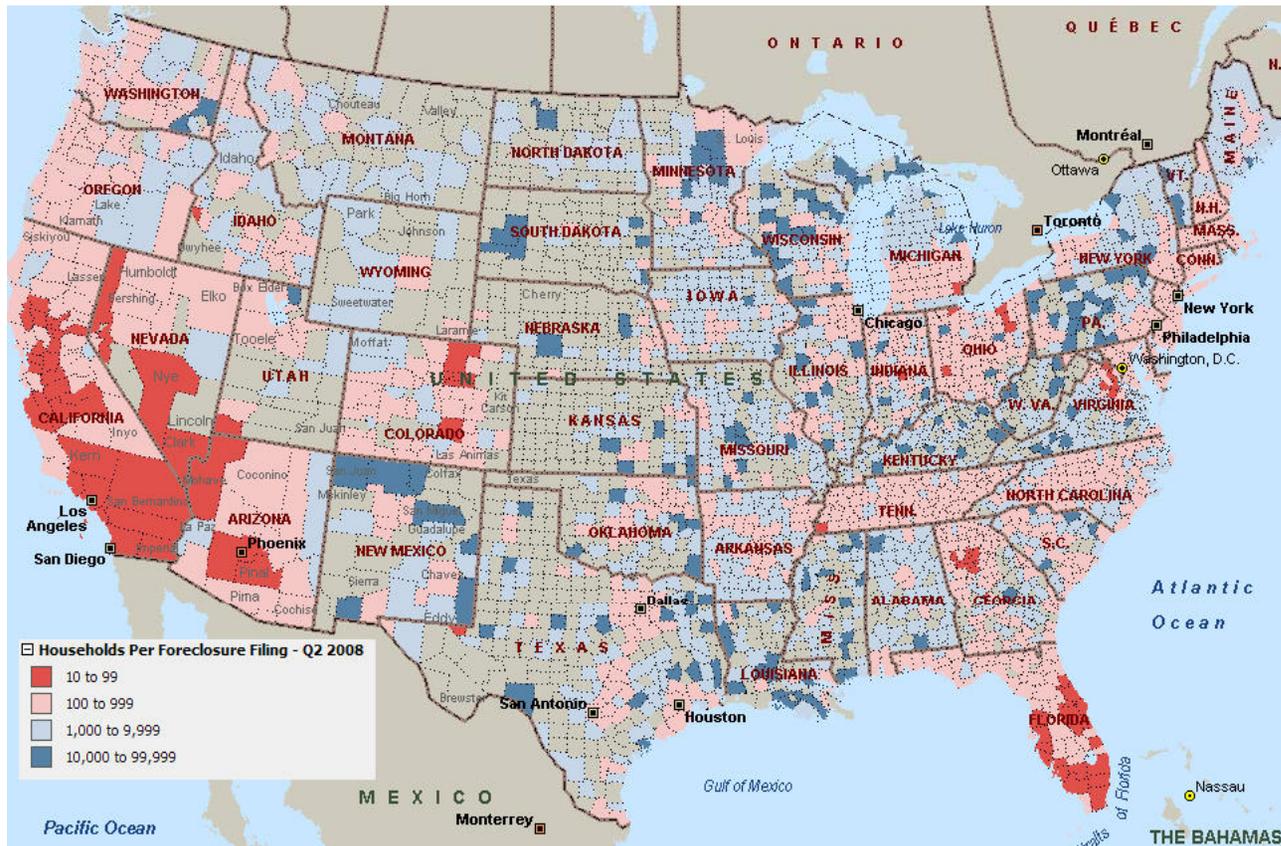


Majority of mezz SF CDO composed of subordinate subprime MBS





Foreclosures spread across much of the country



"Diversifying sufficiently among uncorrelated risks can reduce portfolio risk toward zero, but financial engineers should know that's not true of a portfolio of correlated risks." Harry Markowitz

Source: Realtytrac



Investors in collateralized debt obligations (CDO) & mortgage-backed securities (MBS) were pressured

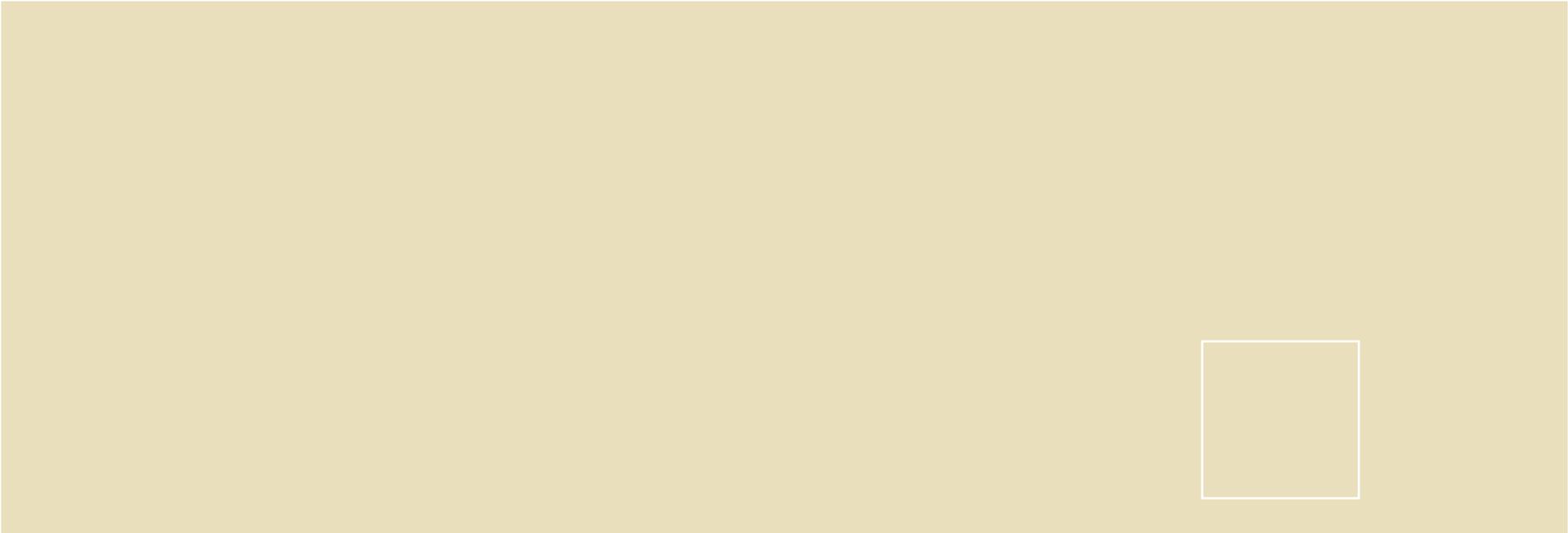
- As the value of their underlying mortgage collateral deteriorated, owners of CDOs and MBS suffered losses.
- Who were (some of) the buyers?
 - Banks, both domestic and foreign (in excess of a half trillion dollars in reported losses)

Worldwide Credit Crisis: Writedowns to Date

Top 13 Institutions	Writedown (\$ Billions)
Wachovia Corporation	96.5
Citigroup Inc.	65.7
AIG (American Intl. Group)	60.9
Freddie Mac	58.4
Fannie Mae	56.0
Merrill Lynch & Co.	55.9
UBS AG	48.6
Washington Mutual Inc.	45.6
HSBC Holdings Plc	33.1
Bank of America Corp.	27.4
National City	26.2
JP Morgan Chase & Co.	20.5
Morgan Stanley	15.7

Source: Bloomberg, Updated 12/1/08





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