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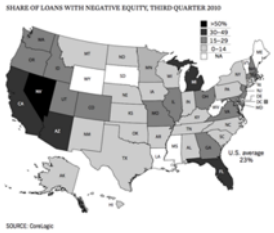
# Housing and the Financial Crisis




Economics in Action Talk

Ec 10b – Principles of Economics (Macroeconomics)

Professor Karen Dynan

March 2, 2021

# Outline for today

Basic facts about the mortgage boom and bust

The rise of riskier mortgages

Changes in the way mortgages were funded

Overly optimistic home price expectations

Fallout

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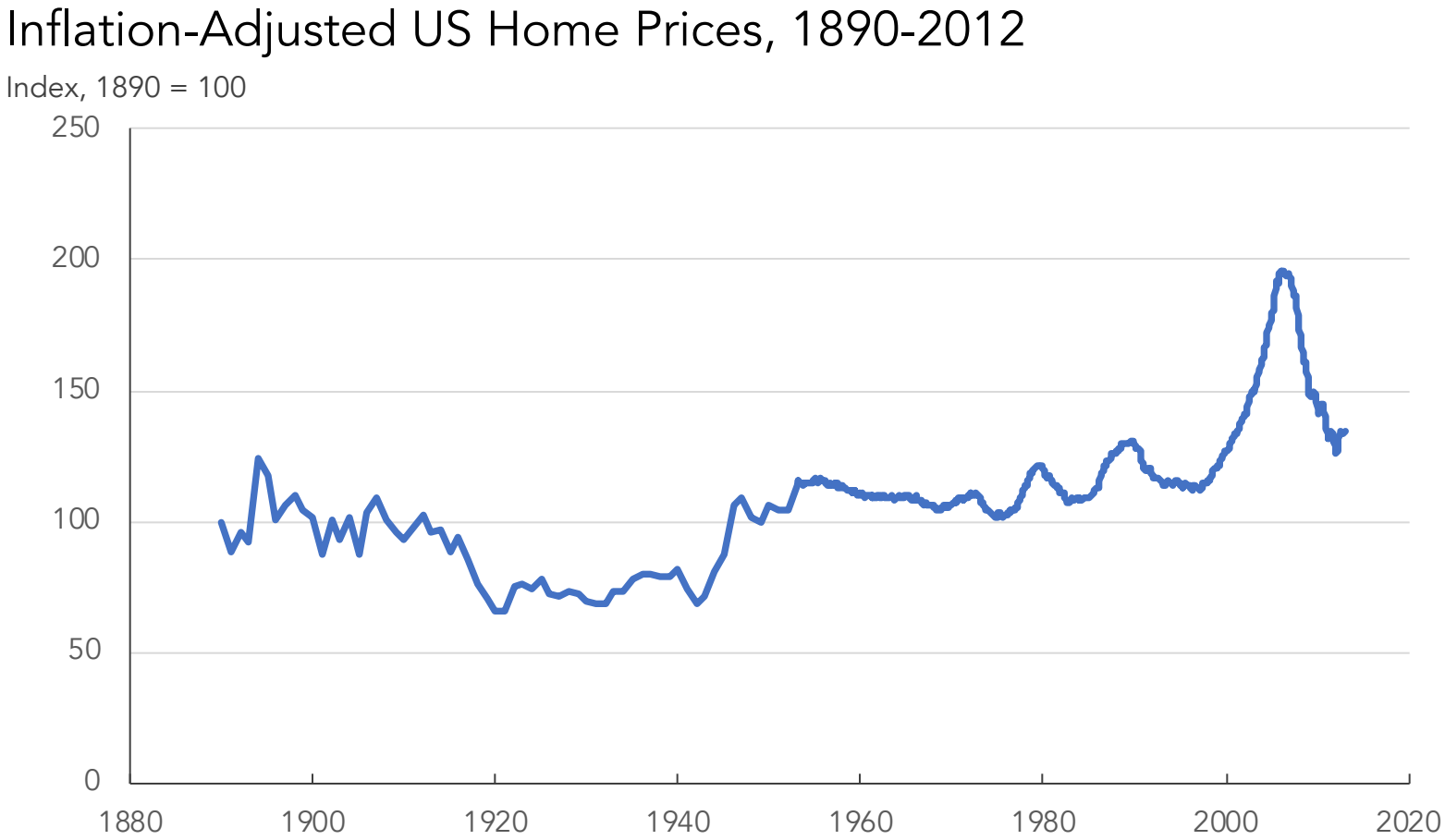
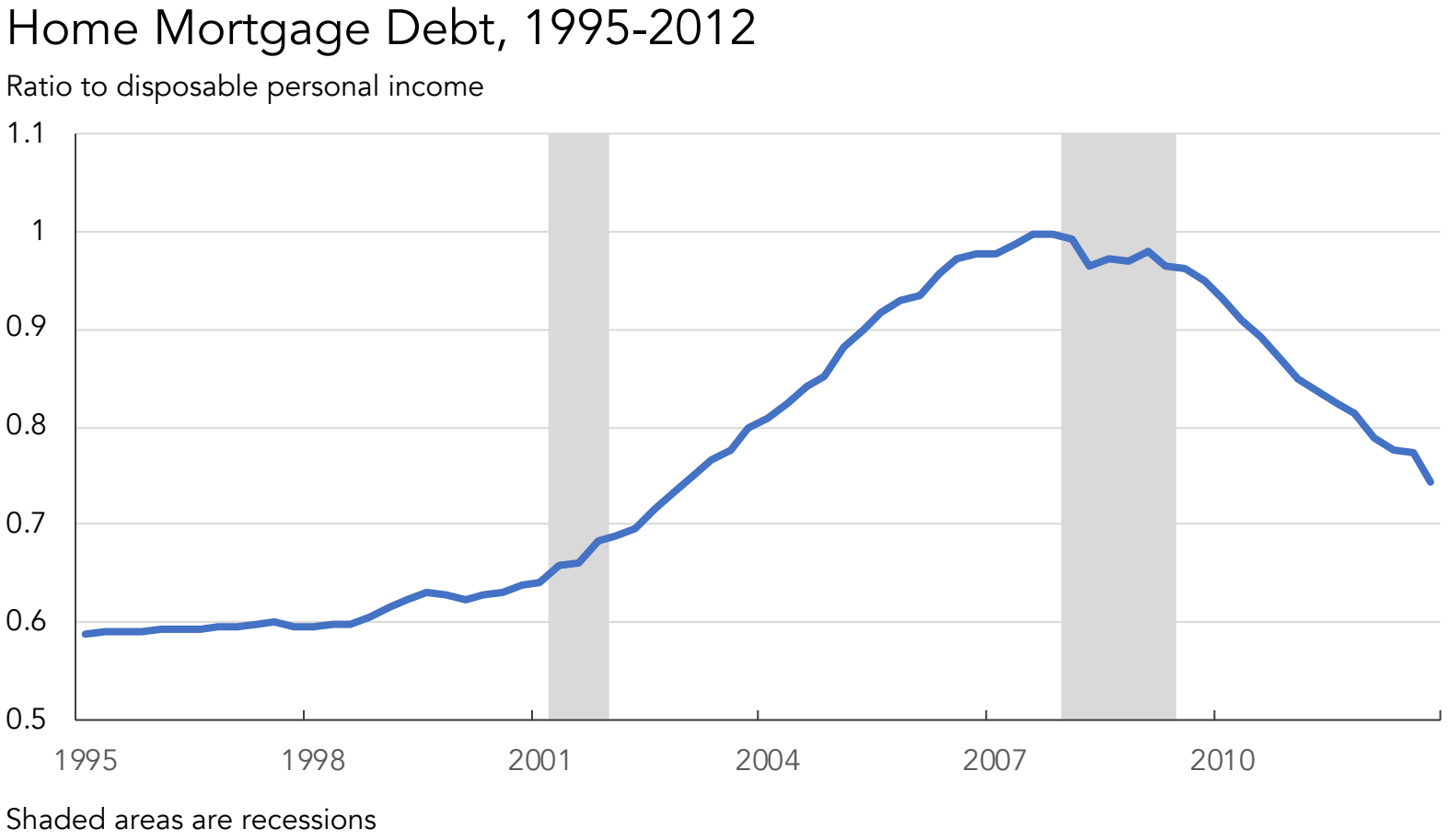
# The early 2000s saw an extraordinary boom and bust in home prices




Data from Robert Shiller

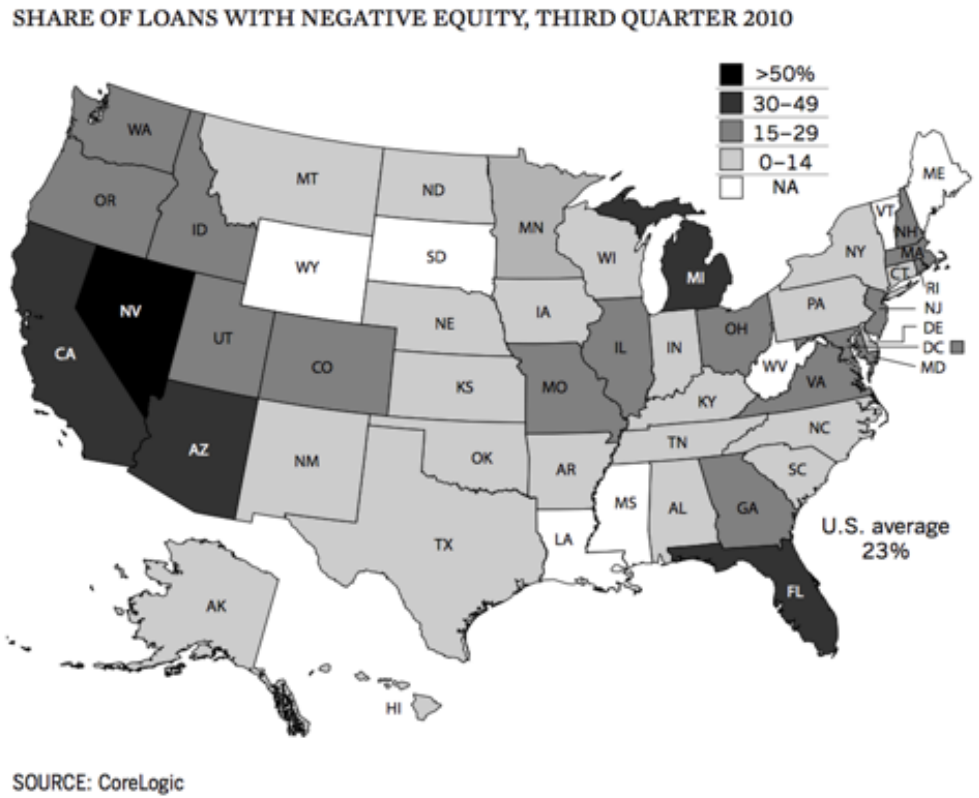
# The run-up in home prices was mirrored by rapid growth in mortgage debt




Data from US Financial Accounts and Bureau of Economic Analysis via FRED (here and here)

# The plunge home prices left nearly one-quarter of borrowers "underwater" with their mortgages

A mortgage is underwater if its outstanding balance exceeds the value of the underlying home




Screenshot from Financial Crisis Inquiry Commission Report

# In 2010, nearly 10 percent of US mortgages were seriously delinquent or in foreclosure

You become delinquent when you fail to make payments; foreclosure is the process by which the lender takes possession of a home after the borrower has failed to make the agreed-upon mortgage payments

Scene from *99 Homes*

Foreclosure often leads to displacement, which is costly and personally traumatic

It damages a borrower's credit record and impairs access to credit for years

Concentrations of foreclosures can reduce neighboring property values

# In the remainder of my talk today

I will focus on three important developments in the period leading up to the mortgage crisis and discuss what we know about how these developments bore on the facts we just looked at

The rise of **riskier mortgages**

Changes in the way **mortgages were funded**

Overly **optimistic home price expectations**

I will conclude the talk with some discussion of what happened next

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Screenshot from Perry (2008)

# In the early 2000s, subprime and Alt-A grew as a path for riskier borrowers to get mortgages

**Subprime**—mortgage loans made to borrowers with relatively poor credit histories, sometimes combined with the other risky features listed below (increasingly so, in the early 2000s):

- Limited or no documentation—sometimes known as NINJA ("no income, no job, no assets") loans
- Low downpayments
- Investor-owned properties
- Non-traditional repayment schemes (see next slide)

**Alt-A**—loans made to borrowers with strong credit scores, but which had some of these other risky features

# Non-traditional repayment schemes created benefits and risks

Traditional mortgages amortize—with each monthly payment the borrower pays interest and pays down some principal on the mortgage

**Interest-only mortgages** allow the borrower to only pay the interest accrued

**Option ARMs** (or "Pick-a-Pay" loans) allow the borrower to pay less than the interest charged in which case the outstanding balance of the loan will grow over time

*These nontraditional features kept the regular payments lower but also meant loan balances weren't shrinking or were growing—the result was high leverage (particularly given low initial downpayments in many cases)*

# An example of the risk (and potential rewards) associated with high leverage

Consider a highly leveraged homeowner:

| | |
|---|---|
| Value of home | = $200,000 |
| Mortgage balance | = $190,000 |
| Home equity | = $10,000 |

A common way to capture mortgage leverage is through the loan-to-value ratio

The loan-to-value ratio for this homeowner is 95% (for context, the median LTV on new subprime loans in 2006 was 100%)

If home prices rise by 10% ($20,000), the homeowner now has $30,000 of home equity—**she has tripled her money**!

But, if home prices fall by 10% ($20,000), the homeowner has not only lost all her housing wealth—**she is underwater**!

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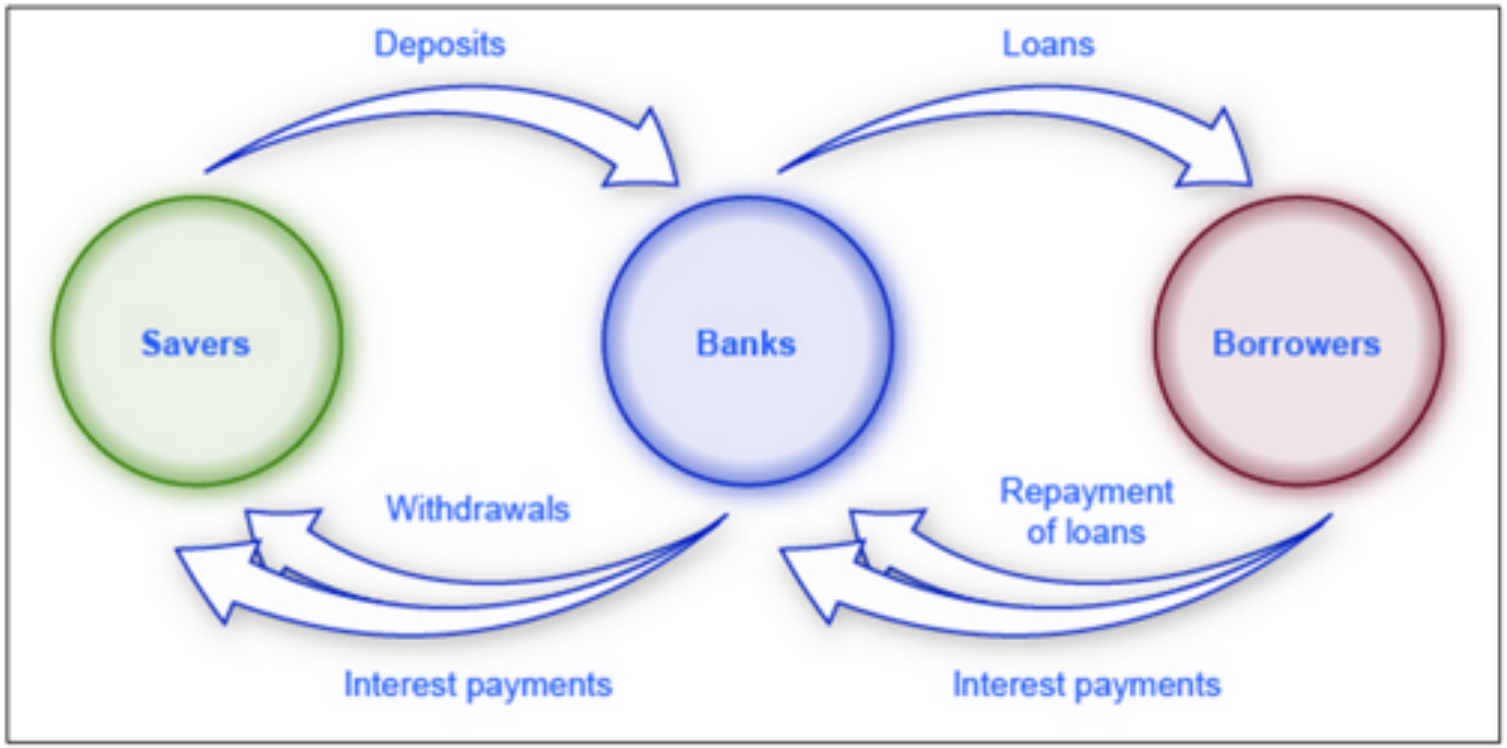
# Traditional model—banks make mortgage loans and hold them in their own portfolios




Screenshot from your February 24th Ec 10b lecture

# Newer model—banks sell mortgages to entities that securitize them and sell the resulting security to investors

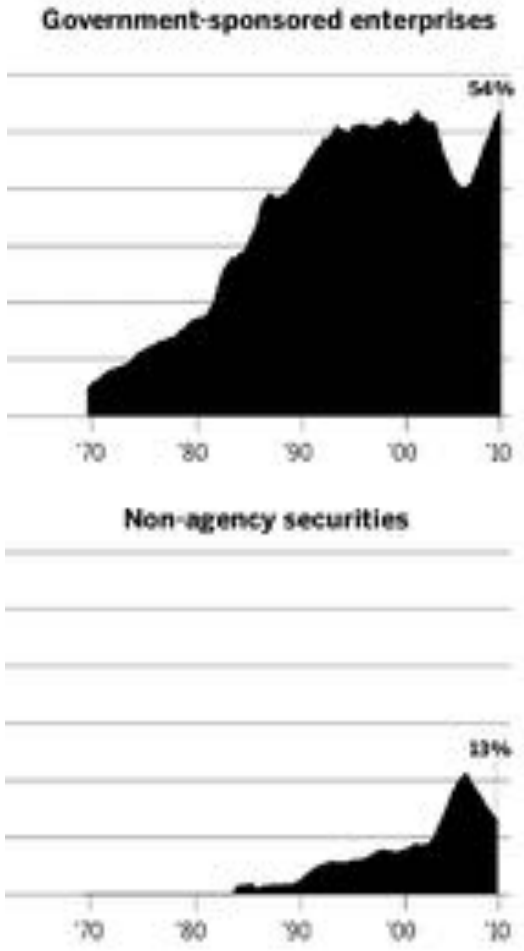
Securitization is the practice of pooling together loans and then selling the cash flow from the loans—the interest and principal payments—to financial investors as a security (a "mortgage-backed security" or MBS)*

Roughly speaking, the investor is buying the borrower's future mortgage payments

Note that banks can still engage in profitable maturity transformation by selling mortgages and buying back MBS—with the added benefit that securitization is helping them to diversify risk and (in some cases) lower their capital requirements

*Mortgage-related securities can be created in other ways, including by re-securitizing MBS into collateralized debt obligations but we won't worry about this for now

# Over the decades, substantial growth in securitization




← The GSEs (Fannie Mae and Freddie Mac) helped forge the mortgage securitization business in the 1970s, 1980s, 1980s, buying **safer mortgages with limited LTVs**

← "Private-label" mortgage-backed securitization grew in the early 2000s, providing **most of the funding for the expansion of subprime and Alt-A loans**

Screenshot from Financial Crisis Inquiry Commission Report

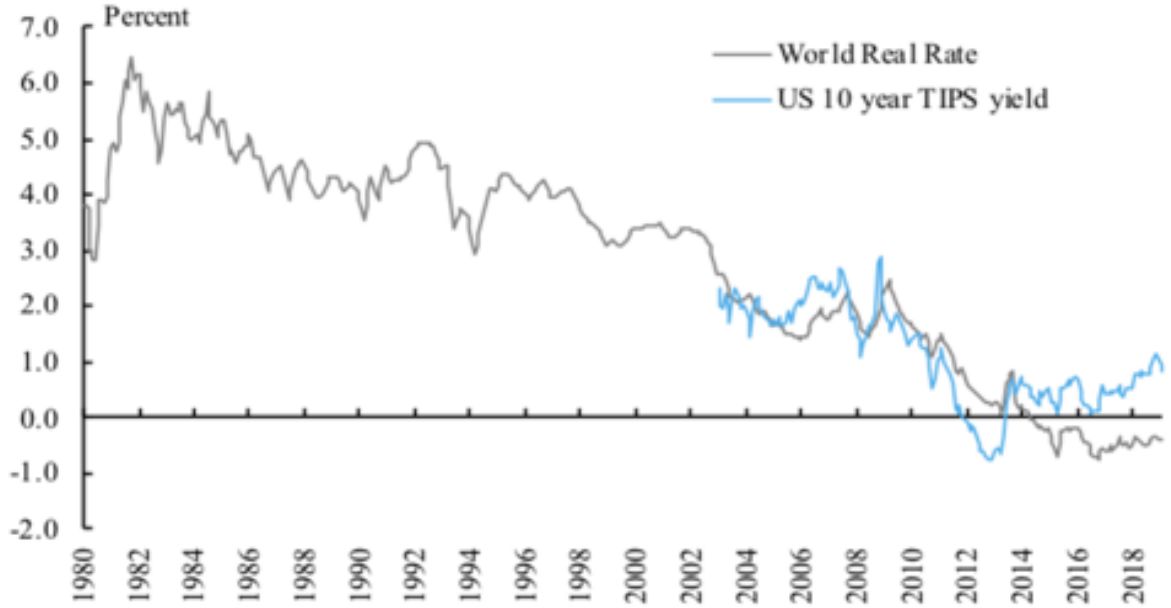
# One attraction of securitization for investors—it created "safe" investments

**GSE MBS included a credit guarantee** that protected investors from losses associated with defaults of the underlying mortgages

**Privately securitized MBS were divided into "tranches"** that were ordered according to their priority in receiving cash flow from the pool

> **If you didn't like risk, you could buy the "Triple-A" tranches** that yielded less but had income streams that were (in principle) unlikely to be disrupted by defaults

# Important context (which you'll learn more about in future classes)




We had seen a long-term downtrend in government interest rates

This downtrend left investors **particularly interested in securities that were "safe" but yielded a little more** than government bonds

Screenshot from Summers and Rachel (2019)

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# The evidence we've seen so far raises some important questions

Why were borrowers, lenders, and investors so convinced these contracts and the related investments were safe?

A lot was at stake:

> It wasn't just borrowers who suffered when their underwater mortgages were foreclosed upon—lenders/investors lost the difference between the value of the mortgage and the price at which they could sell the home

Why were regulators complacent?

Let's consider how overly optimistic home price expectations might help answer these questions

# Home price optimism seems like a good answer

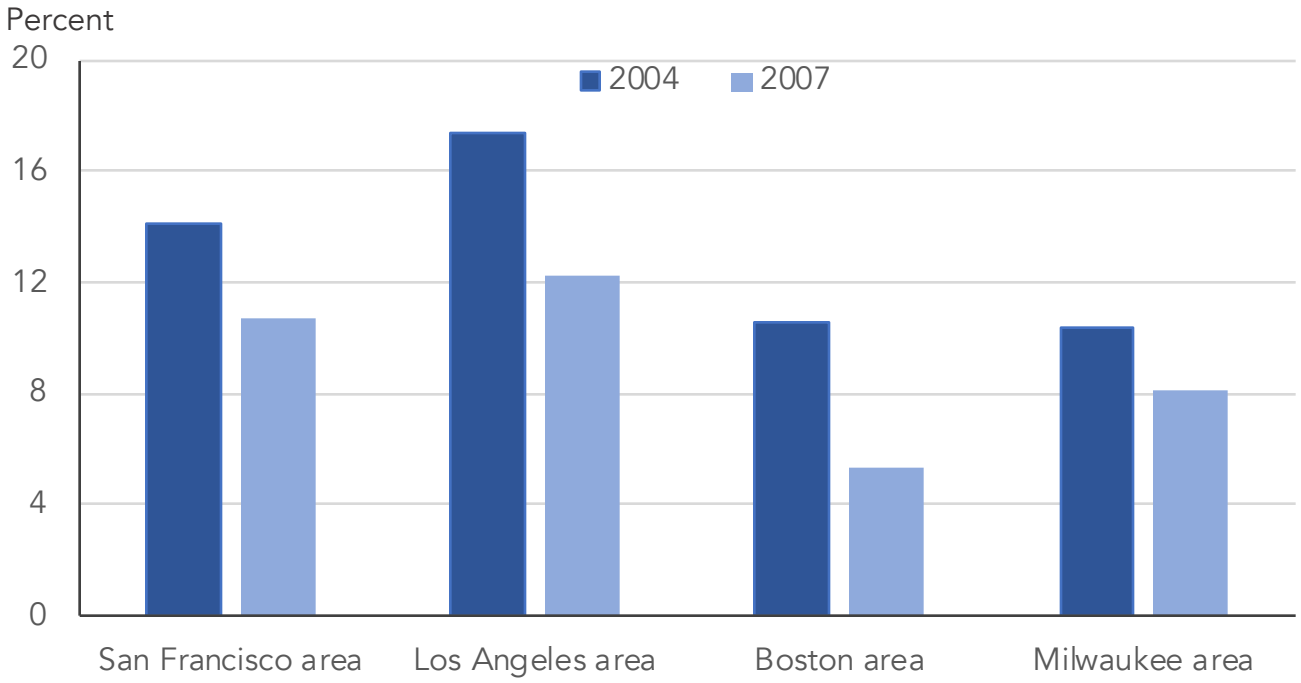
When home prices are expected to rise rapidly, **the risk associated with these contracts is greatly muted**

Lose your job and **can't make your mortgage payments**?

- If your home is worth more than your mortgage: you can sell your home, pay off your mortgage, walk away with some cash, and the lenders/investors don't take a loss
- If you are underwater with your mortgage: you can't pay off your loan by selling your home—you'll probably be foreclosed upon and the lenders/investors will take losses

# Households were very optimistic about home prices

*"On average over the next 10 years, how much do you expect the value of your property to change each year?"*




Data from Case and Shiller (2012)

Results from a survey conducted of people who bought homes in previous year in and around major cities

# Wall Street published incredibly optimistic analysis

| Name | Scenario | Probability | Cum Loss |
|---|---|---|---|
| (1) Aggressive | 11% HPA over the life of the pool | 15% | 1.4% |
| (2) | 8% HPA for life | 15% | 3.2% |
| (3) Base | HPA slows to 5% by end-2005 | 50% | 5.6% |
| (4) Pessimistic | 0% HPA for the next 3 years 5% thereafter | 15% | 11.1% |
| (5) Meltdown | -5% for the next 3 years, 5% thereafter | 5% | 17.1% |

**Table 2.** Conditional Forecasts of Losses on Subprime Investments from Lehman Brothers. This table shows that investors knew that subprime investments would turn sour if housing prices fell. The "meltdown" scenario for housing prices above implies cumulative losses of 17.1 percent on subprime-backed bonds; such losses would be large enough to wipe out all but the highest-rated tranches of most subprime deals. The table also shows that investors placed small probabilities on these adverse price scenarios, a fact that explains why they were so willing to buy these bonds.
Source: "HEL Bond Profile Across HPA Scenarios" from Lehman Brothers: "U.S. ABS Weekly Outlook," August 15, 2005.

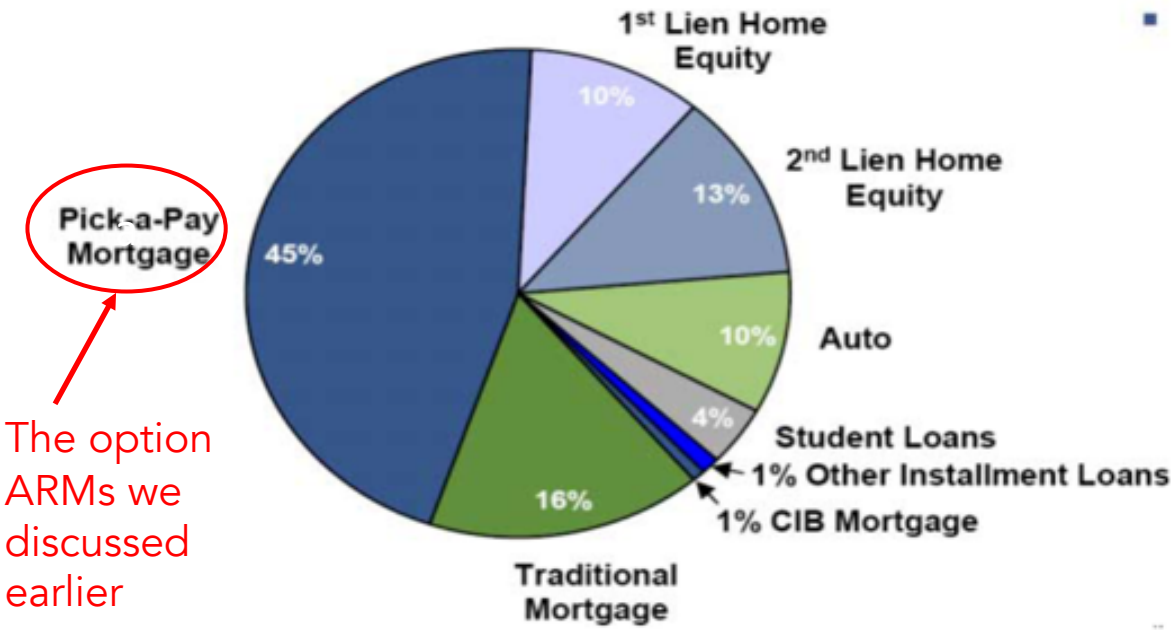
Screenshot from Foote, Gerardi, and Willen (2012)

From a 2005 Lehman Brothers analysis of the likely losses on subprime mortgage securities under different scenarios about home price appreciation (HPA)

(The thing to notice is the weights they put on the different scenarios)

# Some have argued that financial firms recognized the home price bubble and were just trying to make money by selling mortgage securities to naïve investors

The consumer portfolio of Wachovia shortly before the government forced a sale to Wells Fargo to avoid its failure in 2008




The option ARMs we discussed earlier

But, this narrative is belied by the fact that many financial firms were highly exposed to the risk of declining home prices themselves

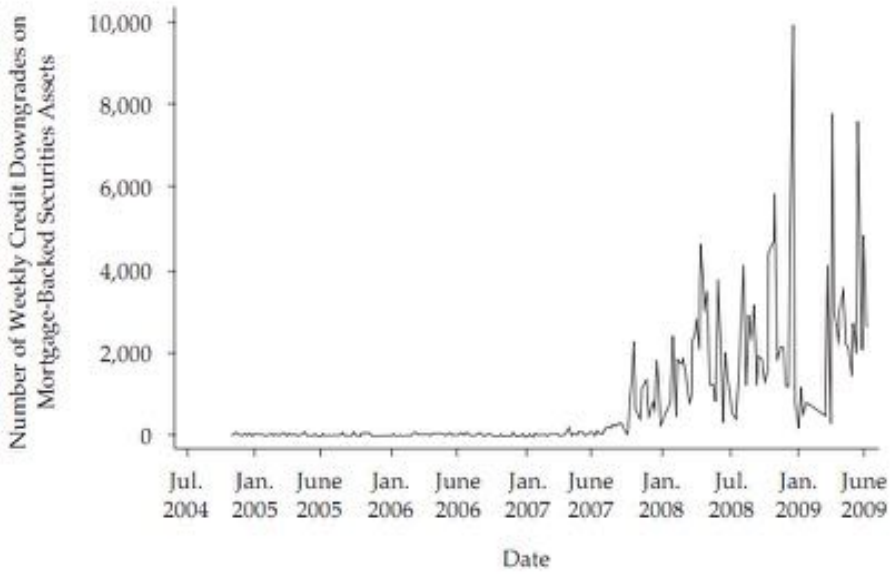
(And ultimately we saw a lot of financial firms taking huge losses!)

# How about the ratings agencies? (A key factor behind why investors were willing to buy the securities)

The credit ratings agencies had the same optimistic view of home prices

The ratings agencies greatly underestimated the potential losses on PLS and had to subsequently downgrade but their initial model estimates were "preternaturally" accurate conditional on a given decline in home prices (see Foote and Willen, 2017)

Figure 2.8 Credit Downgrades of Mortgage-Backed Securities, by Month, 2008




*Source:* Authors' tabulation, based on ratings actions reported by Bloomberg Professional Terminal.
*Note:* Downgrades include all negative ratings actions on private-label mortgage-backed securities and mortgage-related collateralized debt obligations by Moody's, Standard & Poor's, and Fitch.

Screenshot from Grusky, Western, and Wimer (2011)

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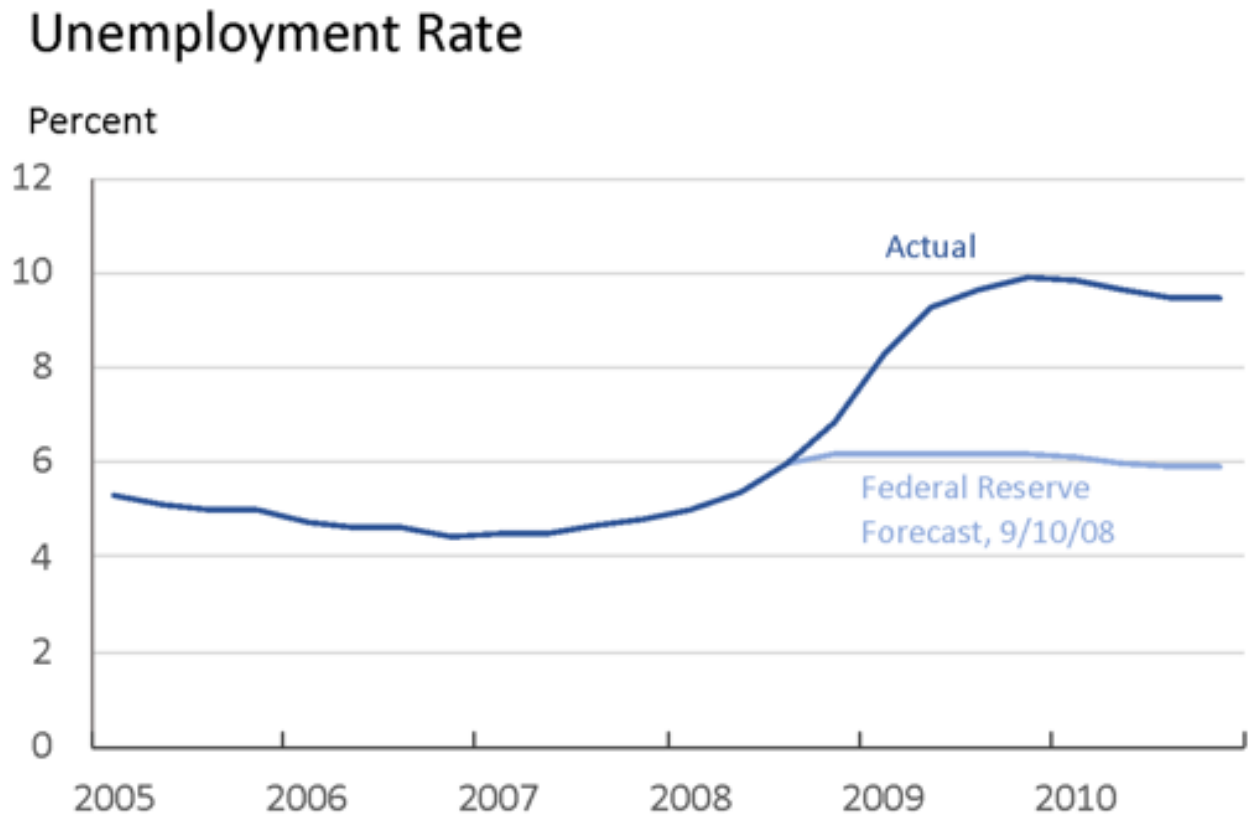
# The mortgage crisis ultimately wreaked havoc on the financial system

By September 2008, mortgage-related losses had **crippled important financial institutions** such as Countrywide Financial, Wachovia, Bear Stearns, Washington Mutual, Fannie Mae, and Freddie Mac

By this time, it was recognized that there would be **many channels through which the economy would weaken**—including lower wealth, an overbuild of housing, reduced credit access

# And, yet, forecasters did not see anything like the Great Recession coming



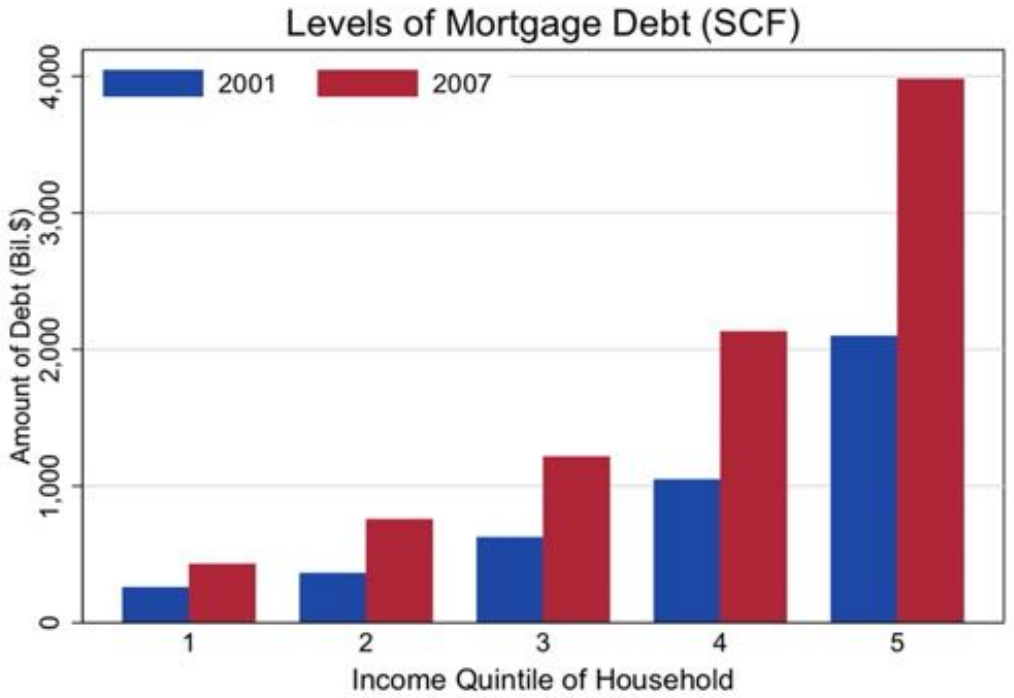

Data from the [Philadelphia Fed Greenbook Data Set]

# What explains the miss? Factor 1—lack of recognition that it wasn't just subprime borrowers with high leverage

Households across the income (and credit) distribution were spurred to do more borrowing by rapidly rising home prices

Many of these households were "extracting equity" through cash-out refinancings to fund other types of spending

The point being that lots of types of borrowers were at risk of going underwater when home prices plunged




Screenshot from Foote, Loewenstein, and Willen (2016)

# What explains the miss? Factor 2—lack of recognition of how mortgage losses would be amplified through the financial system

Credit markets seized up in late September 2008 due to panic about the exposure of financial institutions to mortgage losses

- There were widespread liquidity problems, failures, and near-failures, including in the regulated banking sector and among systemically important institutions

You can take EC 1746 if you want to know more about this amplification, as well as:

- What policymakers did to stop the crisis and the recession
- What policies we have put in place to protect homeowners and the financial system from another crisis

# Summary

Over-optimism about home prices (the home price "bubble") likely played a central role fueling the housing and mortgage boom and bust

The rise in home prices was enabled and sustained by the rise of riskier mortgages and financial engineering that drew in a large amount of funding for mortgages

The losses were amplified by the pre-crisis structure of the financial system, leading to the global financial crisis that precipitated the Great Recession