



Thank You Milken Institute

Demystifying the Mortgage Meltdown: What It Means for Main Street, Wall Street and the U.S. Financial System

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“Any real estate investment is a good investment ... ”



“Any real estate investment is a good investment ...”



... Really?!

Subprime mortgage meltdown timeline

December 2006–September 2008

Dow Jones U.S. Financial Index

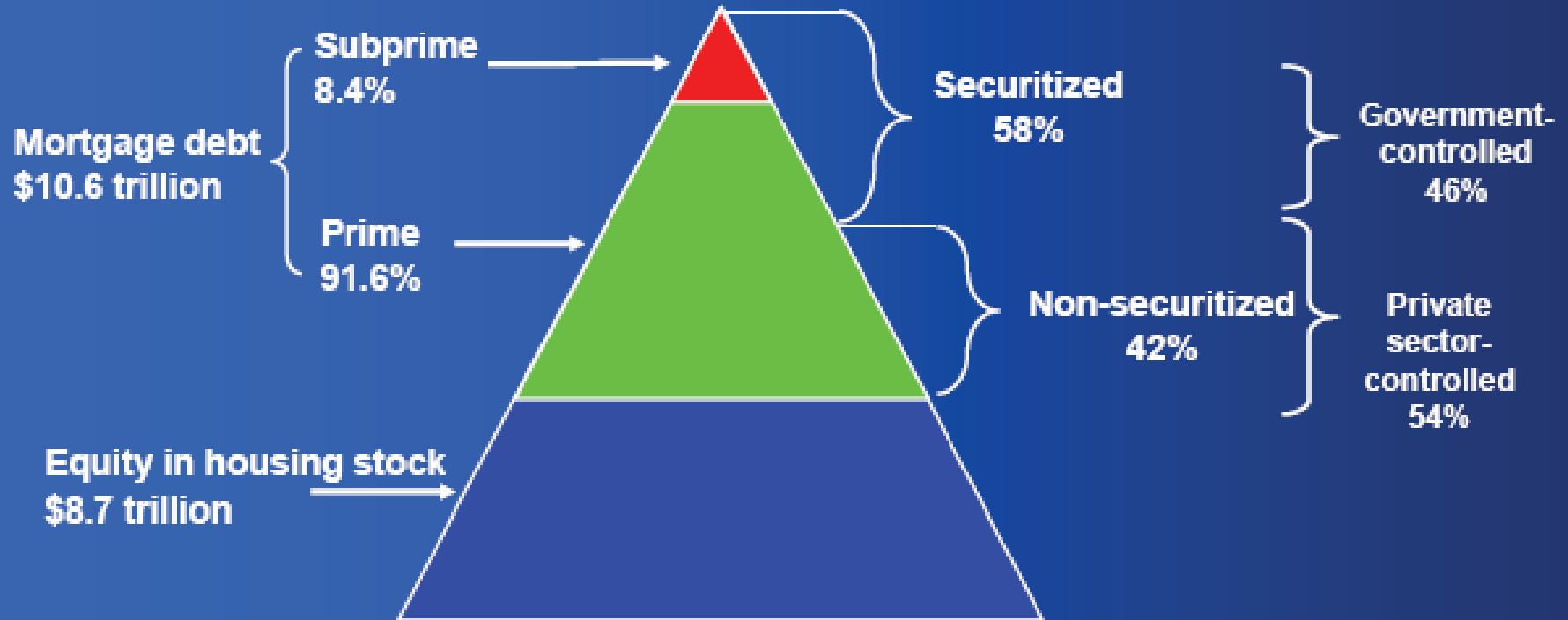


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Sources: BusinessWeek, S&P, Global Insight, Milken Institute.

Home mortgages: Who borrows, how much has been borrowed, and who funds them?

Total value of housing stock = \$19.3 trillion



Note: total residential and commercial mortgages = \$14.7 trillion; 5 percent = \$700 billion

The mortgage problem in perspective

80 million houses →
27 million are paid off

53 million have mortgages →
48 million are paying on time

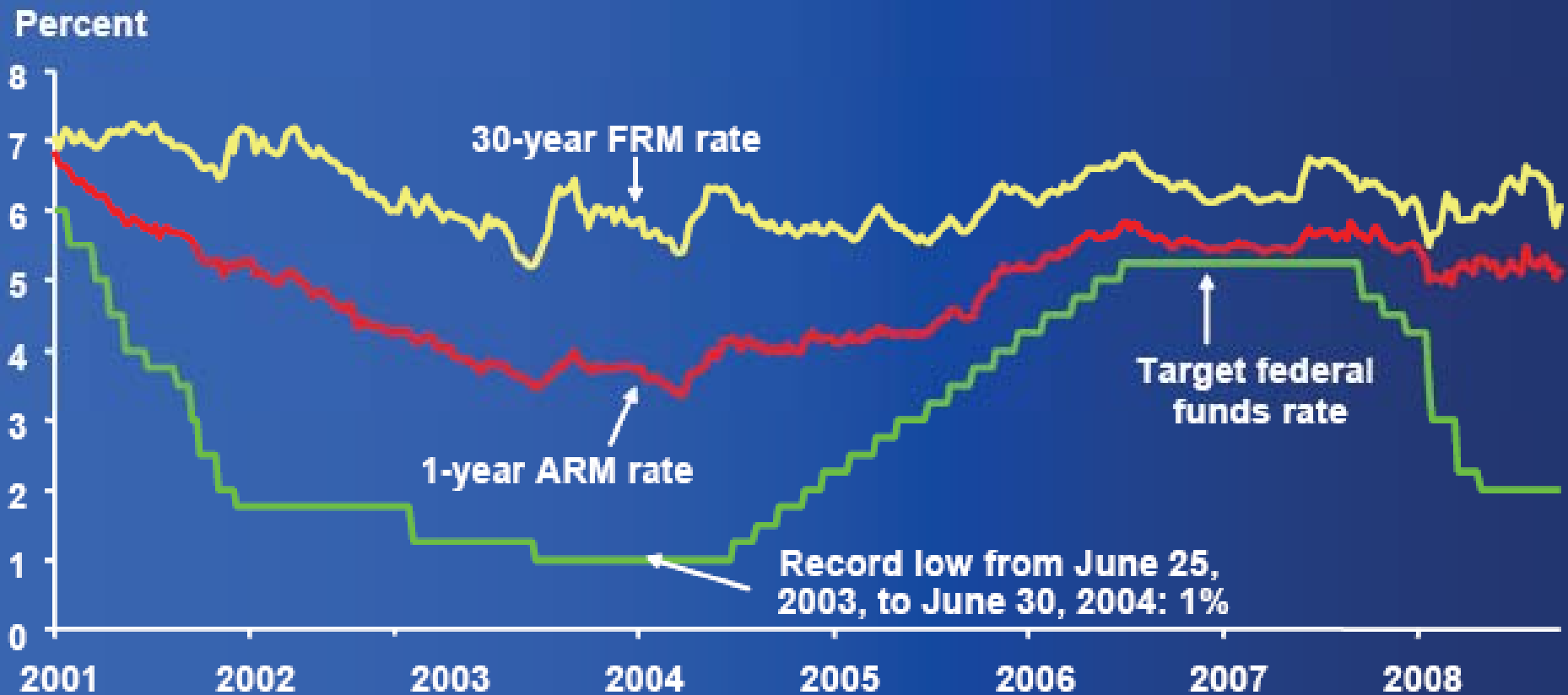
5 million are behind →
(9.2% of 53 million with 2.8% in foreclosure)

*This compares to
50% seriously
delinquent in the
1930s.*

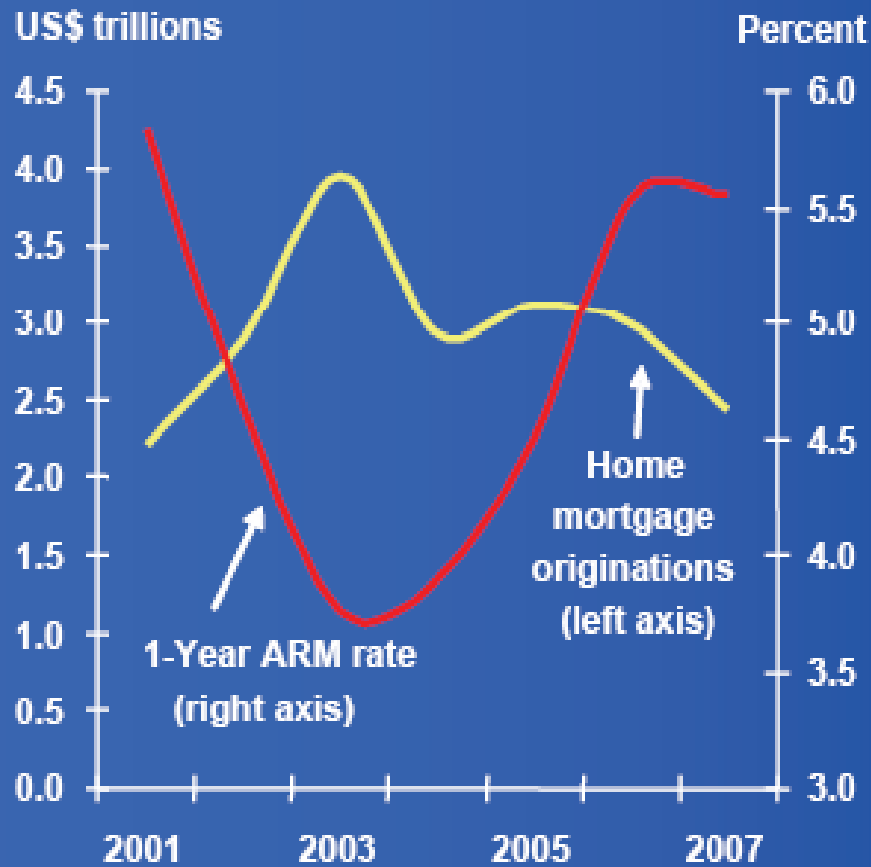
I. Low interest rates and a lending boom

Did the Fed lower interest rates too much and for too long?

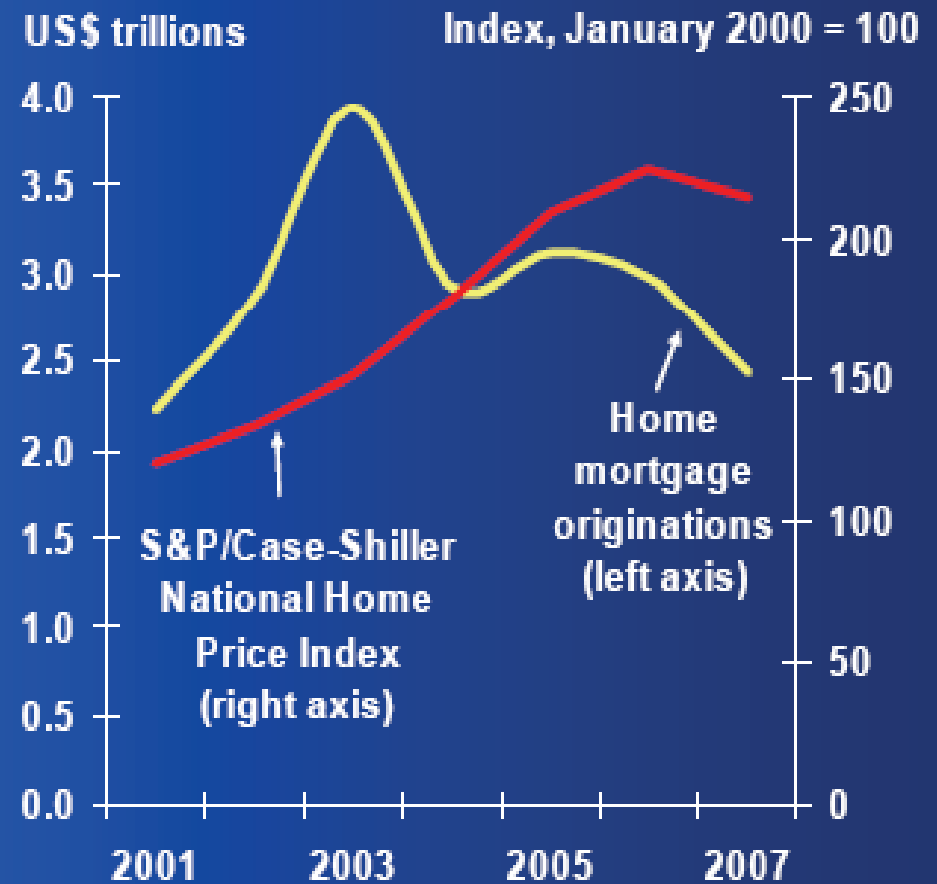
Federal funds rate vs. rates on FRMs and ARMs



Low interest rates and credit boom

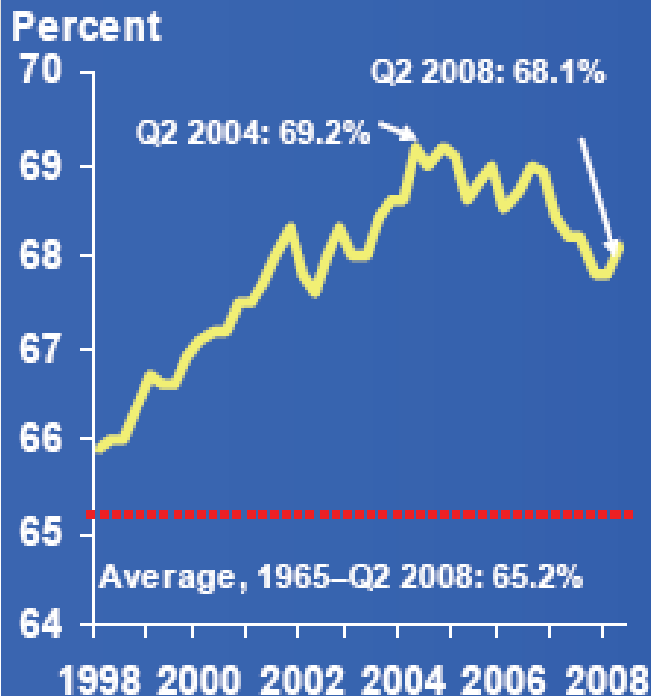


Home price bubble and credit boom

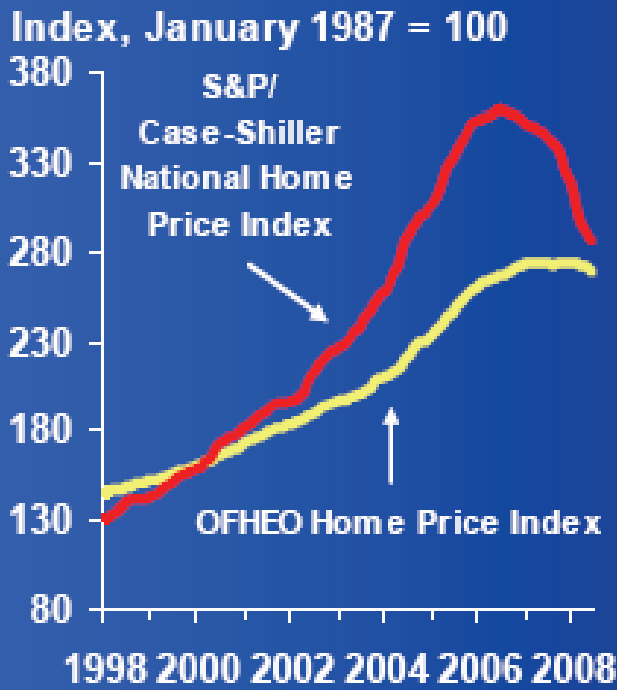


II. Homeownership, prices, starts and sales take off

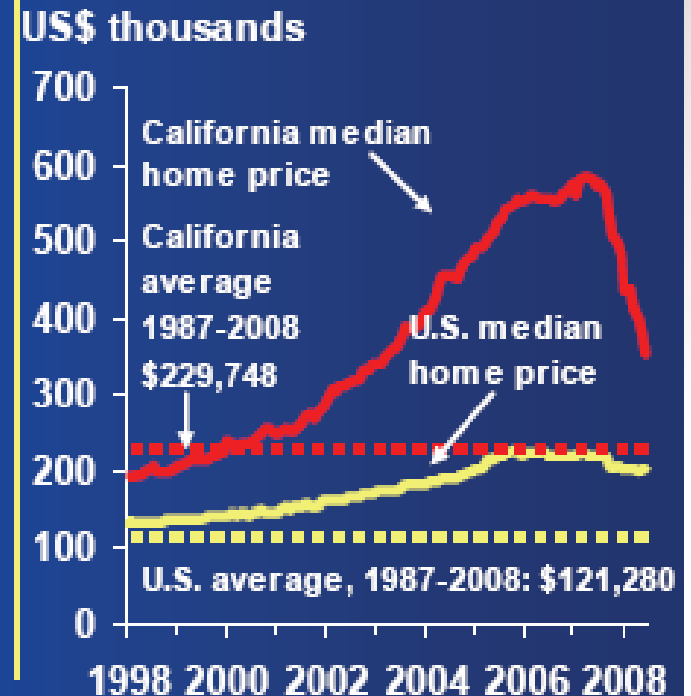
Credit boom pushes homeownership rate to historic high



Home price bubble peaks in 2006

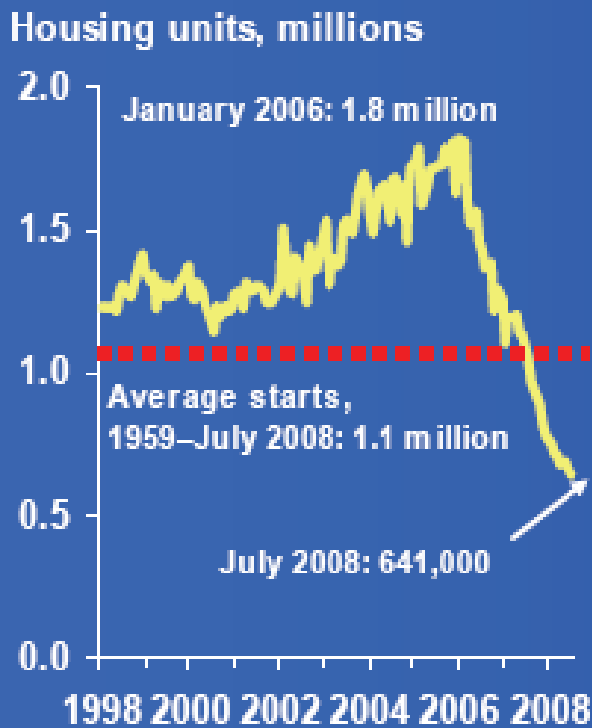


California and national home prices reach record highs



Sources: U.S. Census Bureau, OFHEO, Moody's Economy.com, S&P/Case-Shiller, California Association of Realtors, Milken Institute.

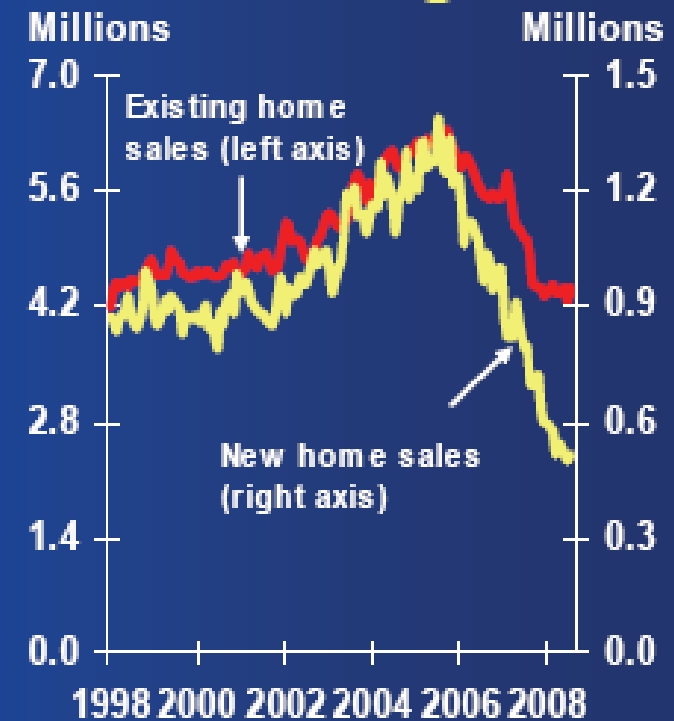
Housing starts hit a record in 2005



Homes for sale



Homes sales reach a new high



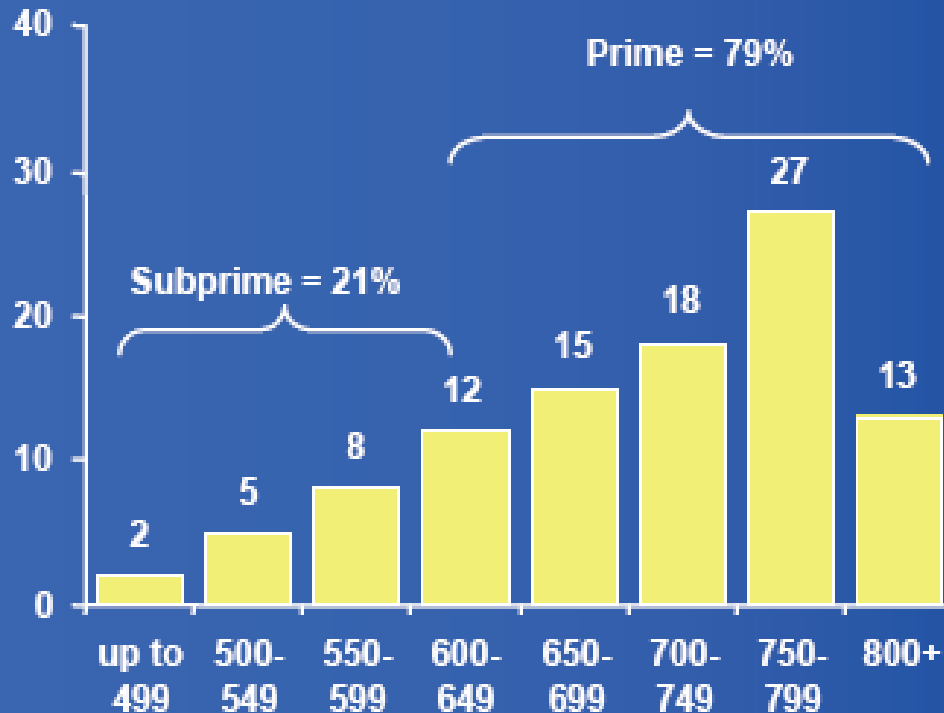
Sources: U.S. Census Bureau, OFHEO, Moody's Economy.com, Milken Institute.

III. Subprime borrowers and subprime mortgages

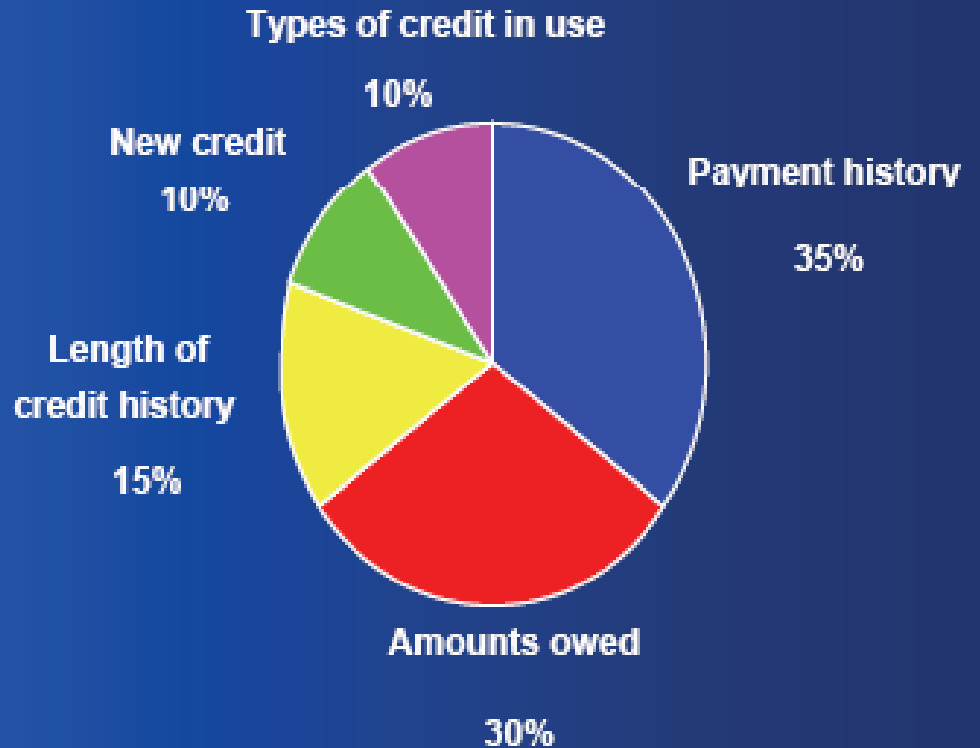
Who is a subprime borrower?

National FICO scores display wide distribution

Percentage of population



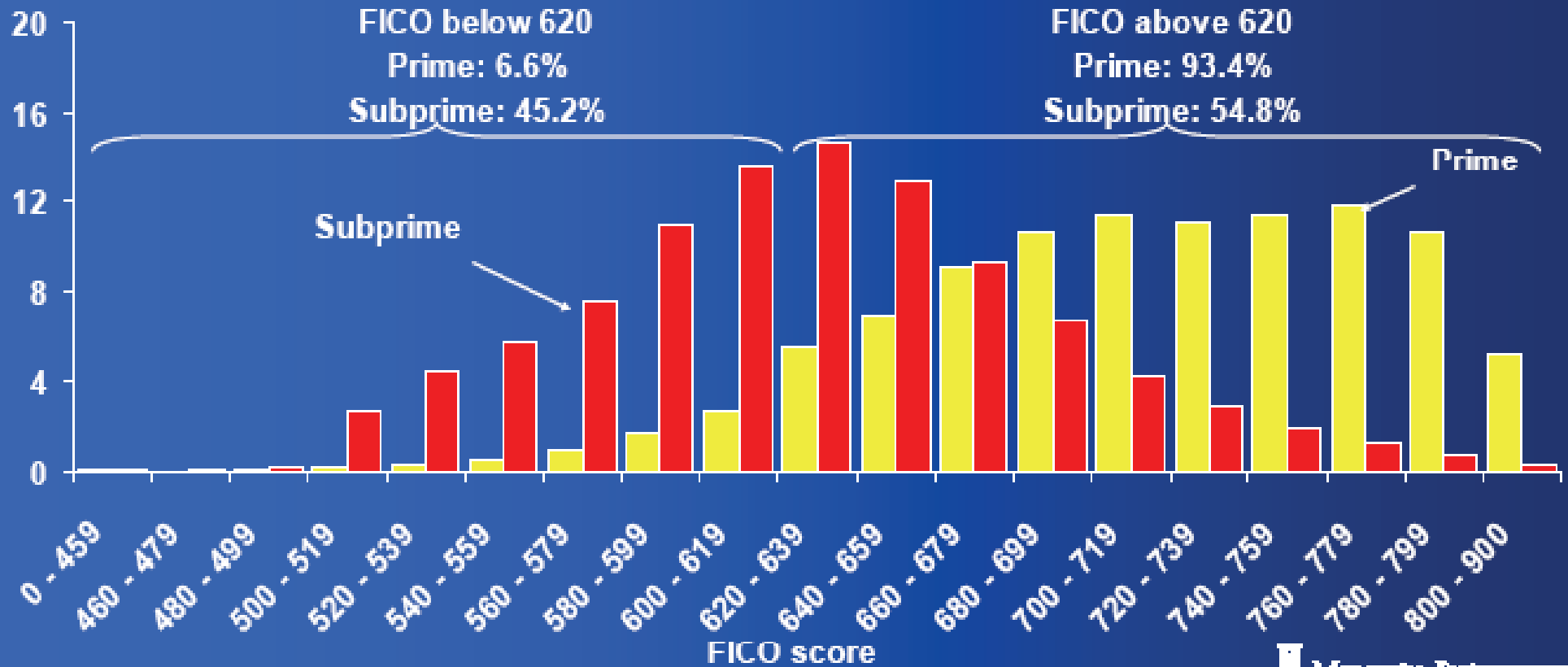
What goes into a FICO score?



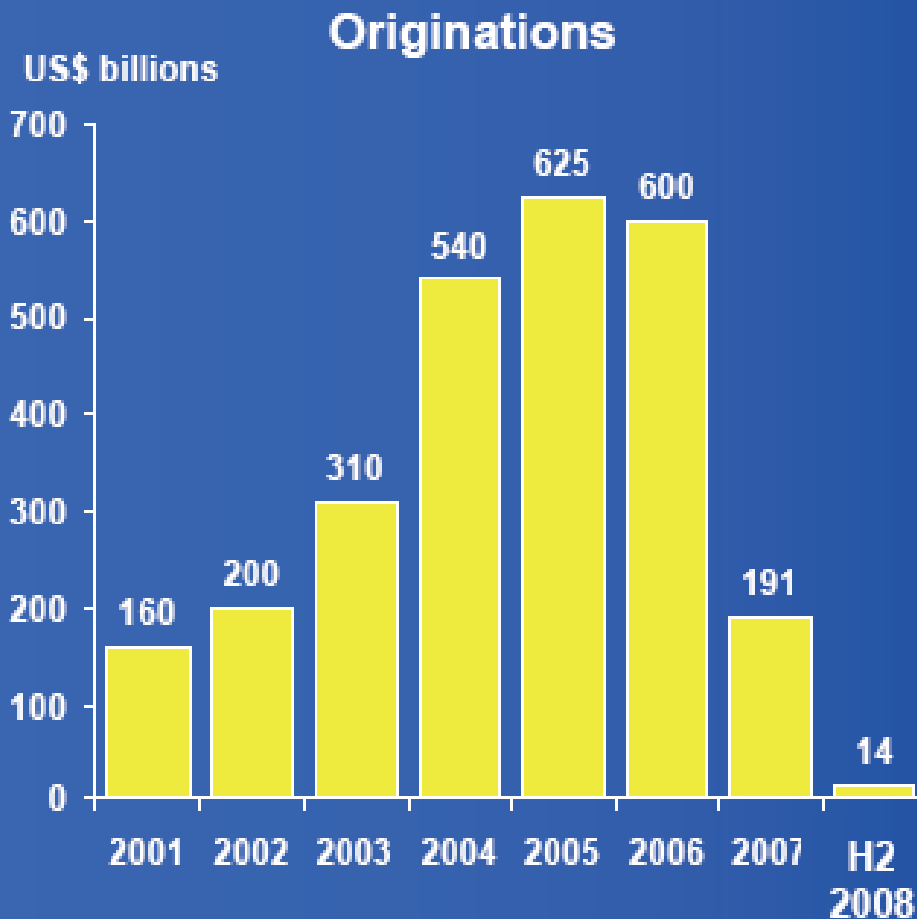
Sources: myFICO.com, Milken Institute.

Prime and subprime mortgage originations by FICO score reveal substantial overlaps

Percent of total originations



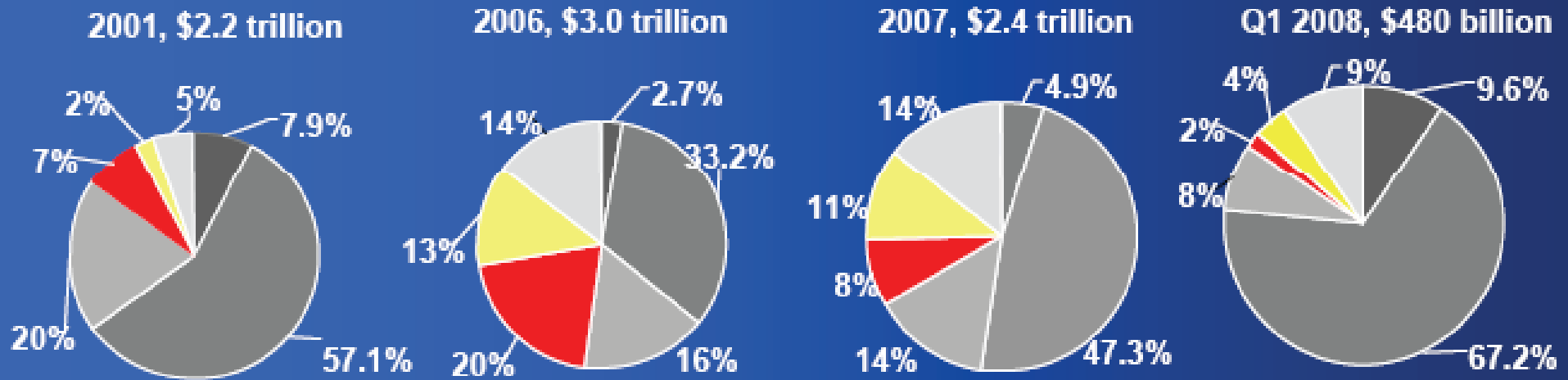
Subprime mortgages increase rapidly before big decline



Sources: Inside Mortgage Finance, Milken Institute.

IV. Mortgage product innovation

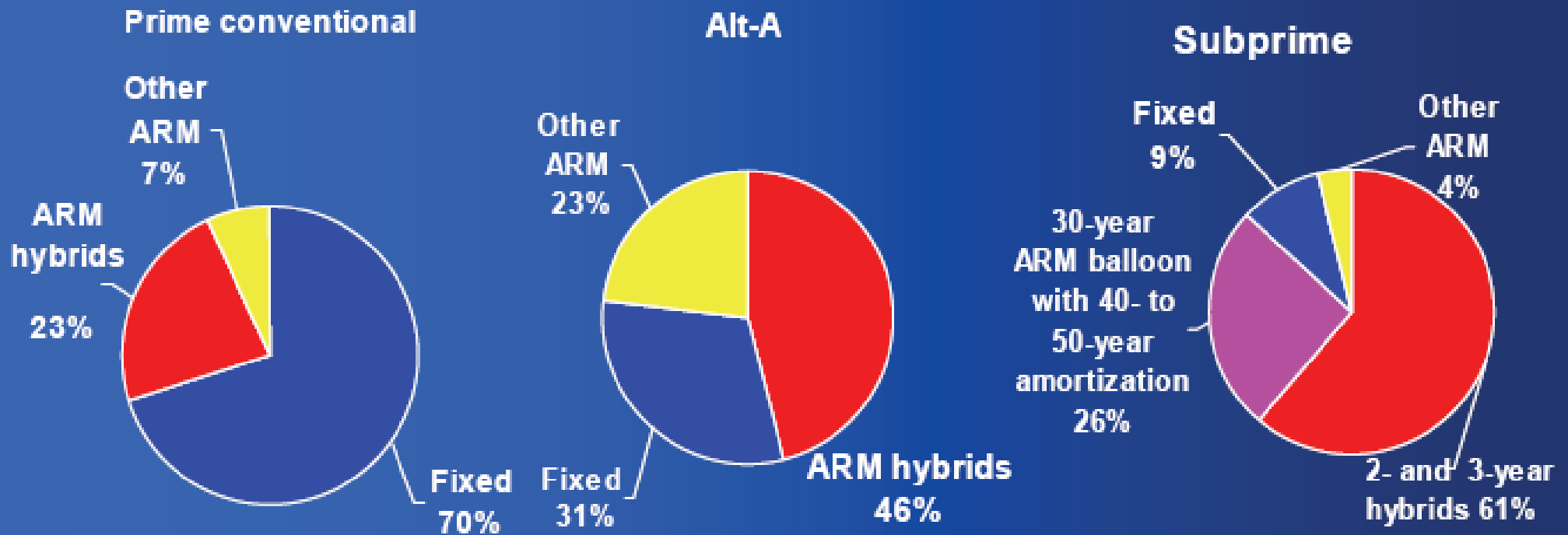
Subprime and Alt-A shares quadruple between 2001 and 2006, then fall in 2007



- FHA & VA
- Conventional, conforming prime
- Jumbo prime

- Subprime
- Alt-A
- Home equity loans

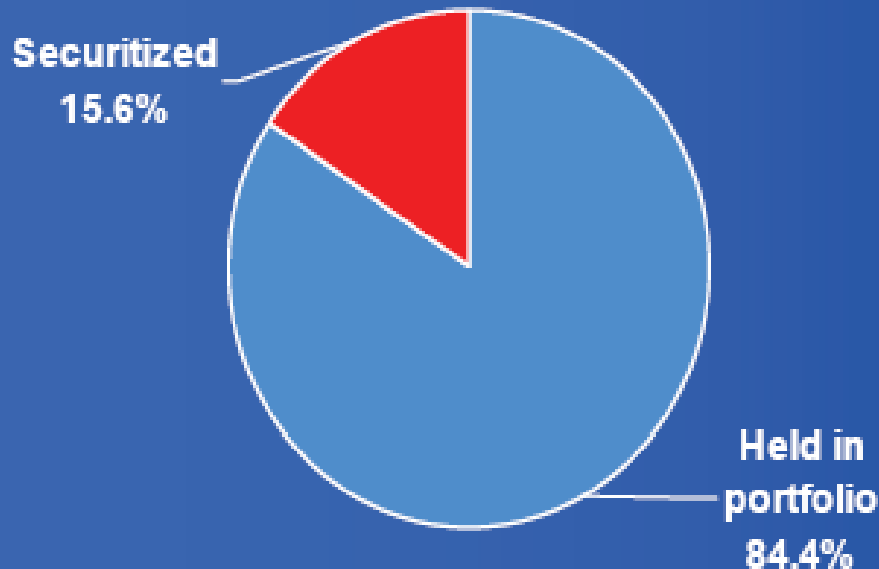
ARM hybrids dominate subprime originations (2006)



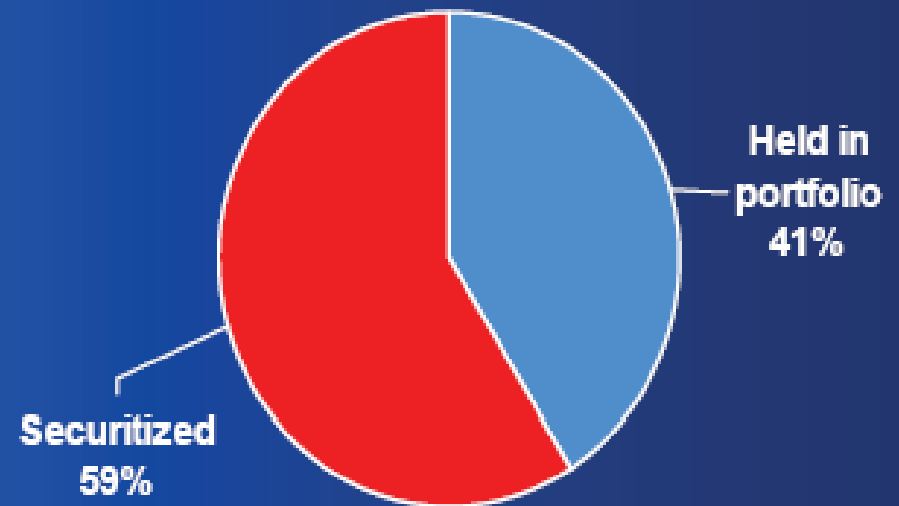
V. Securitization

The mortgage model switches from originate-to-hold to originate-to-distribute

Residential mortgage loans
1980: Total = \$958 billion



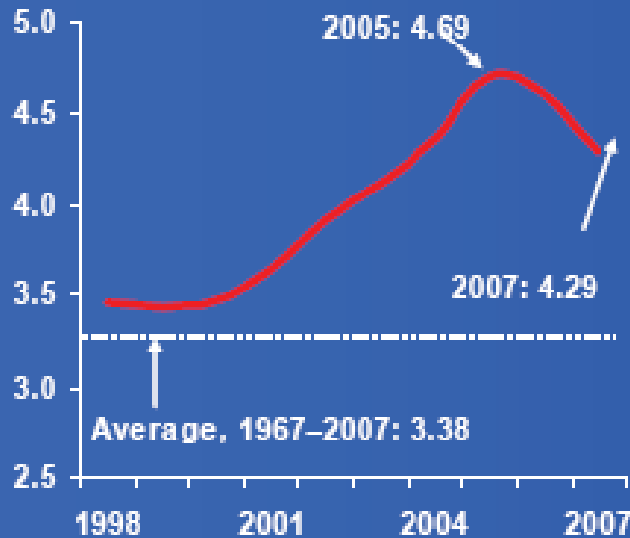
Residential mortgage loans
Q2 2008: Total = \$11.3 trillion



VI. Affordability

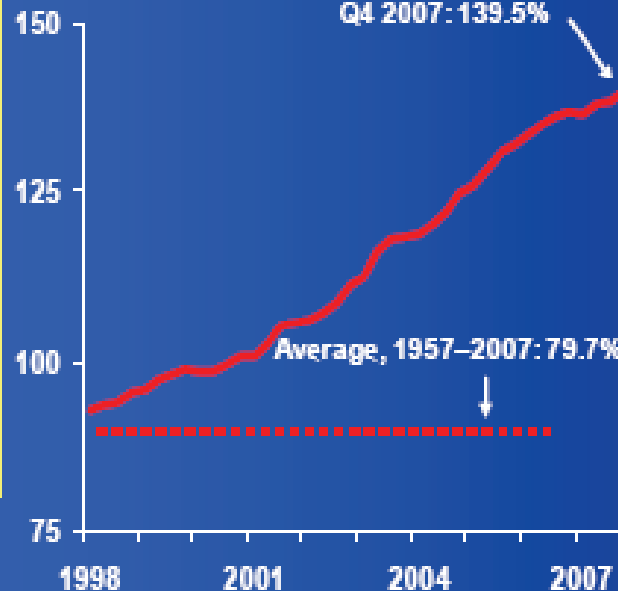
Ratio of home price to household income surges

Median home price/
 median household income



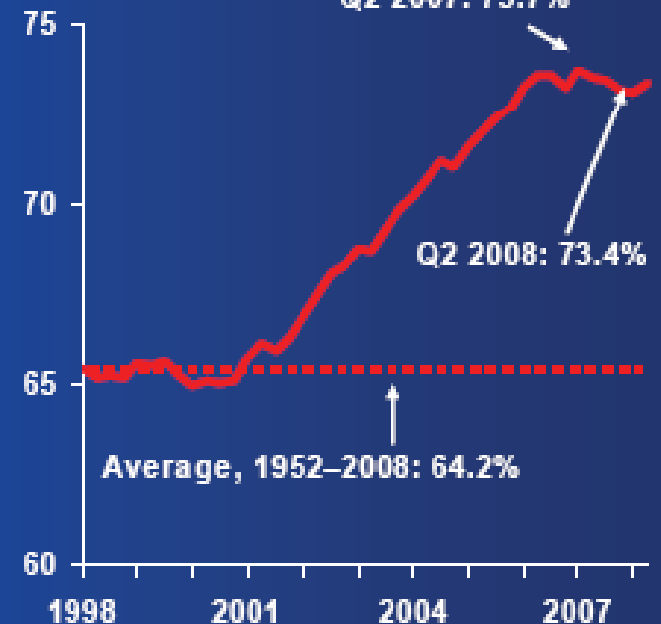
Debt-to-income ratio of households has increased rapidly

Home mortgage debt/disposable
 personal income



Home mortgage share of household debts reaches a new high in 2007

Percent

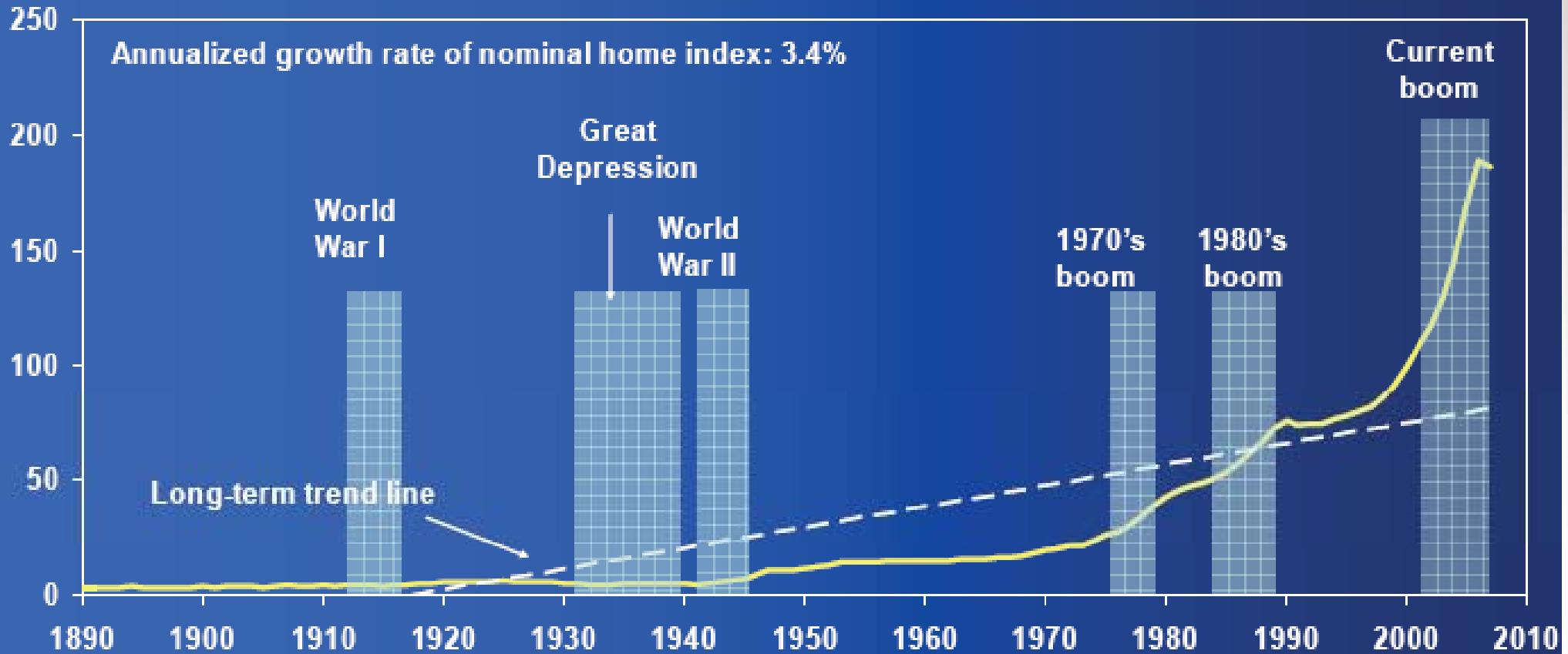


Sources: U.S. Census Bureau, OFHEO, Federal Reserve, Moody's Economy.com, Milken Institute.

VII. Collapse

The recent run-up of home prices was extraordinary

Index, 2000 = 100



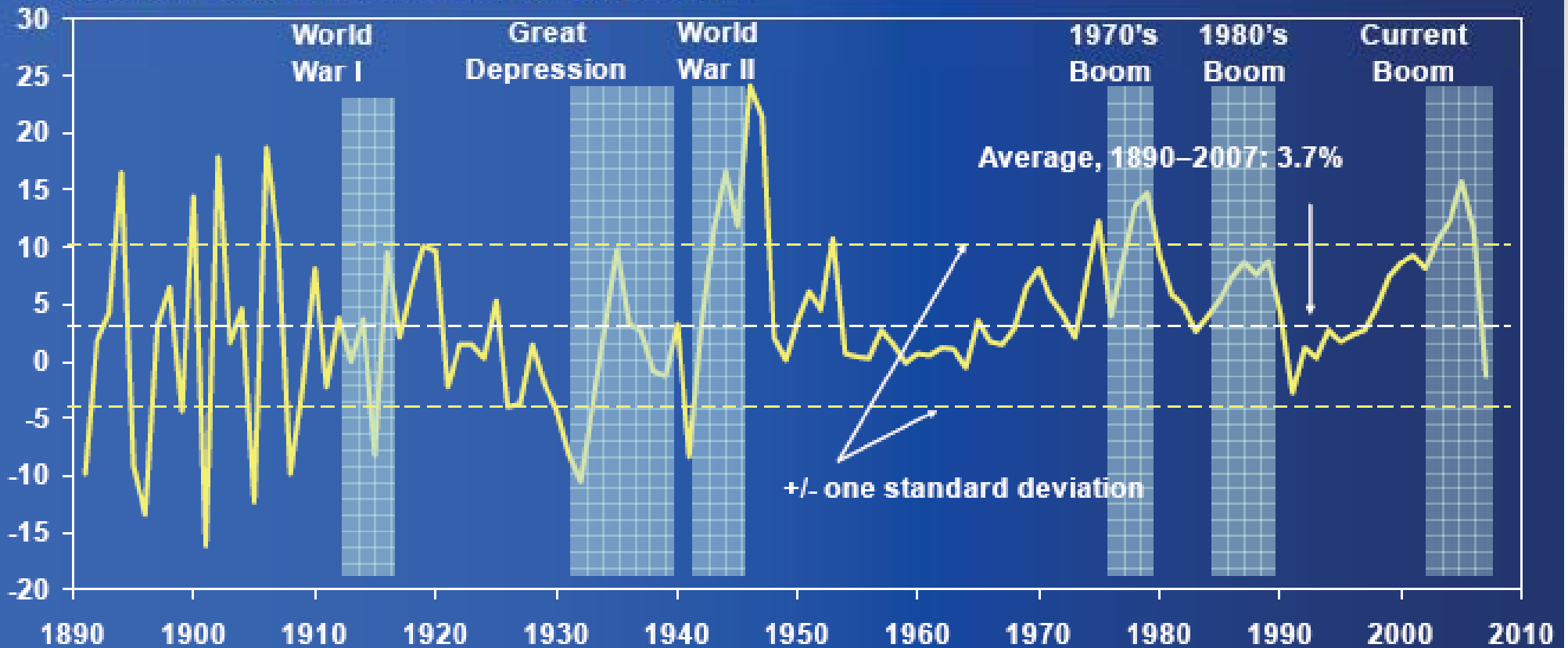
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Sources: Robert Shiller, Milken Institute.

Home prices don't go up forever

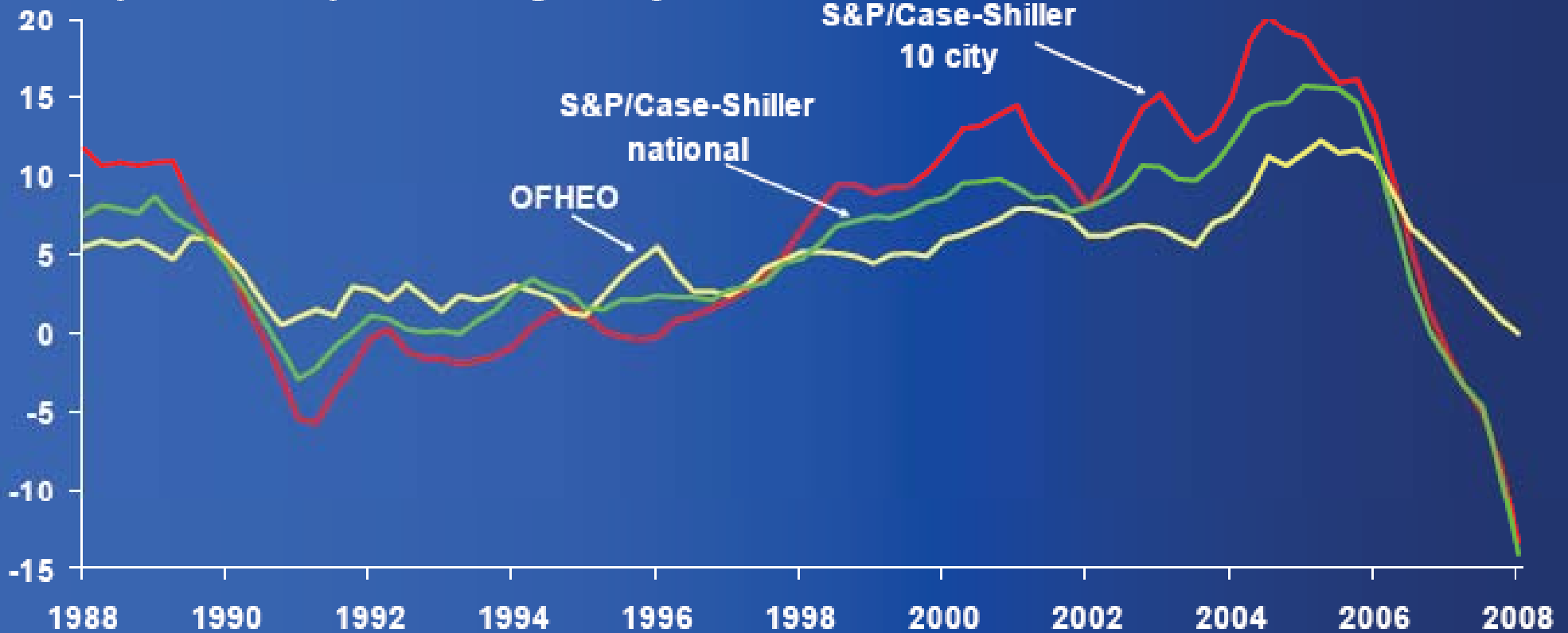
Change in home prices in 100 plus years

Percentage change in nominal home price, year ago



2005: The collapse begins

Home price indices, percent change on a year earlier

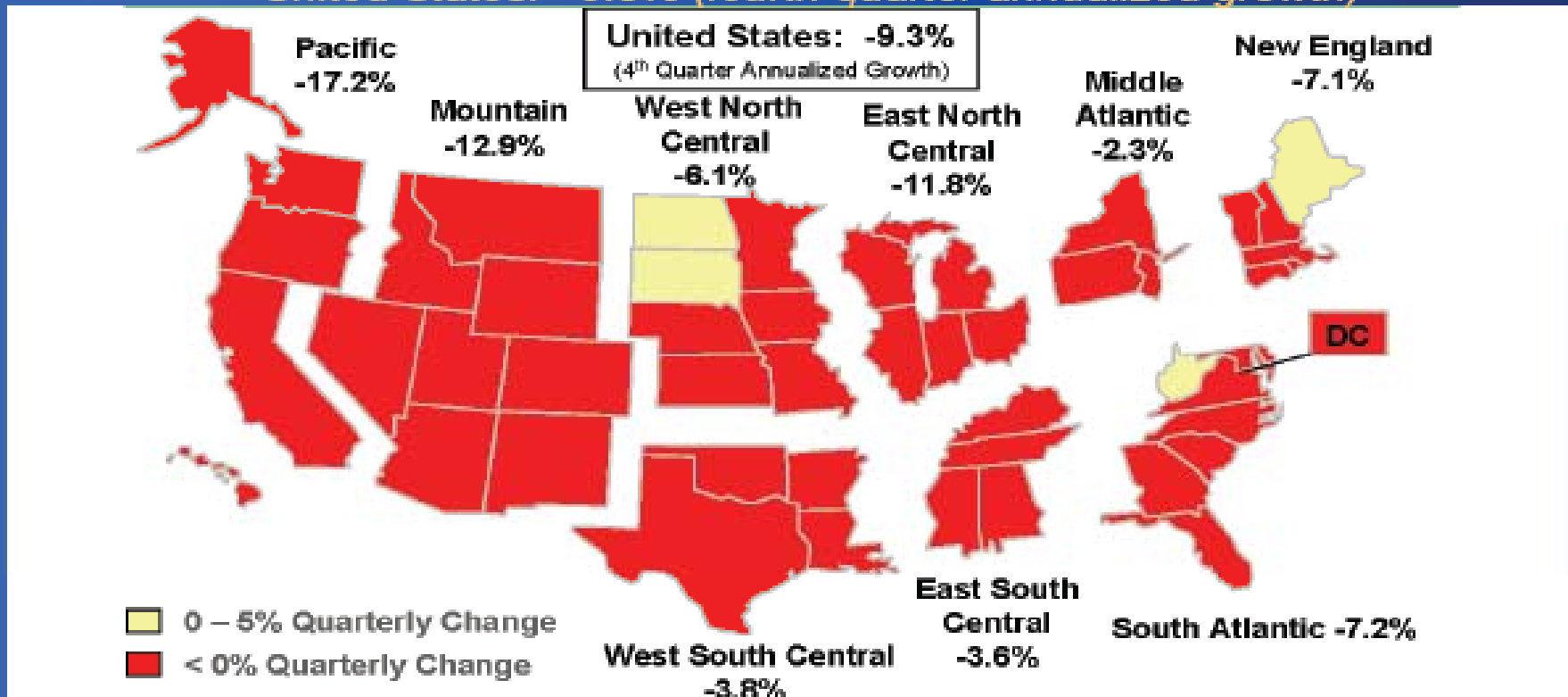


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Sources: S&P/Case-Shiller, OFHEO, Moody's Economy.com, Milken Institute.

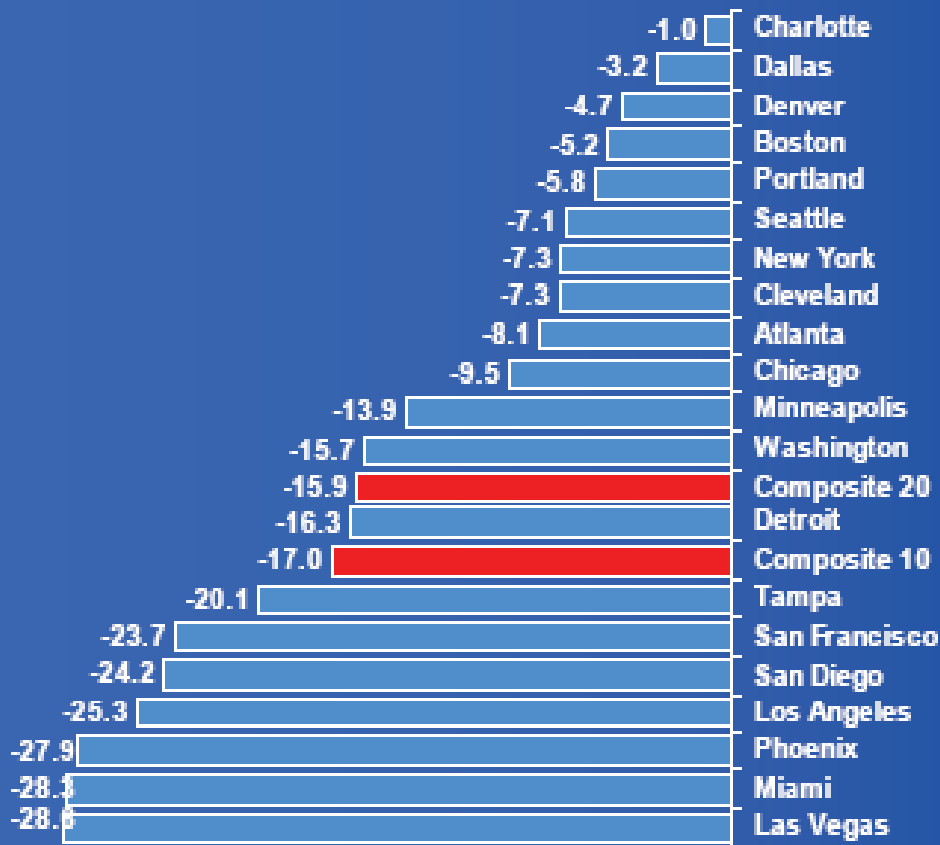
Forty-six states had falling prices in the fourth quarter 2007

United States: - 9.3% (fourth-quarter annualized growth)



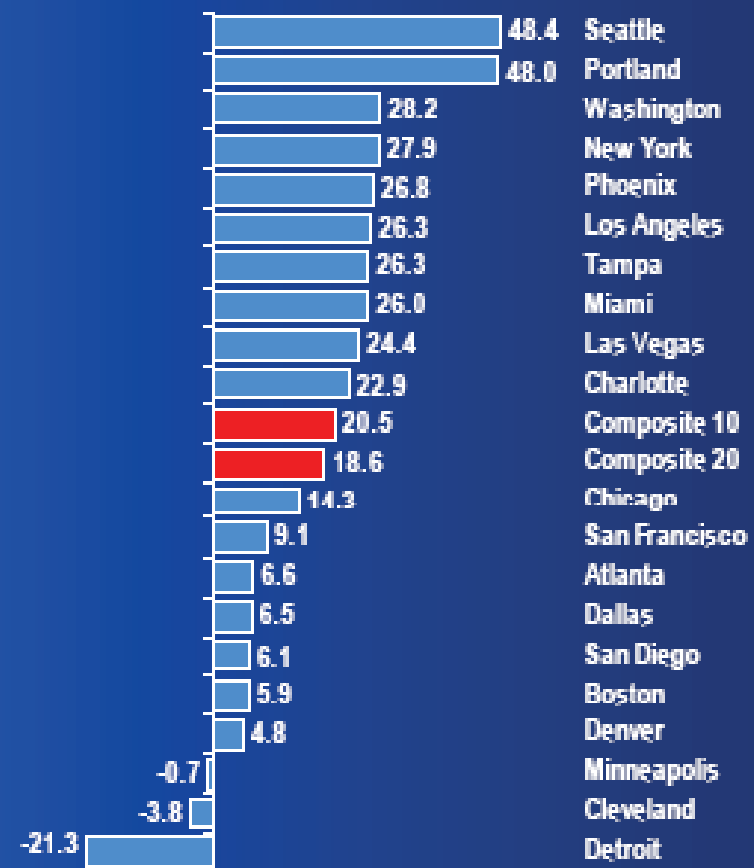
If you bought your house...

One year ago...



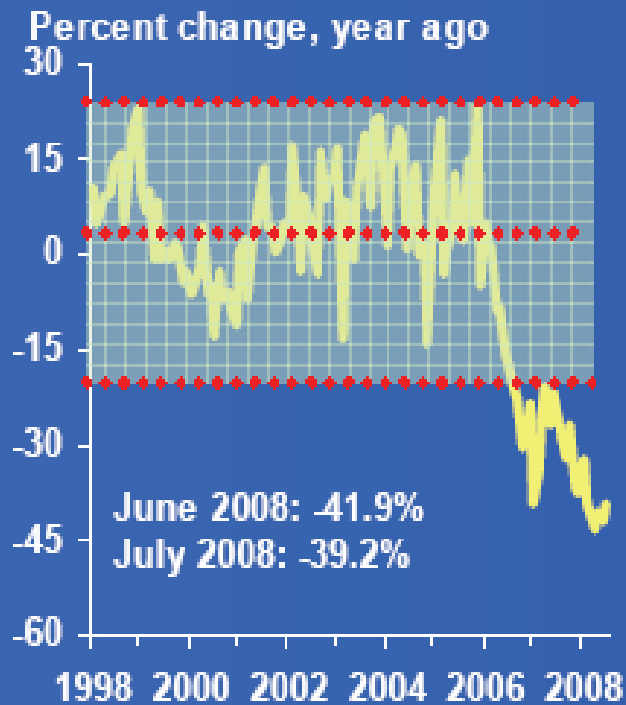
% change in price, June 07-08

Five years ago...



% change in price, June 03-08

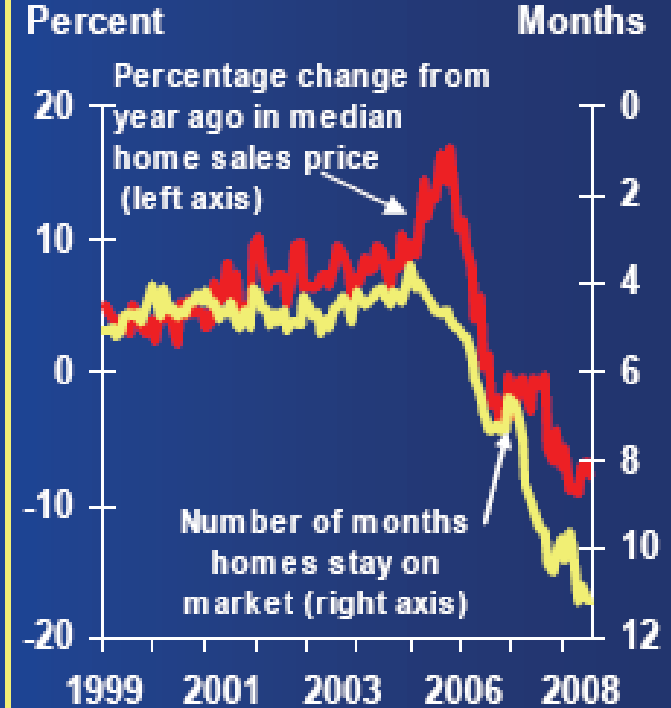
Housing starts sharply decline



Homes sit longer on the market ...



... as home appreciation slows



Note: Shaded area represents fluctuation within one standard deviation from mean (1.28%)

Sources: Mortgage Bankers Association, OFHEO, Moody's Economy.com, Milken Institute.

VIII. Delinquencies and foreclosures

Foreclosures are nothing new, but ...

Thousands of foreclosures per year



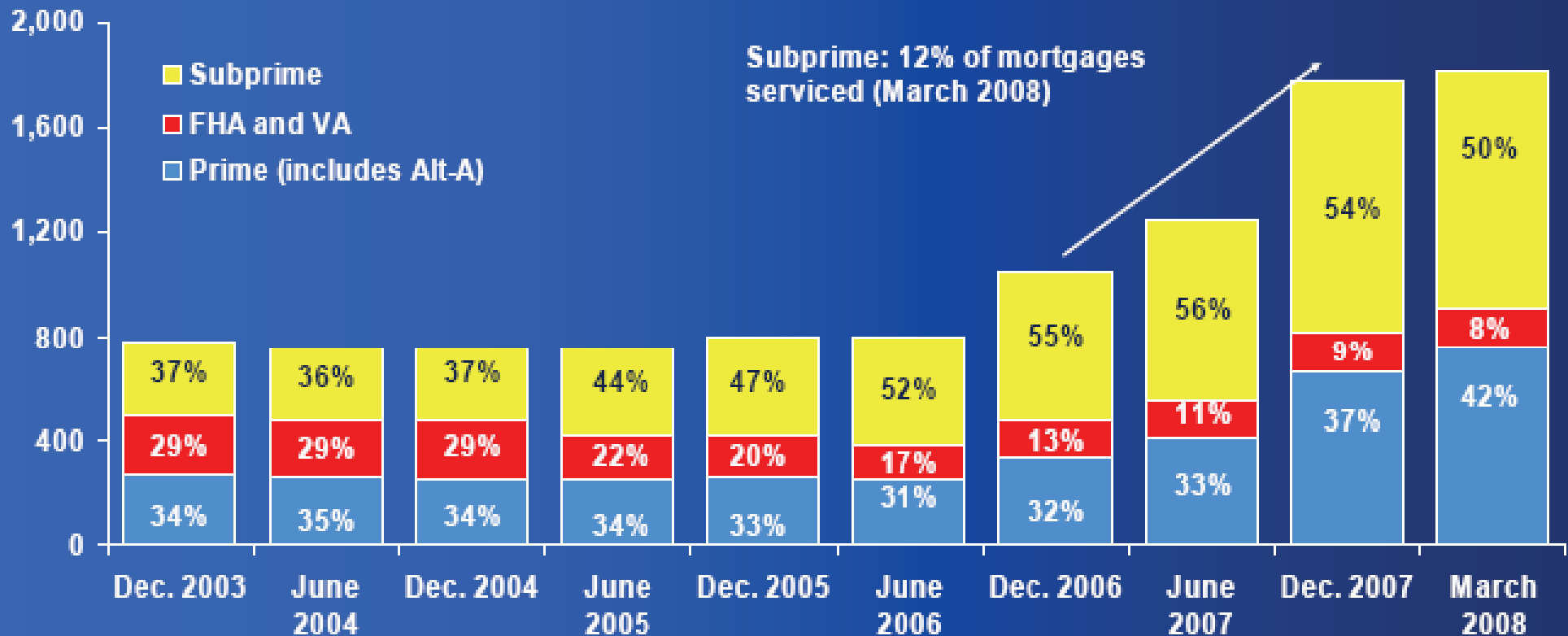
... their numbers have doubled

Thousands of foreclosures per year



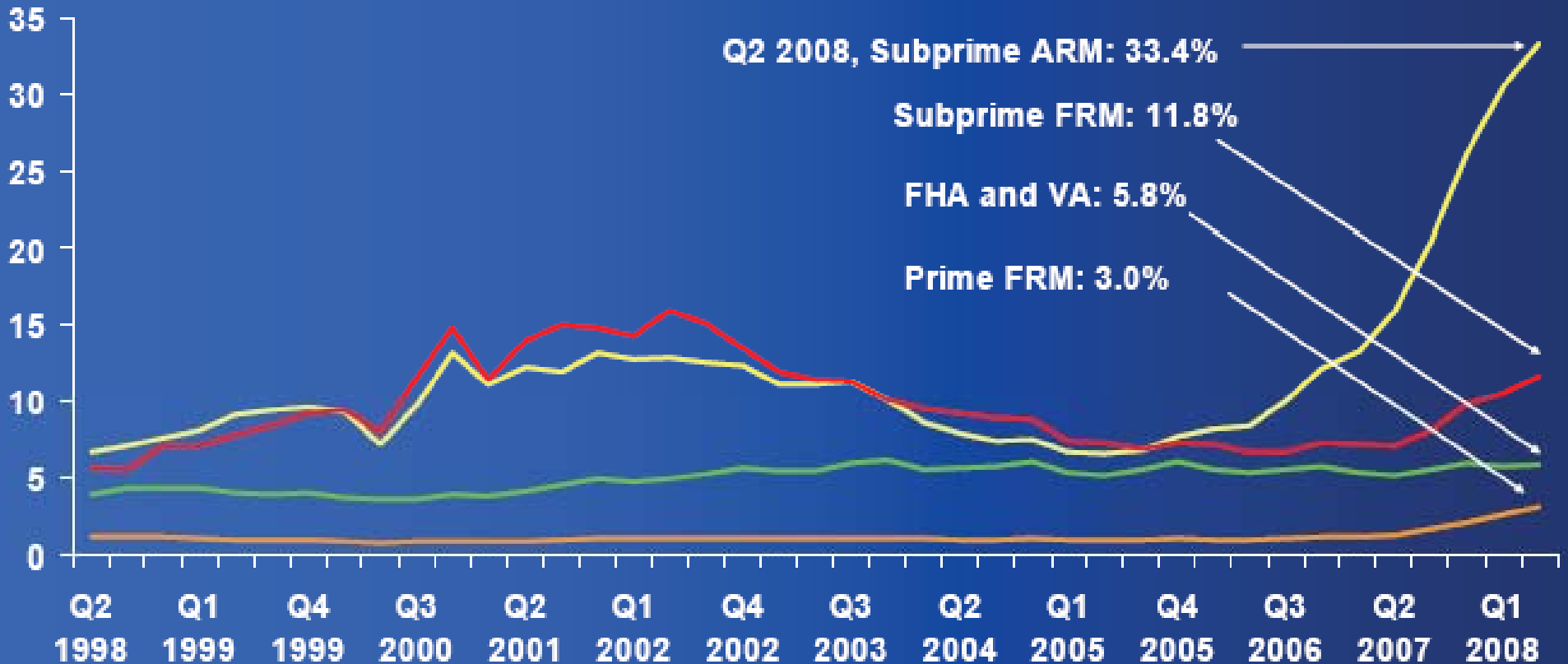
Subprime mortgages accounted for half or more of foreclosures since 2006

Number of home mortgage foreclosures started (annualized, in thousands)

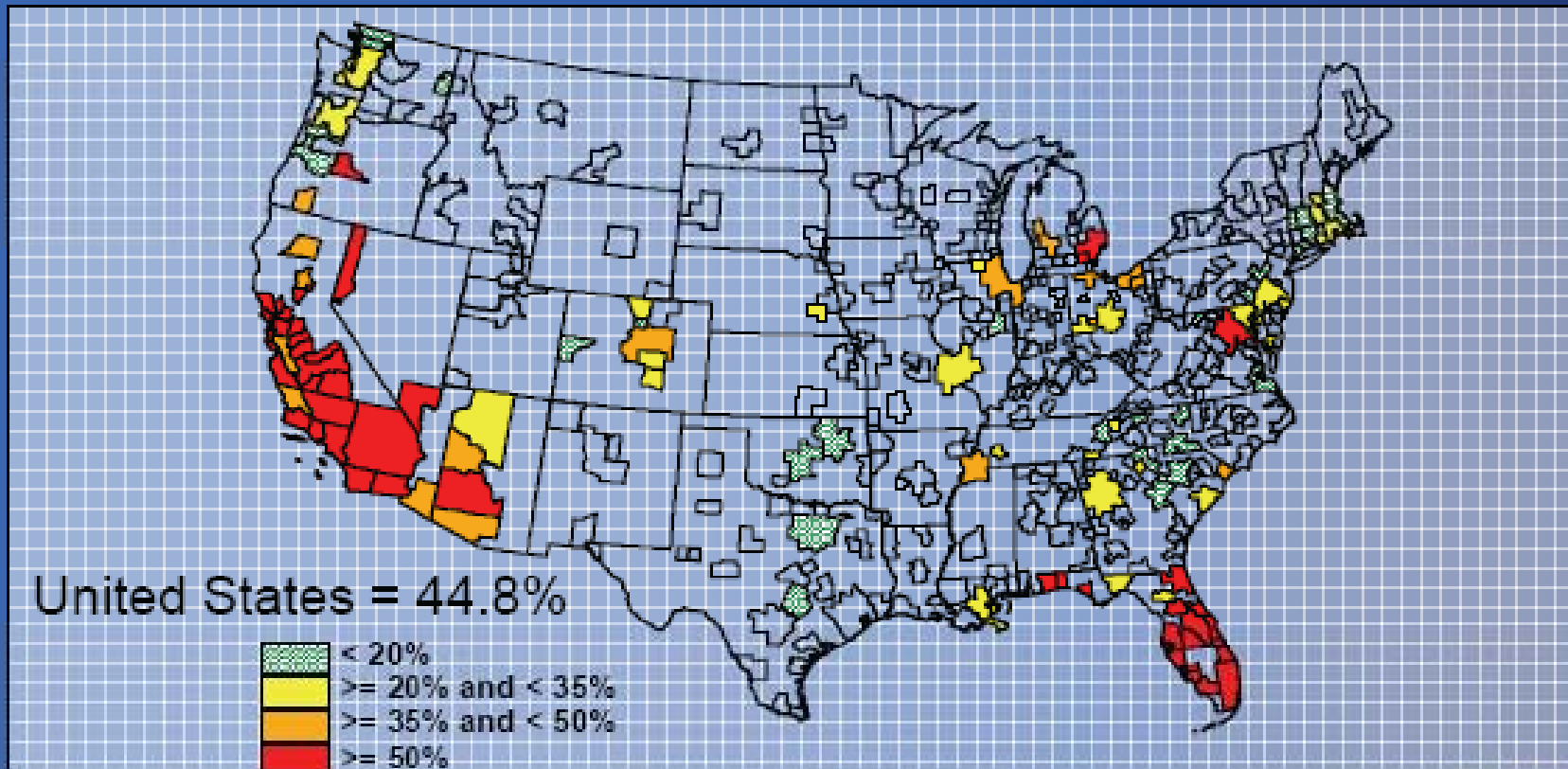


Subprime ARMs have the worst default record

Home mortgages delinquent or in foreclosure (percent of number)

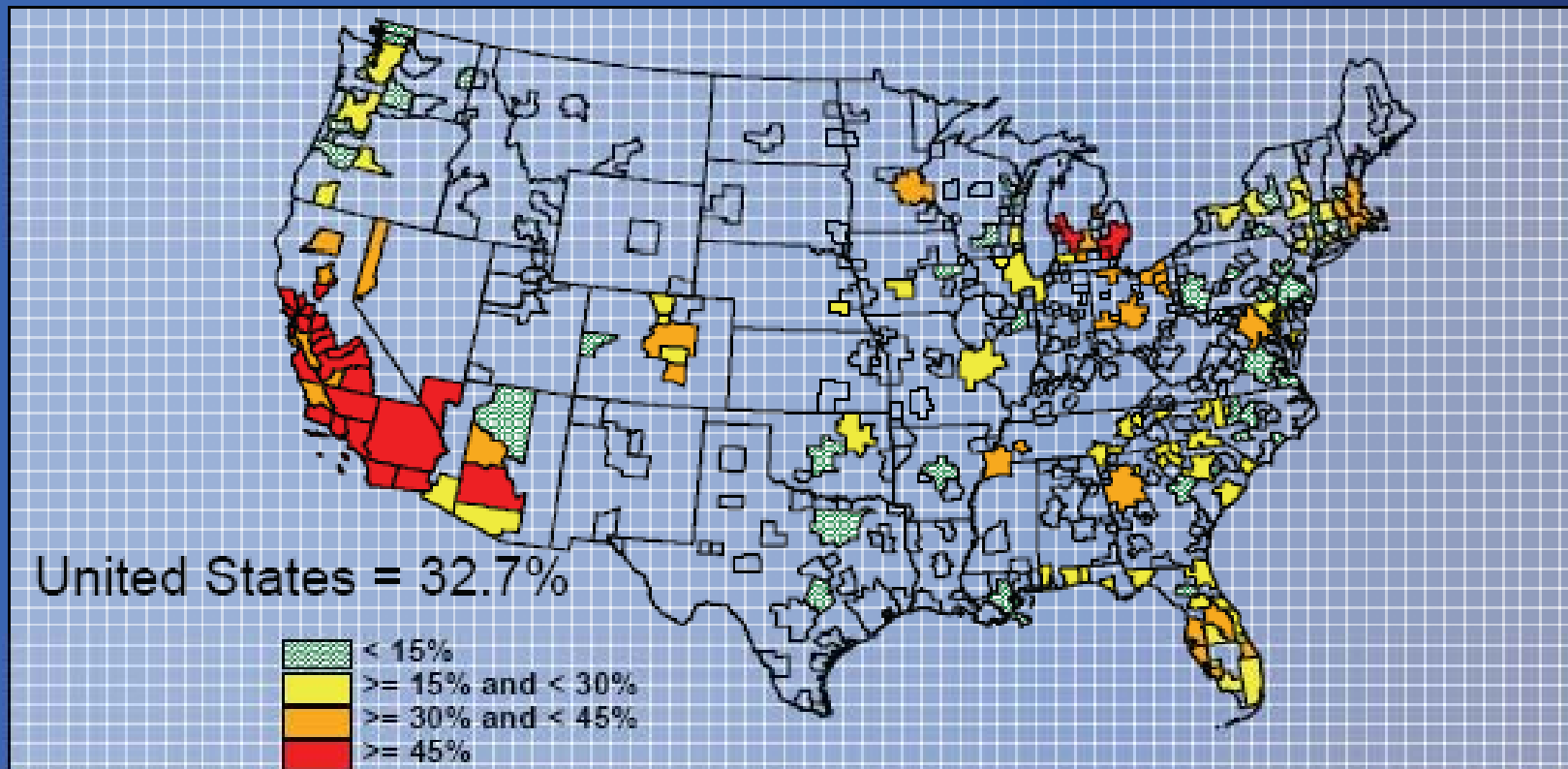


Percentage of homes purchased in Q2 2008 that now have negative equity

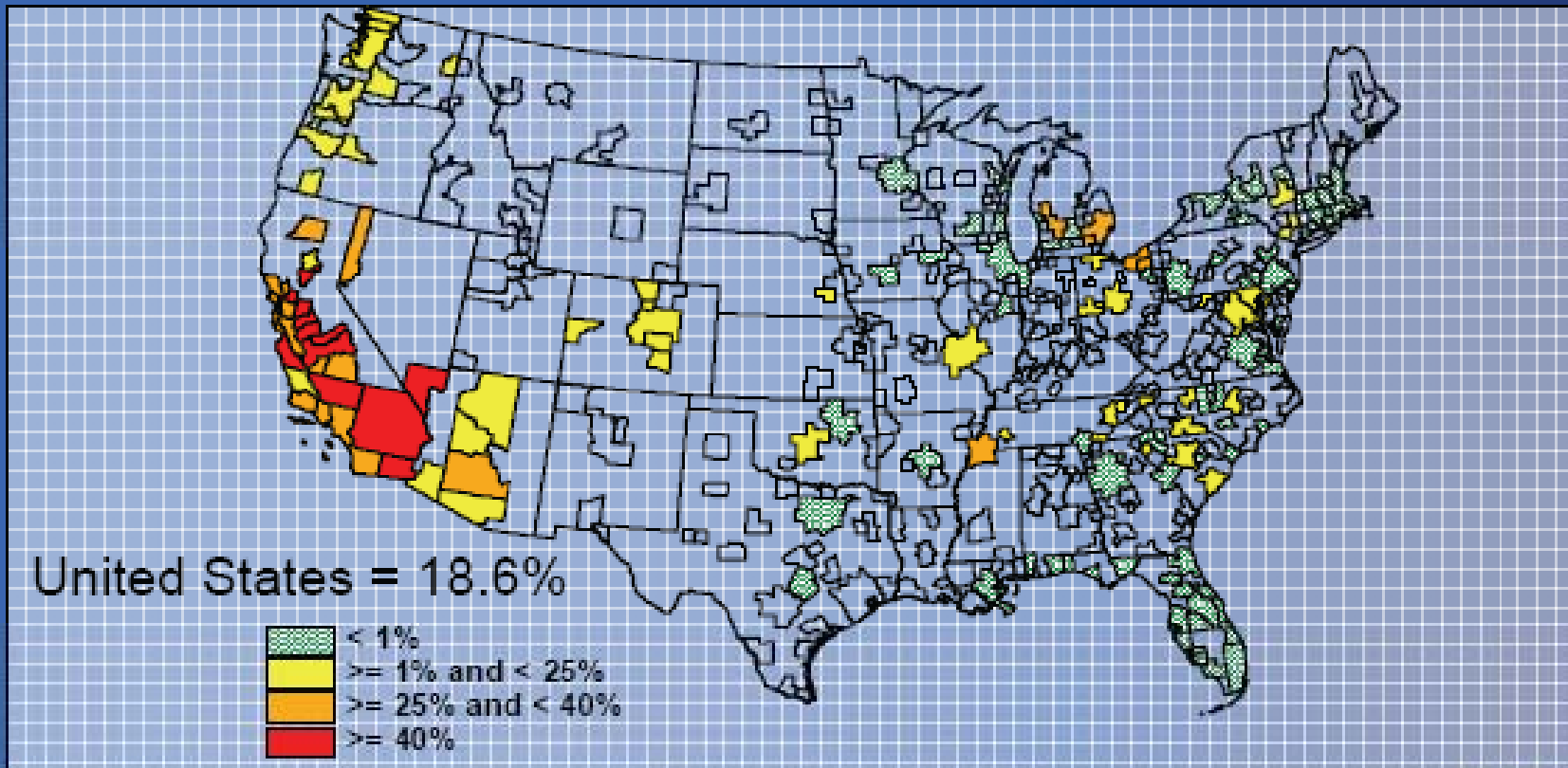


Sources: Zillow.com, Milken Institute.

Percentage of homes sold for a loss (Q2 2008)



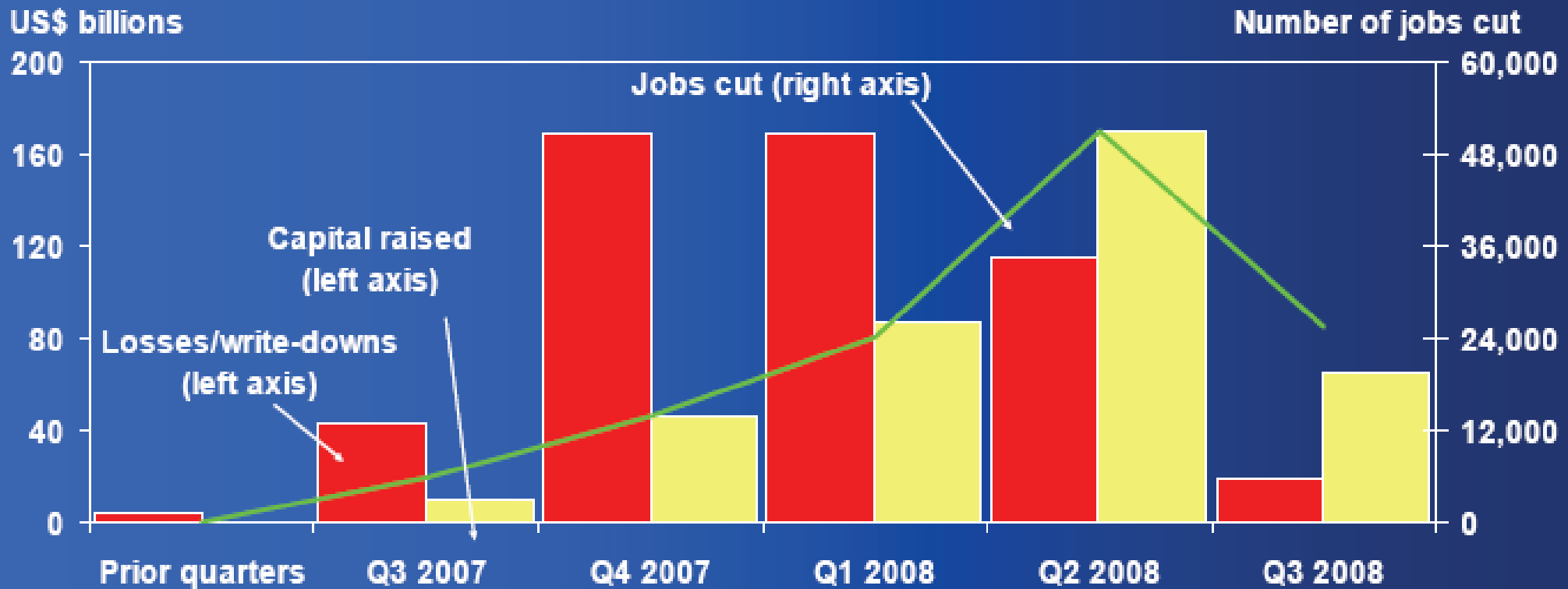
Percentage of homes sold that were in foreclosure (Q2 2008)



Sources: Zillow.com, Milken Institute.

IX. Damages scorecard

Losses/write-downs, capital raised, and jobs cut by financial institutions worldwide

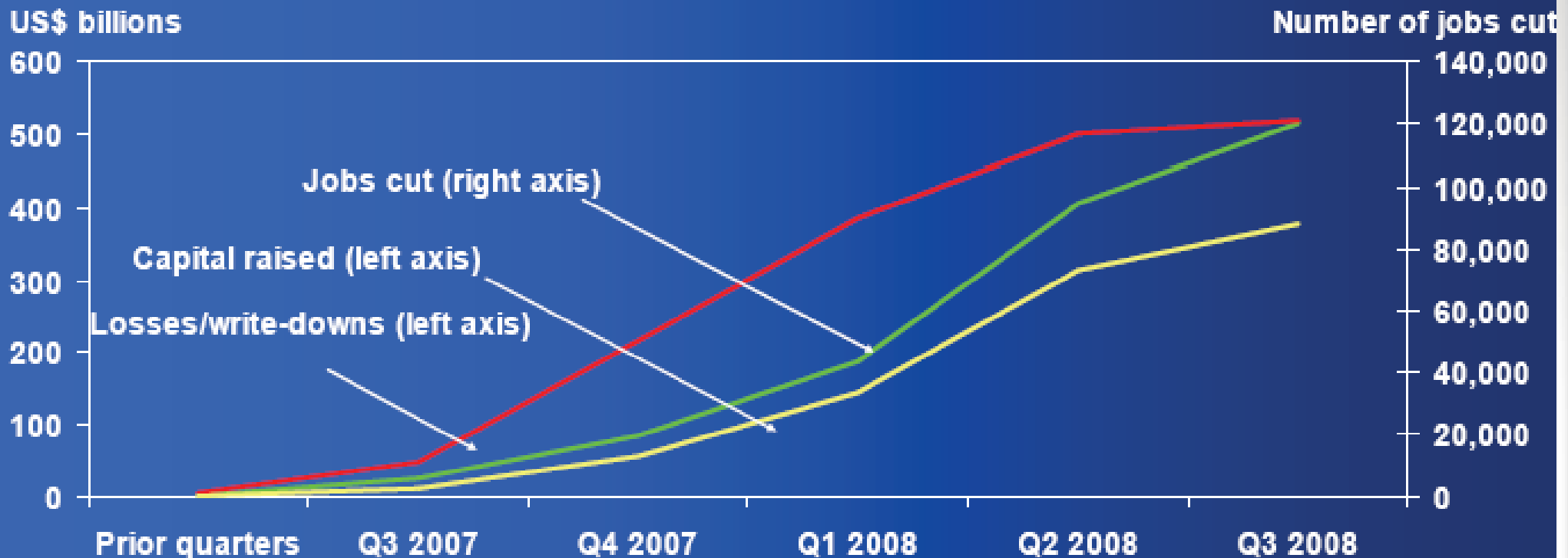


Note: Q3 data are through September 25, 2008.

Sources: Bloomberg, Milken Institute.

What is the cumulative damage?

Cumulative losses/write-downs, capital raised, and jobs cut by financial institutions worldwide



Note: Q3 data are through September 25, 2008.

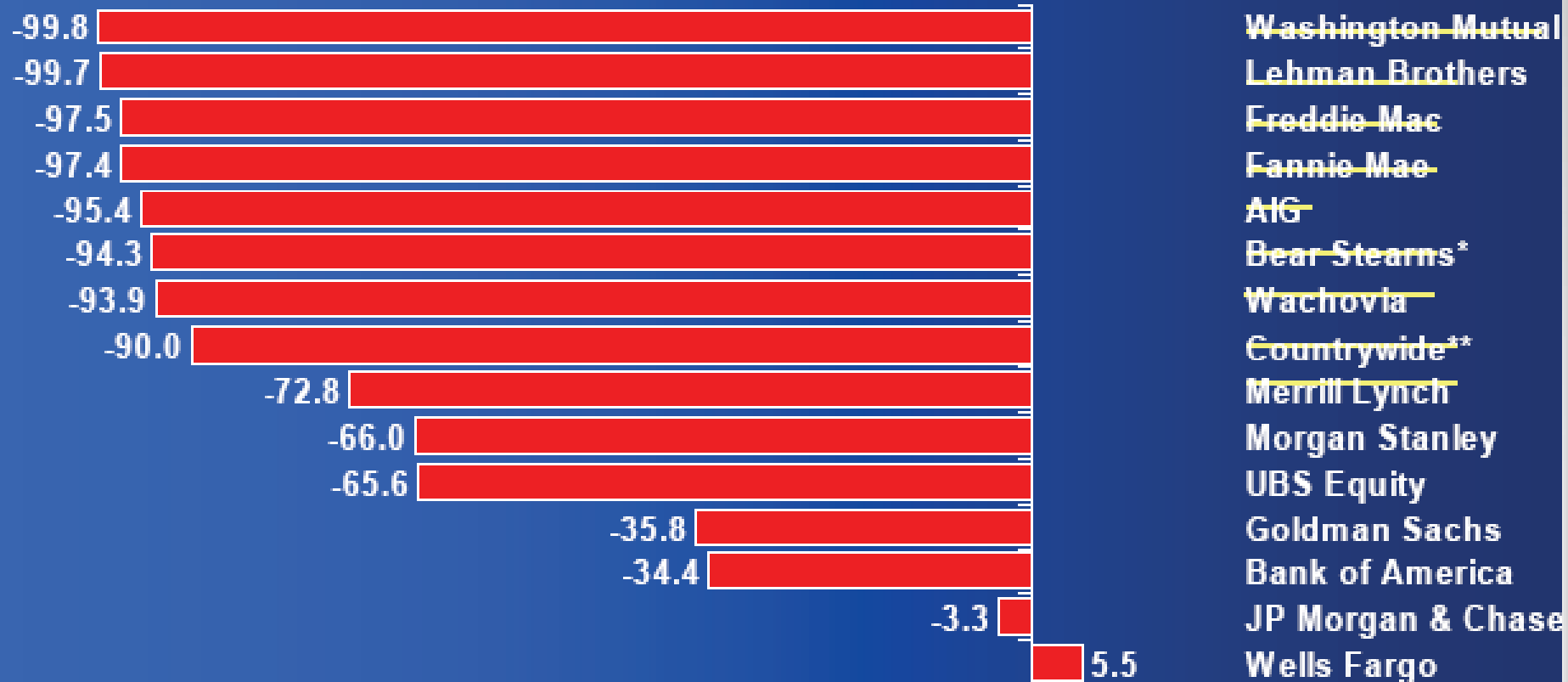
Sources: Bloomberg, Milken Institute.

Recent losses/write-downs and capital raised by selected financial institutions

US\$ billions, through September 25, 2008	Losses /write-downs	Capital raised
Citigroup, United States	55.1	49.1
Merrill Lynch , United States	52.2	29.9
UBS, Switzerland	44.2	28.2
HSBC, United Kingdom	27.4	5.1
Wachovia , United States	22.7	11.0
Bank of America, United States	21.2	20.7
Morgan Stanley, United States	15.7	5.6
IKB Deutsche, Germany	15.0	12.3
Washington Mutual , United States	14.8	12.1
Royal Bank of Scotland, United Kingdom	14.4	23.5
World total	521.9	379.2

Financial stock prices take big hits

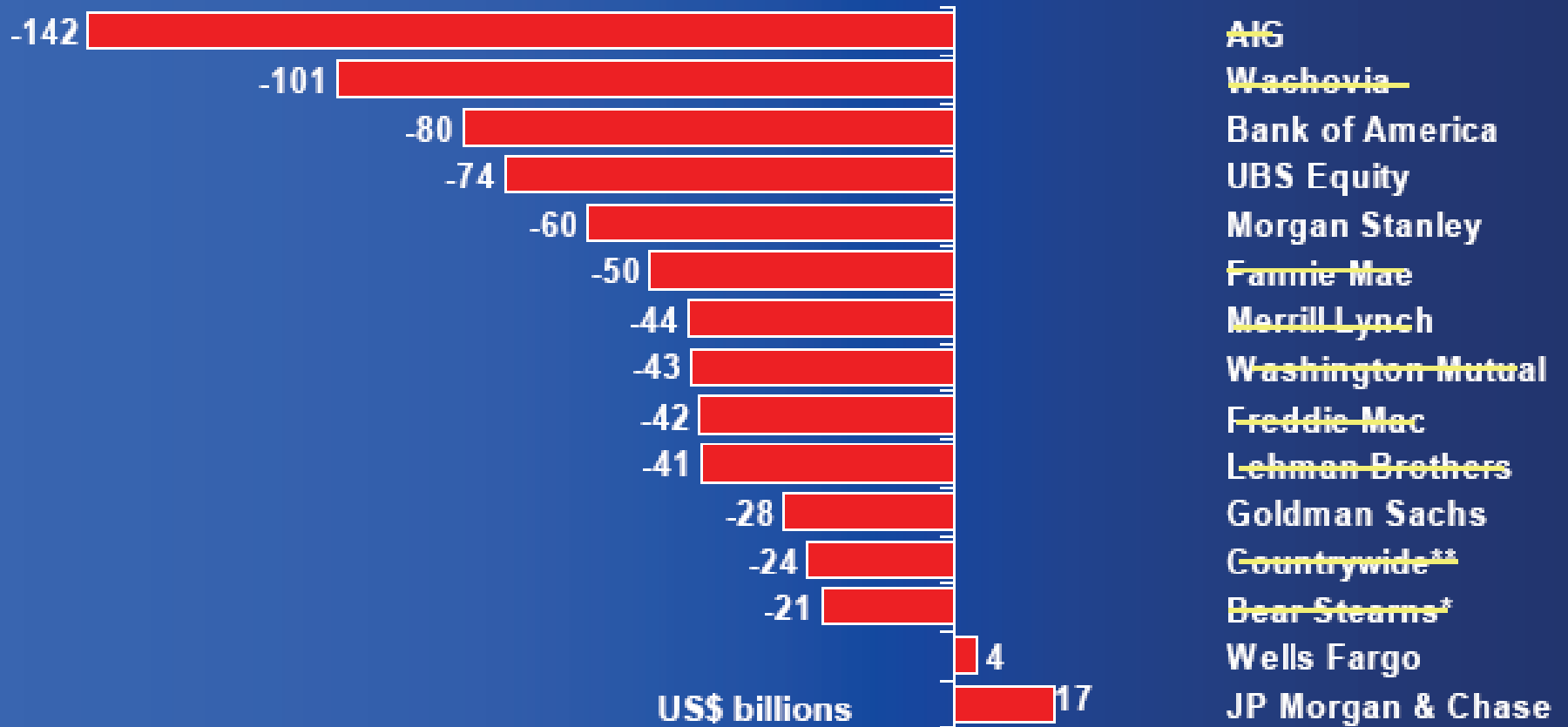
Percentage change in stock price, December 2006–September 2008



Note: * Bear Stearns stock price is to May 2008. ** Countrywide stock price is to June 2008.
 Sources: Bloomberg, Milken Institute.

Financial market capitalization takes big hit

Total loss in market value: \$728 billion, December 2006–September 2008

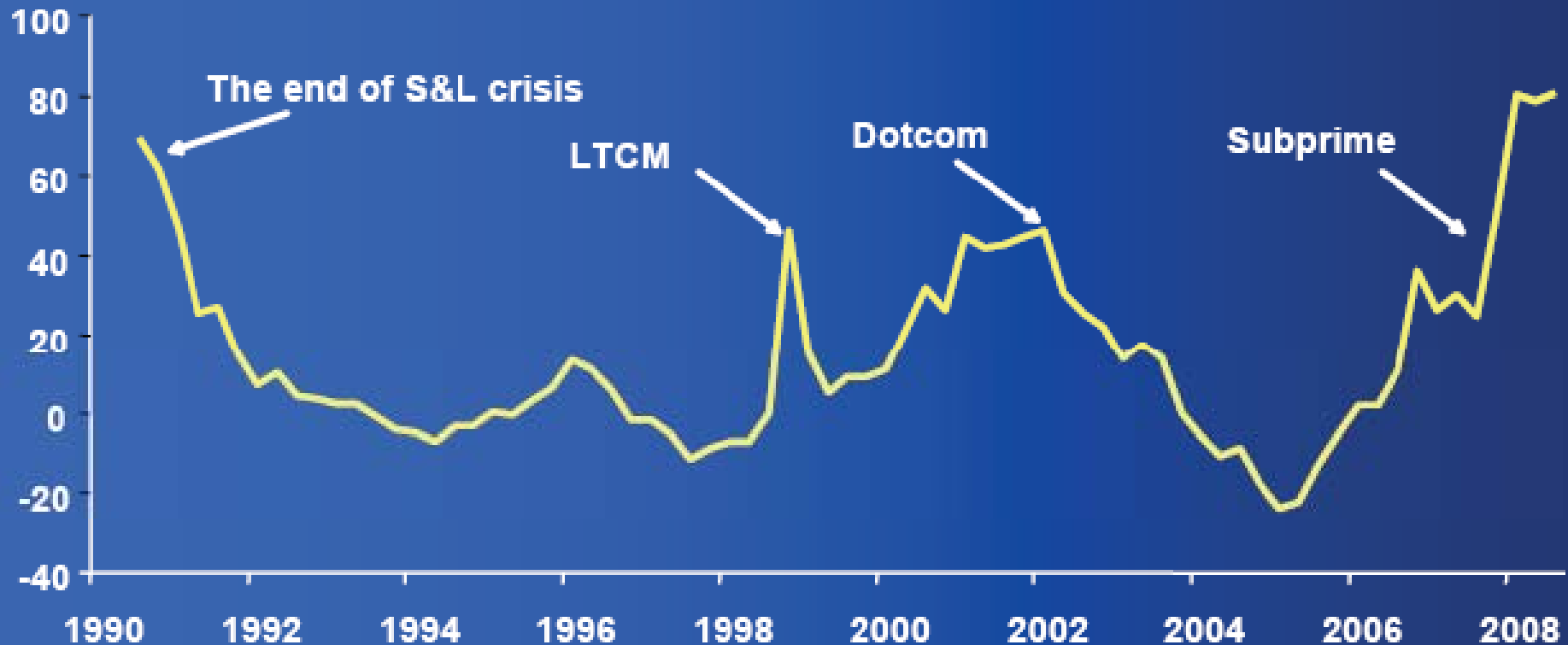


Note: * Bear Stearns stock price is to May 2008. ** Countrywide stock price is to June 2008.
 Sources: Bloomberg, Milken Institute.

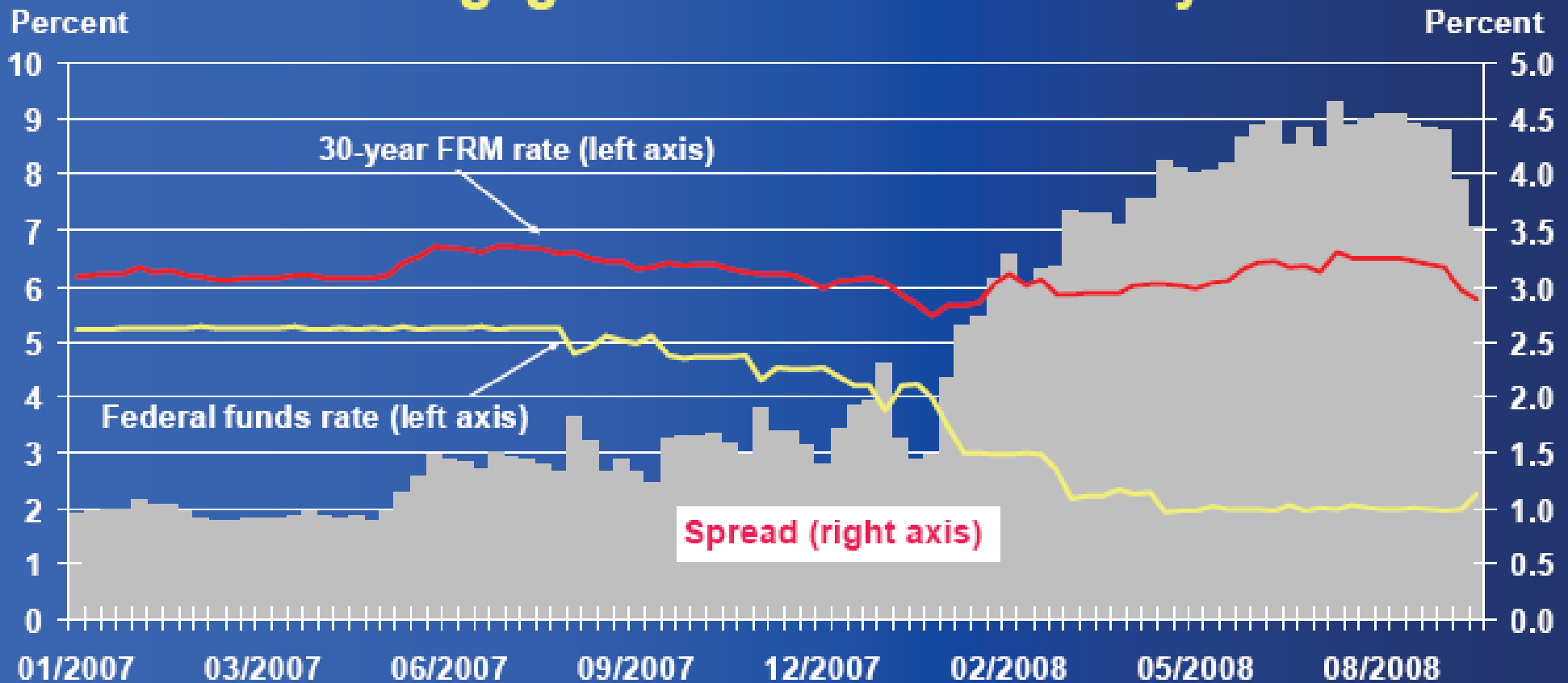
X. Credit crunch and liquidity freeze

Tightened standards for real estate loans

Net percentage of domestic respondents tightening standards for commercial real estate loans



Federal Reserve responds by cutting Fed funds rate, but mortgage rates remain relatively flat



Congress and White House responses

- HOPE NOW
- The Economic Stimulus Act of 2008
- Housing and Economic Recovery Act of 2008
- Conservatorship of Fannie Mae and Freddie Mac
- Temporary guaranty program for money market funds
- Temporary ban on short selling in selected companies
- Bailout package?

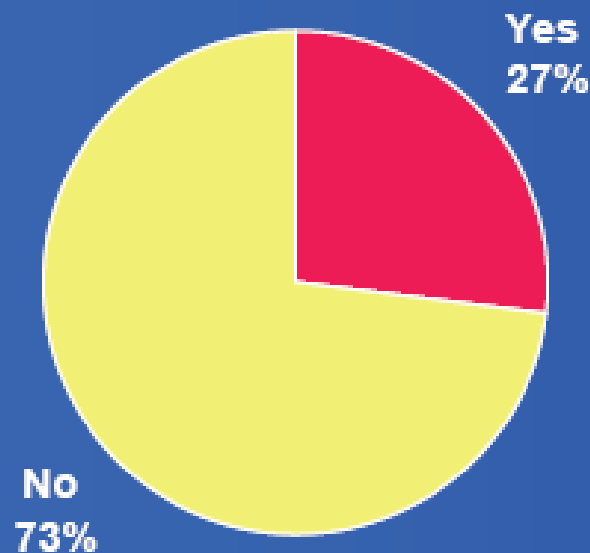
XI. When will we hit bottom?



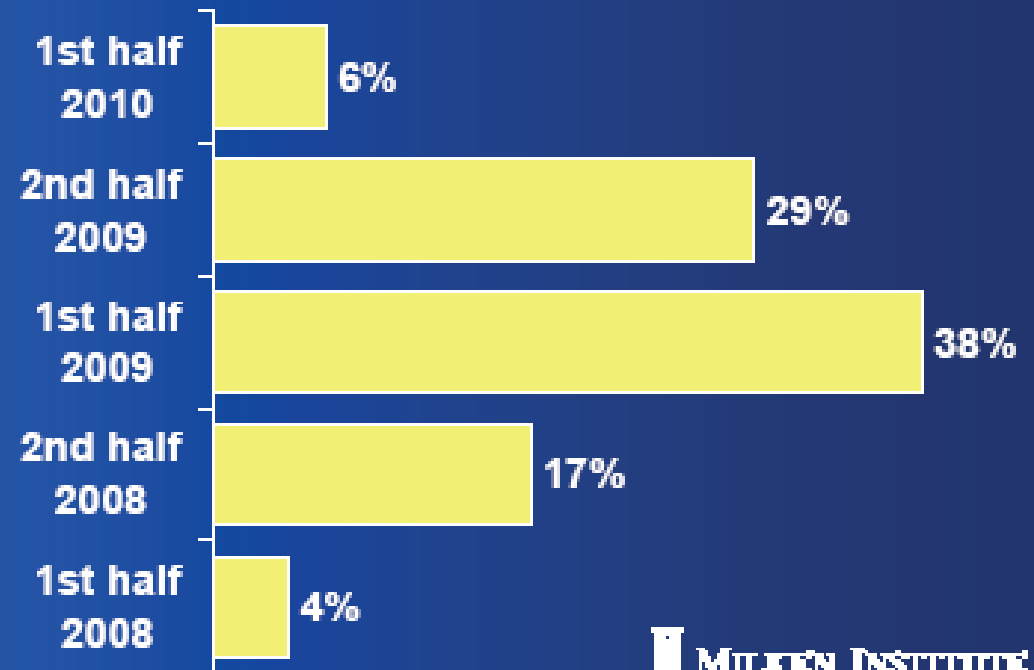
Looking for a bottom?

Economists say the economy isn't at its low point yet, and house prices likely won't get there until 2009

Does this feel like the bottom to a downturn?

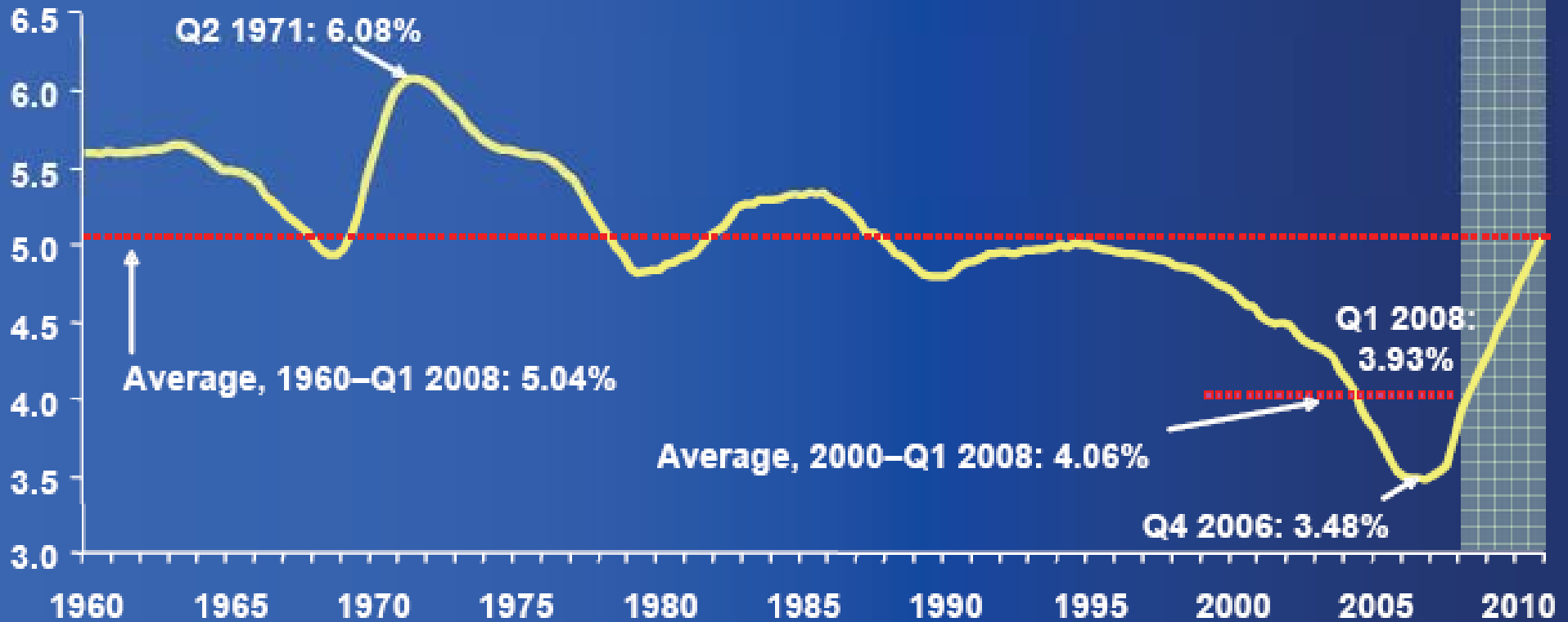


When will home prices hit bottom?



How far do home prices have to fall?

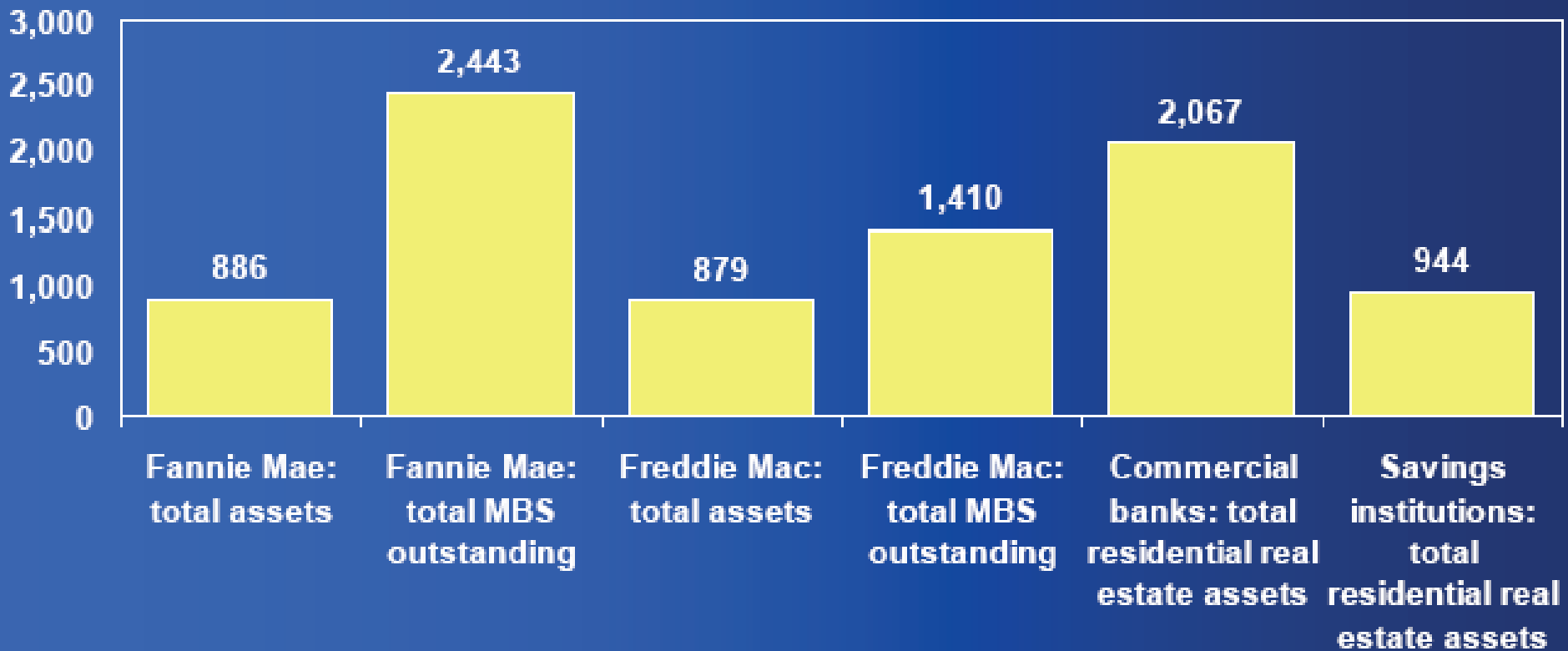
Annual rents as percent of home prices



XII. What went wrong

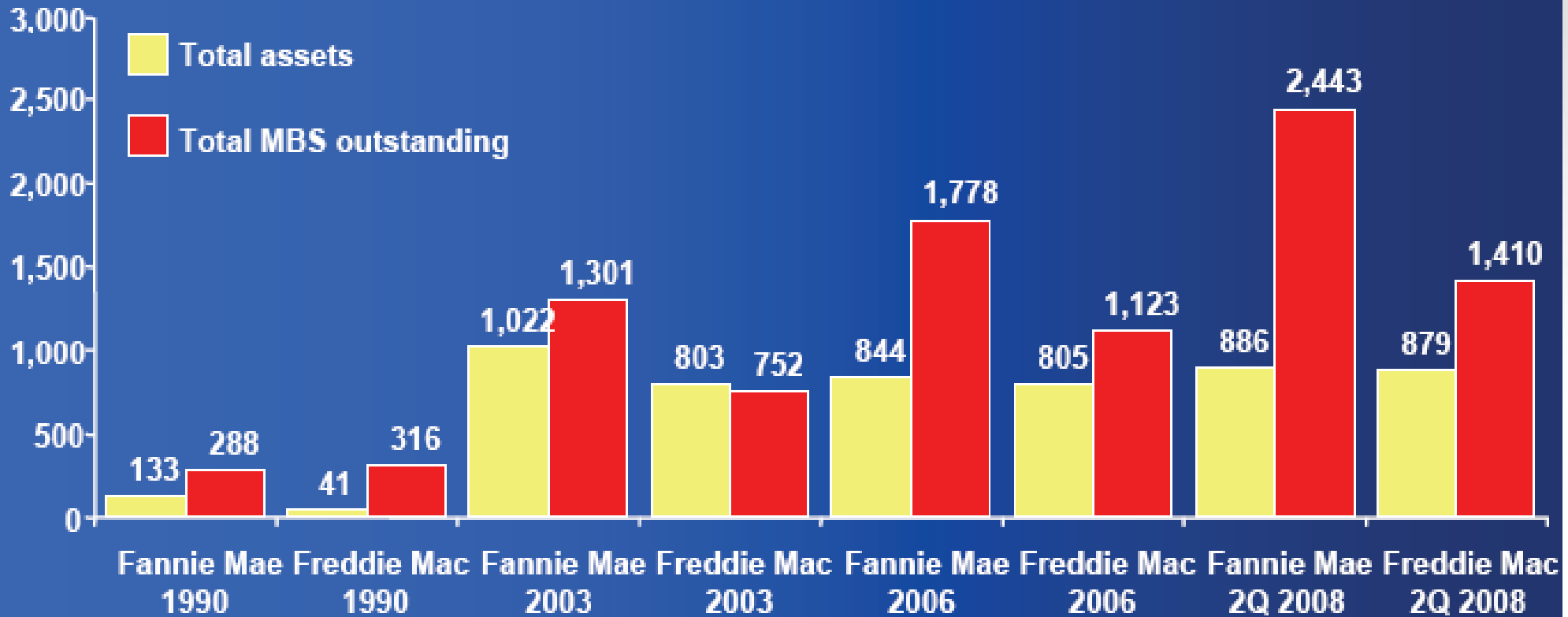
The importance of Fannie Mae and Freddie Mac

US\$ billions



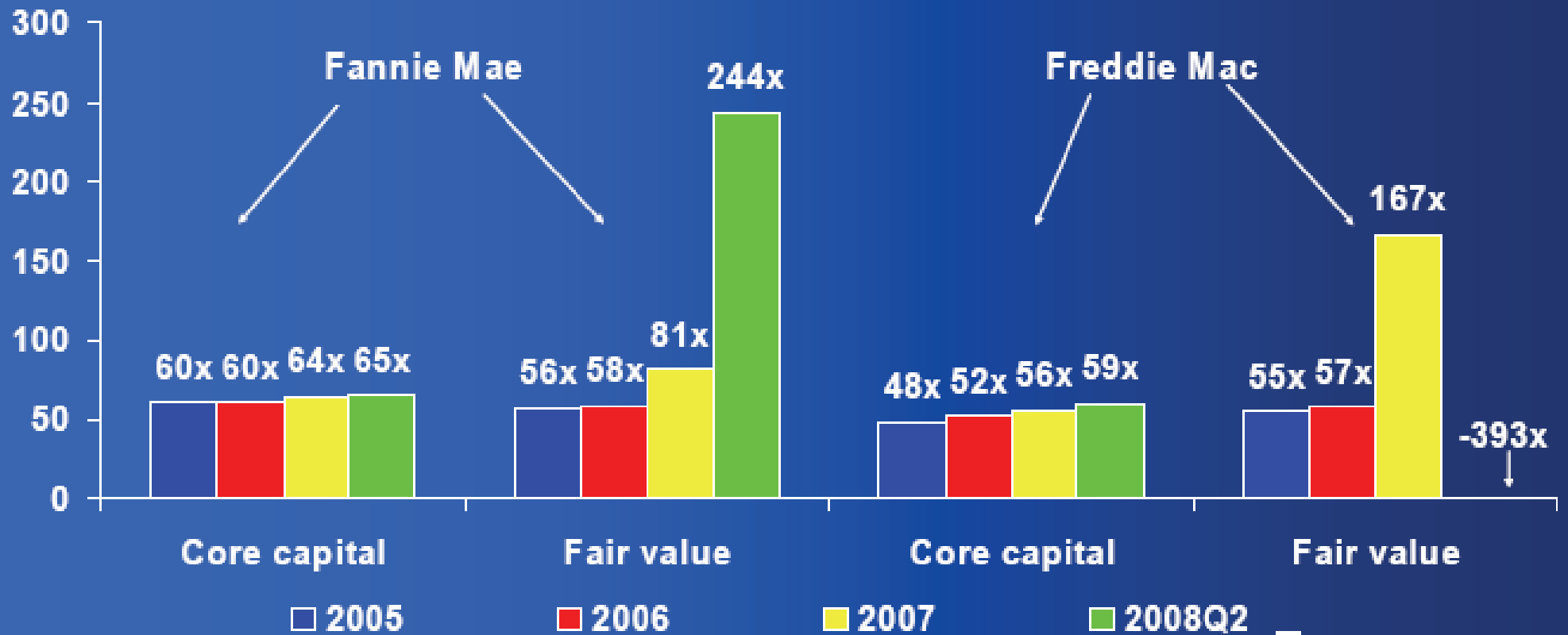
Fannie Mae and Freddie Mac: Too big with too little capital?

US\$ billions

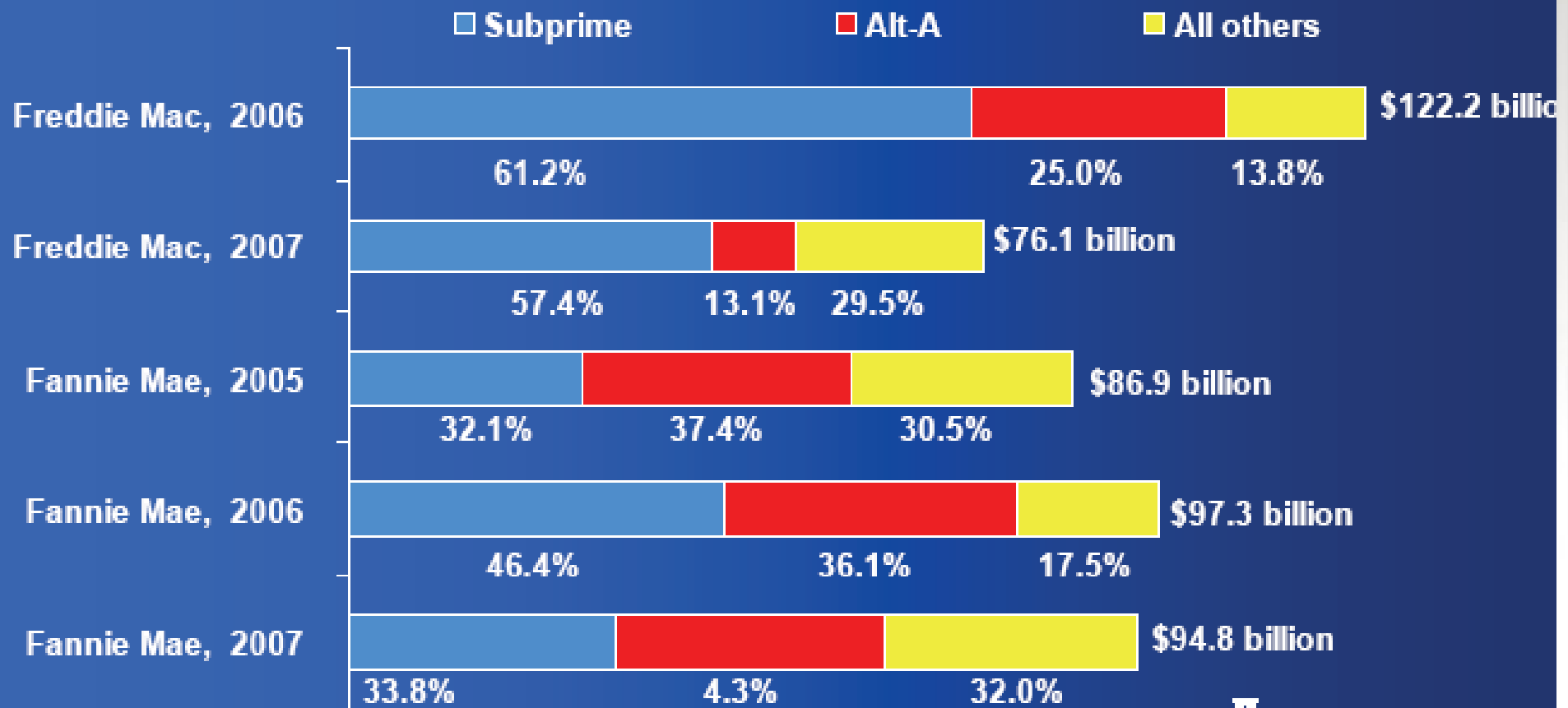


Fannie Mae and Freddie Mac are highly leveraged

Mortgage book of business over capital measures

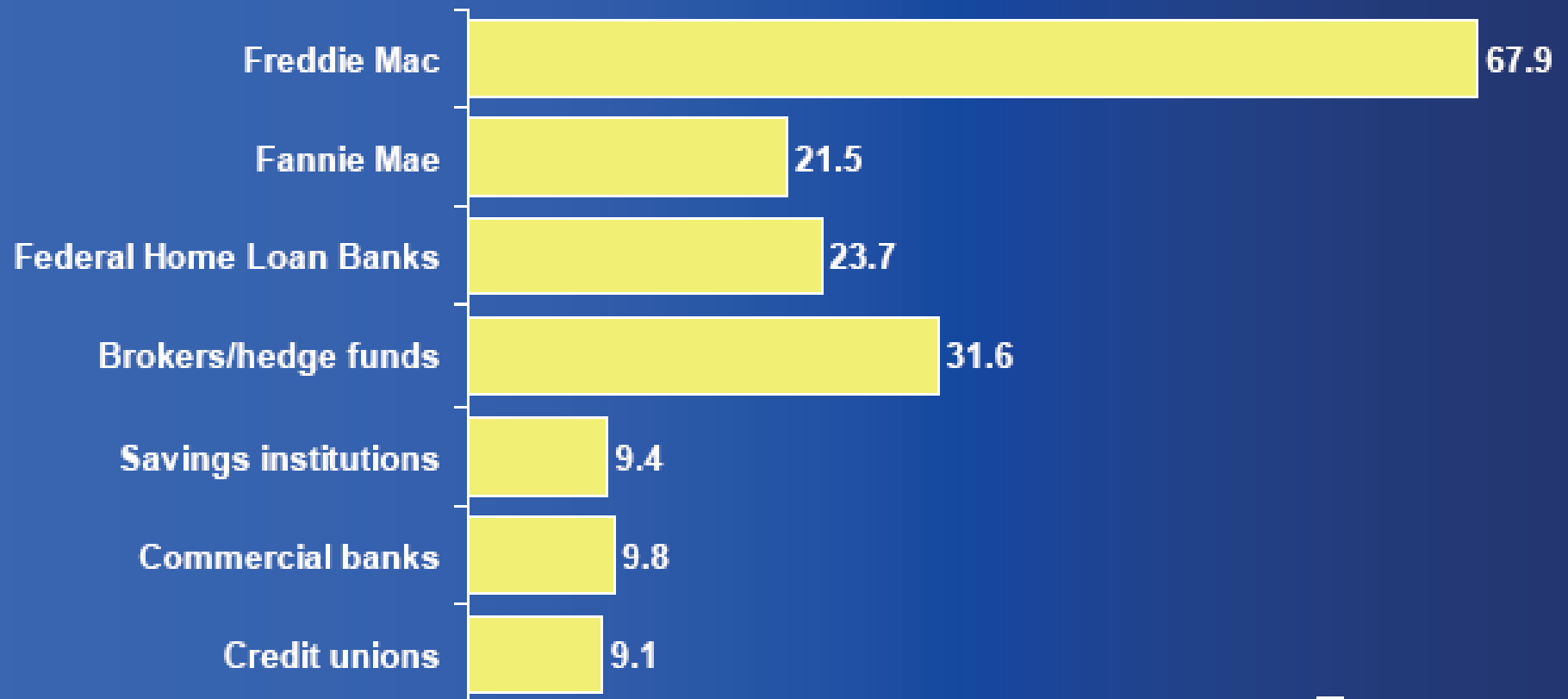


Freddie Mac's and Fannie Mae's retained private-label portfolios



Leverage ratios of different types of financial firms (June 2008)

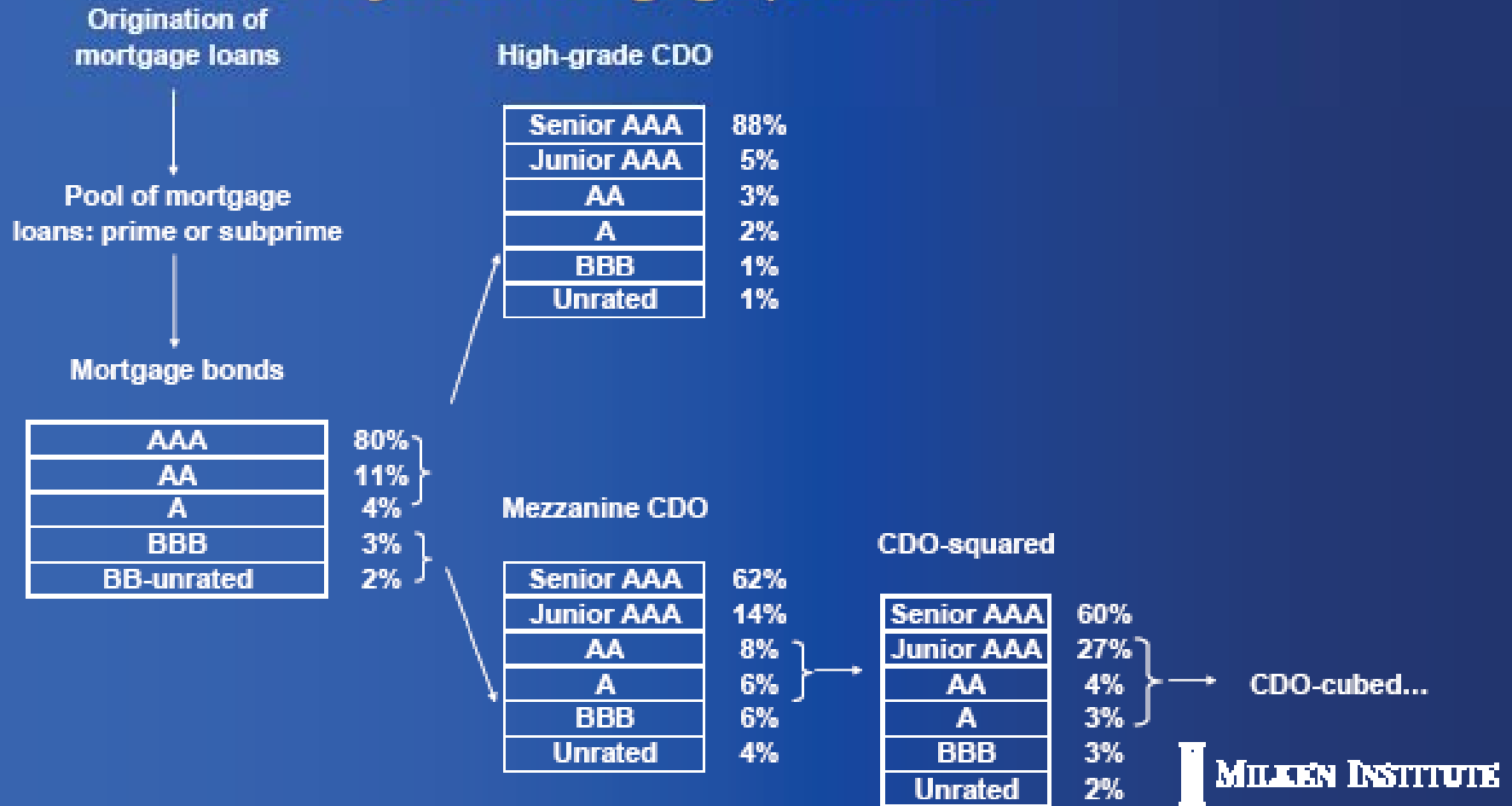
Leverage ratio, total assets/common equity



Sources: Federal Deposit Insurance Corporation, Office of Federal Housing Enterprise Oversight, National Credit Union Administration, Bloomberg, Google Finance, Milken Institute.

When is a AAA not a AAA?

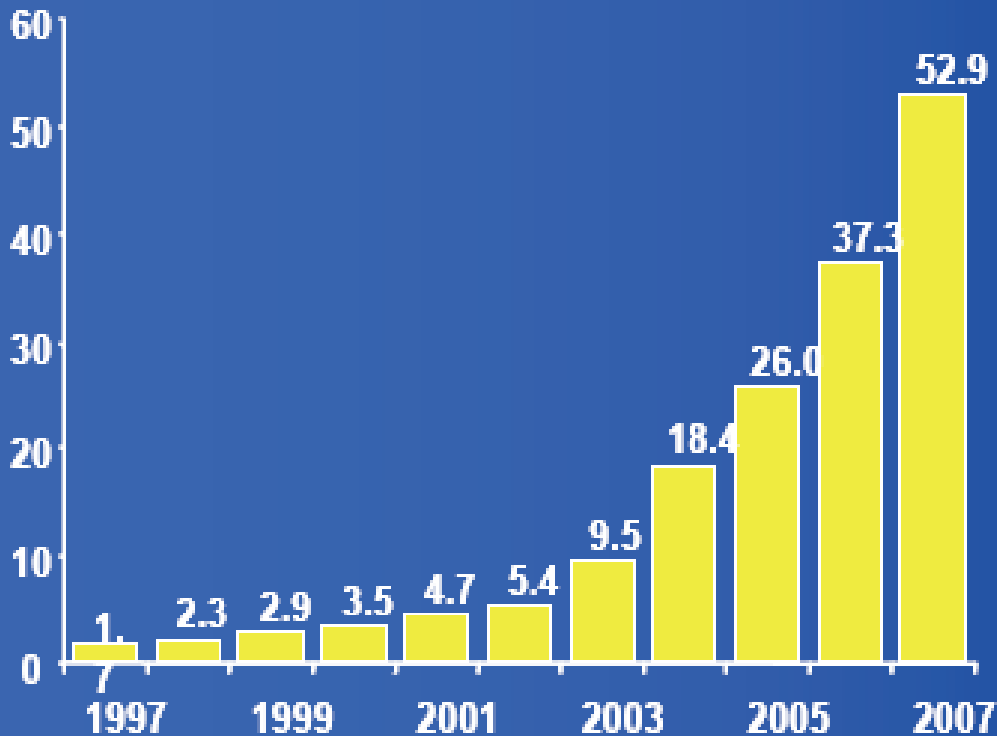
Multilayered mortgage products



Source: International Monetary Fund, Milken Institute

Mortgage loan fraud surges

Number of cases reported, thousands



Dollar losses in reported cases of mortgage fraud

US\$ millions

