The U.S. Housing Crisis: Lessons Learned

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Is/Was The U.S. Housing Market A "House of Cards?"

Cultural Background

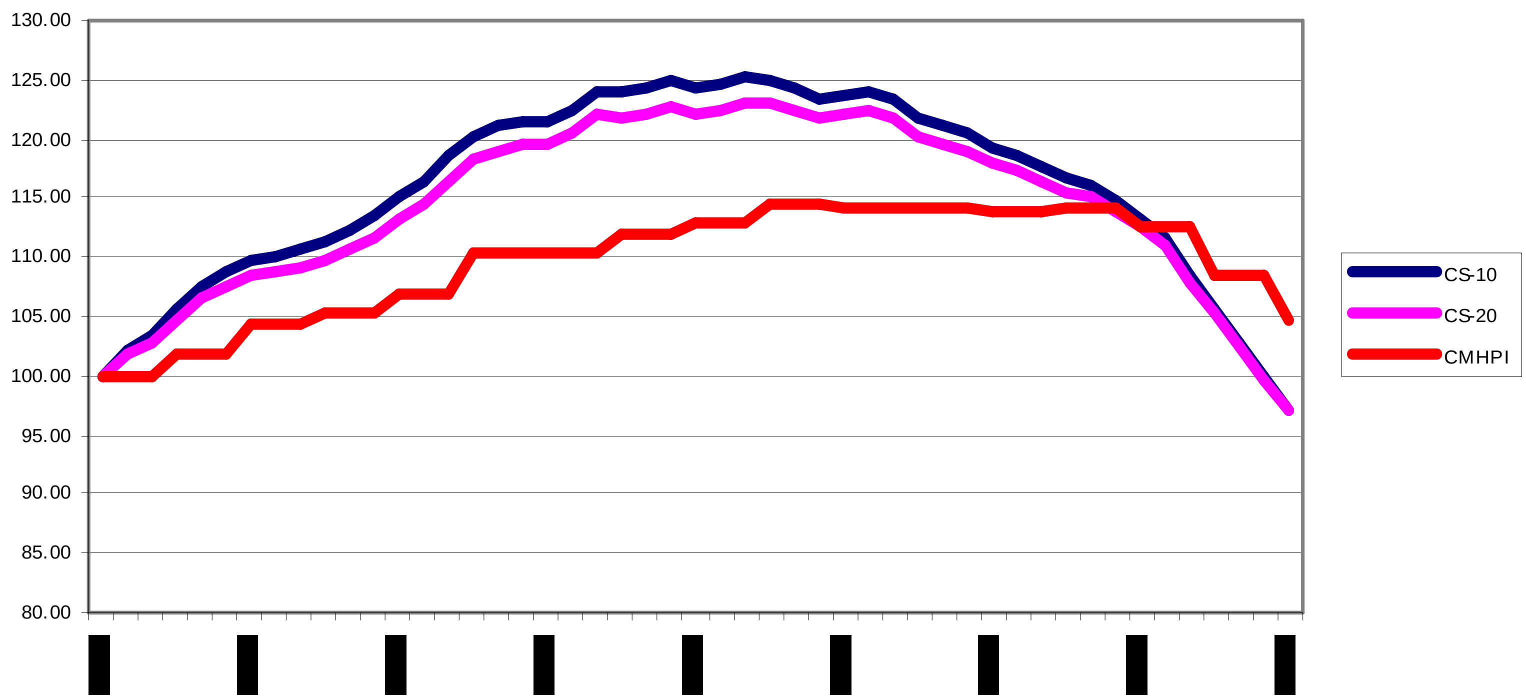
- In the U.S., homeownership has been elevated to the status of “The American Dream”
- Homeownership has been continuously supported by U.S. presidents
- There is a substantial subsidy for homeownership embedded in the U.S. tax code
- There are many special interest groups and advocacy groups that support homeownership
- Implication: the current downturn in the U.S. housing market is viewed as a “crisis”

Questions That Will Be Answered In This Discussion

- 1. What is the nature and extent of the U.S. housing crisis? How is the downturn linked to the preceding housing boom?
- 2. What were the fundamental causes of the housing boom and what were the facilitating factors?
- 3. What factors caused the end of the boom?
- 4. What lessons can be learned from the crisis and what policies are appropriate?

1. What Is The Extent Of The Housing Downturn In The U.S. House Prices?

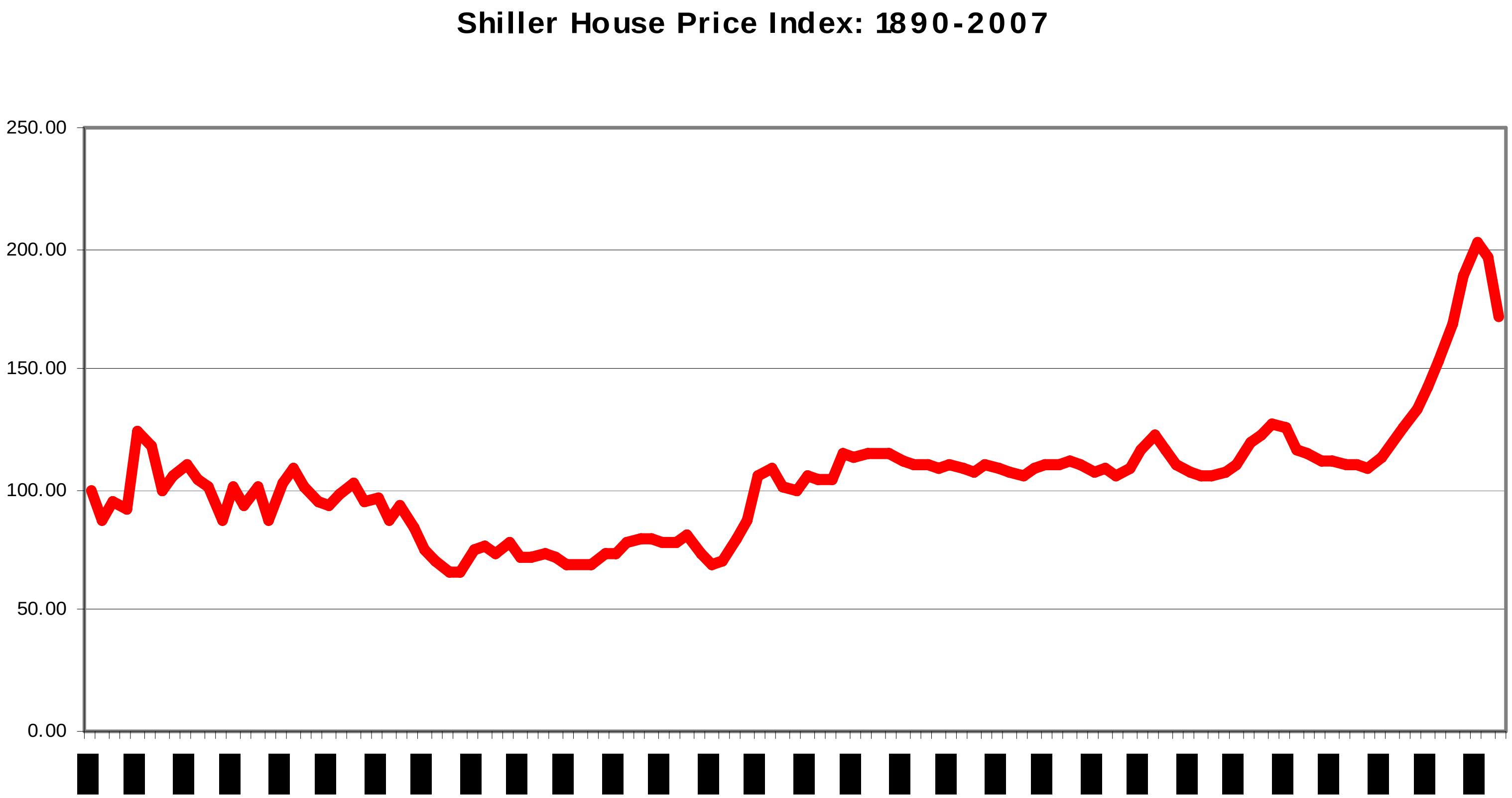
U.S. Real House Price Indexes: 2004:1-2008:1



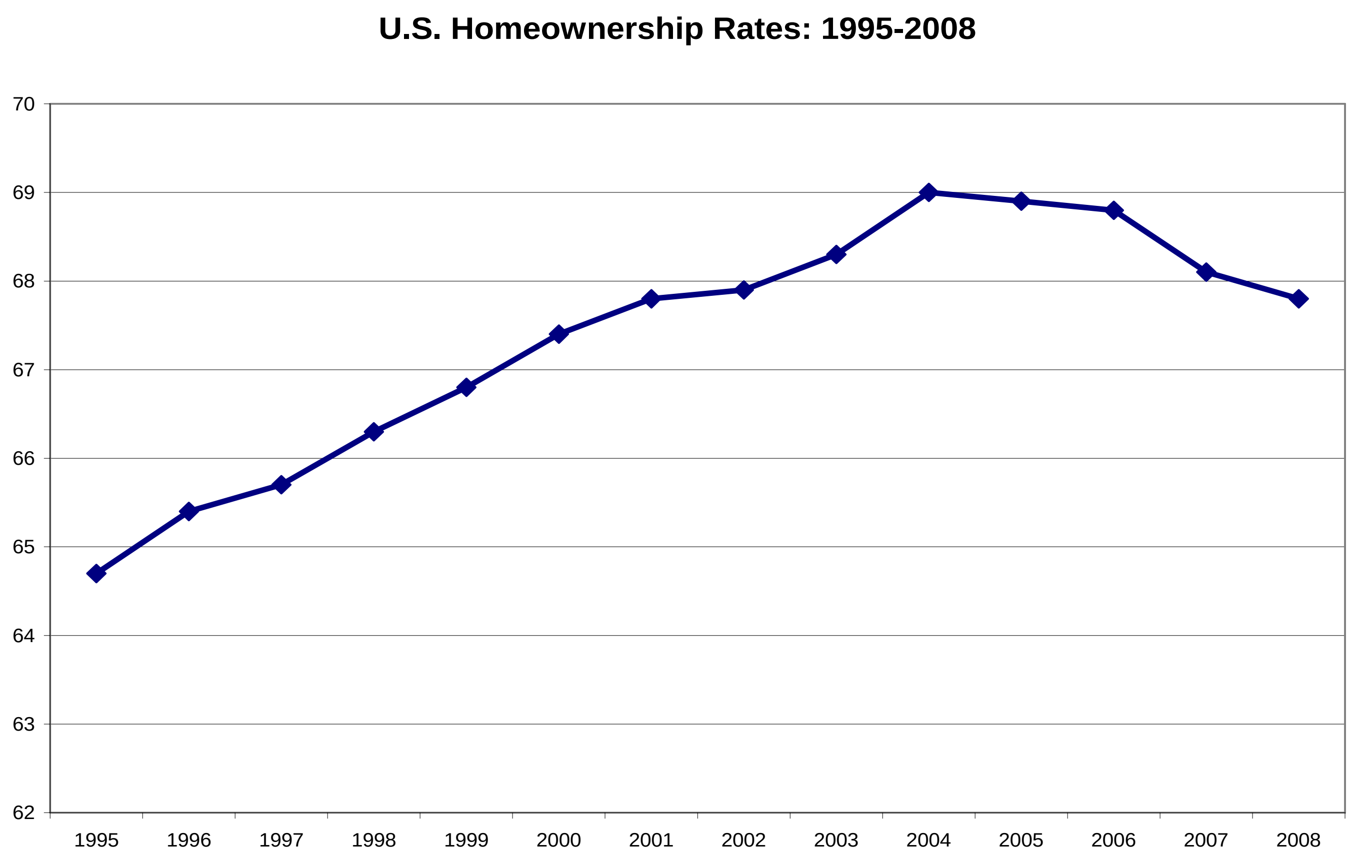
Real House Price Changes

- Case-Shiller 20 city index:
  - 25% increase 2004:1-2006:1
  - 28% decline 2006:1-2008:1
- Freddie Mac index:
  - 14% increase 2004:1-2006:1
  - 10% decline 2006:1-2008:1
- The housing boom is likely the largest in U.S. history and the eventual total decrease in real house prices is potentially the largest as well.

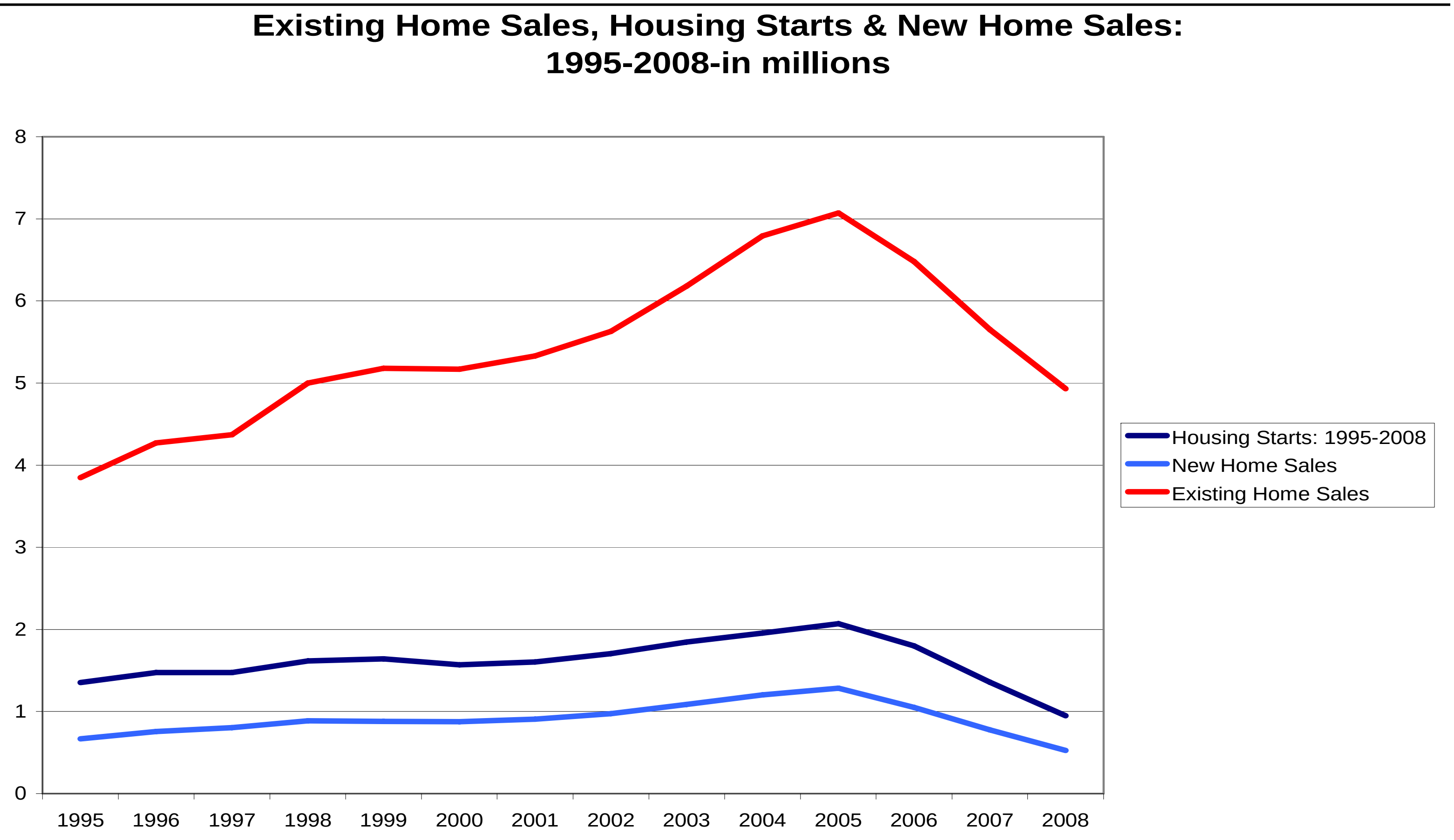
U.S. Real House Prices: 1890-2007



U.S. Homeownership Rates: 1995-2008



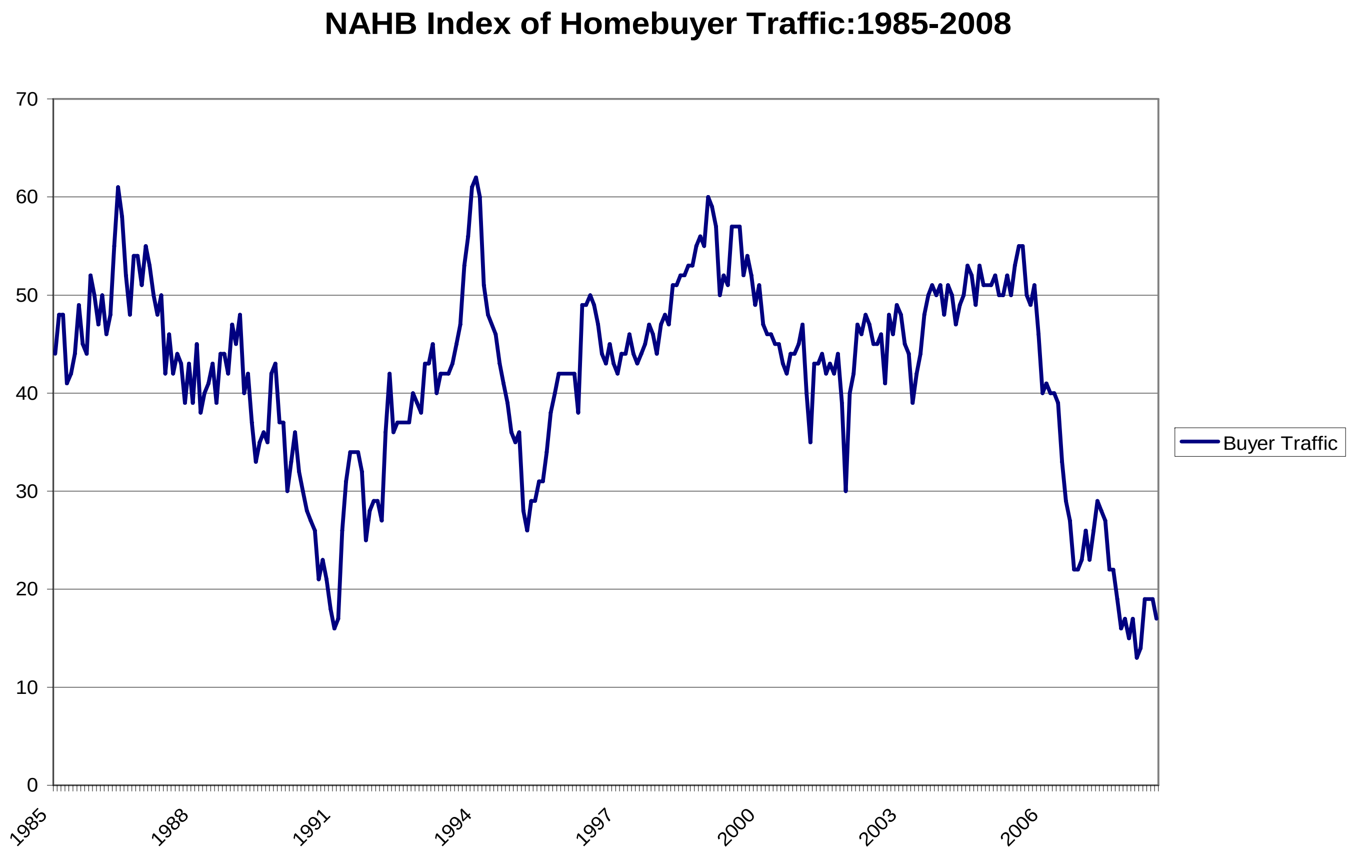
Existing Home Sales, Housing Starts & New Home Sales



The Downturn In Housing Supply

- The reduction in housing starts, new home sales, and existing home sales began mid-2005.
- These reductions occurred in all regions, concentrated in single unit detached housing.
- Housing starts have fallen from over 2 million annually to less than 1 million currently.
- Note: there was a large increase in supply during 1995 to 2005, steadily rising from 1.3 to 2 million units.

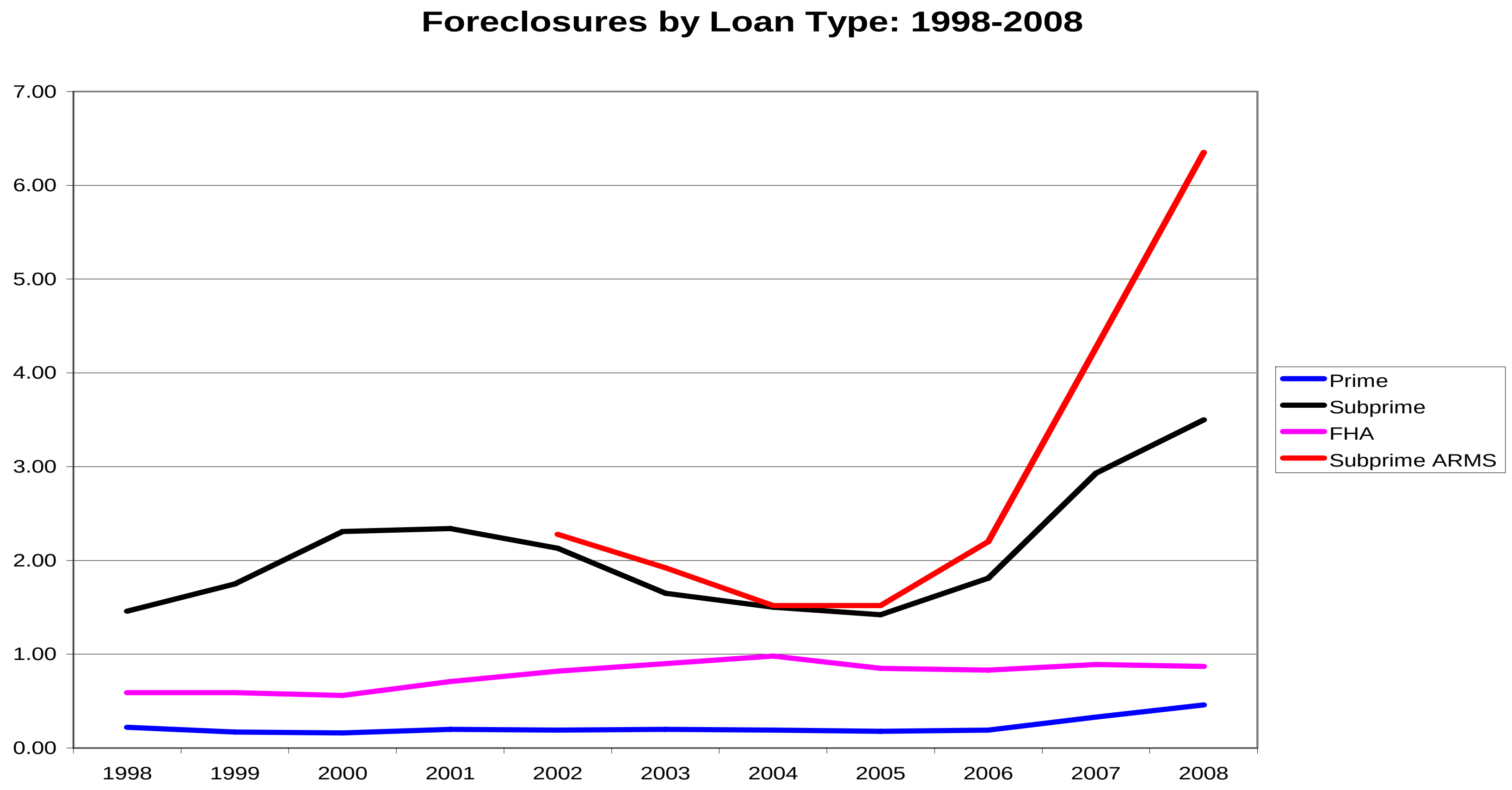
The Downturn Is Home Sales Is Likely To Continue



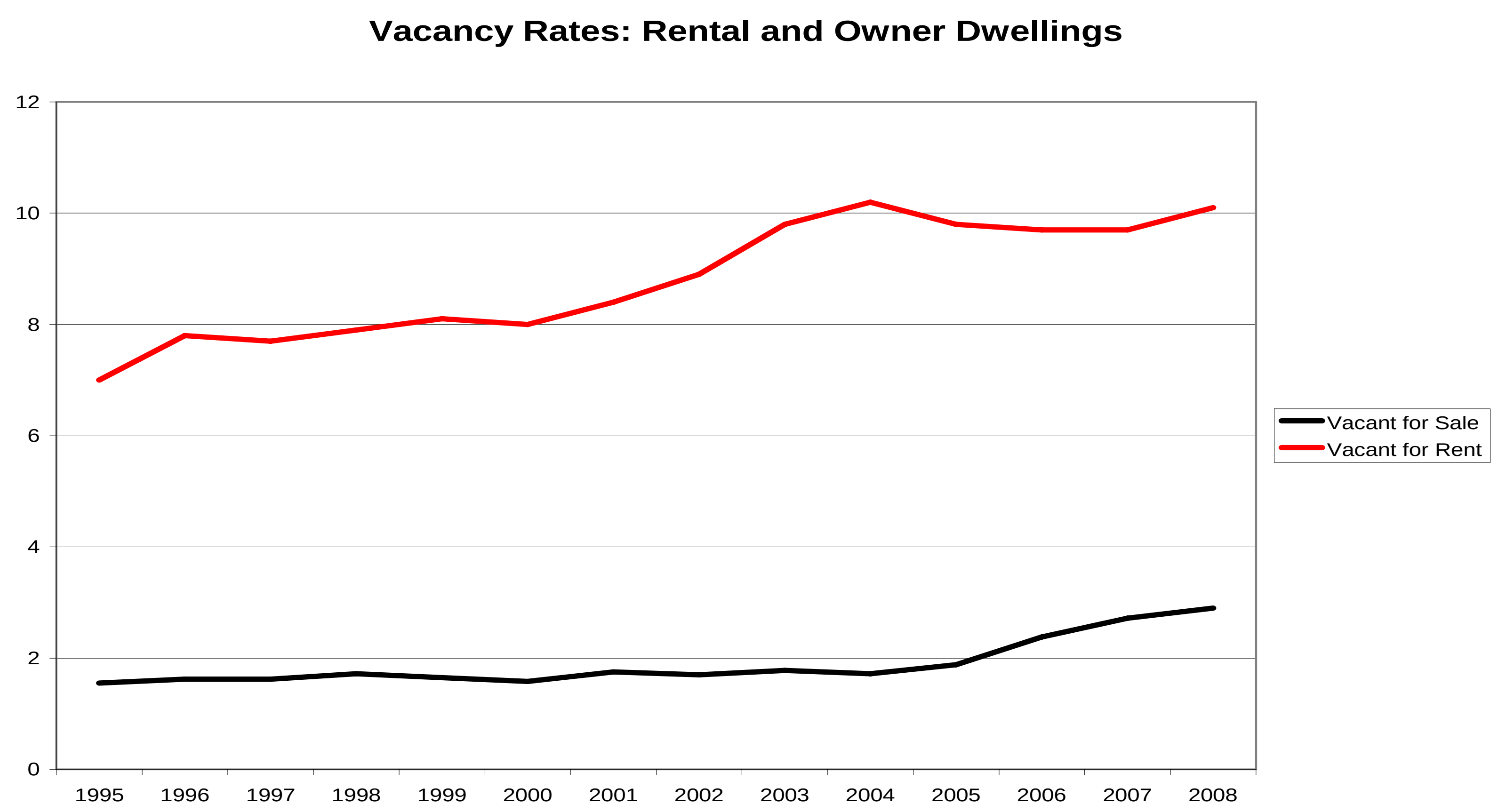
Foreclosures Are Rising Rapidly

- The seasonally adjusted total mortgage delinquency rate is the highest recorded in the Mortgage Bankers Association (MBA) survey since 1979.
- MBA data shows that the foreclosure rate for subprime loans and especially subprime adjustable rate mortgages (ARMs) have increased dramatically.
- Subprime ARMs represent 6 percent of the mortgages outstanding, but they represented 39 percent of the foreclosures started during the first quarter of 2008
- Prime ARMs represent 15 percent of the loans outstanding, but 23 percent of the foreclosures started.

Foreclosures By Loan Type: 1998-2008



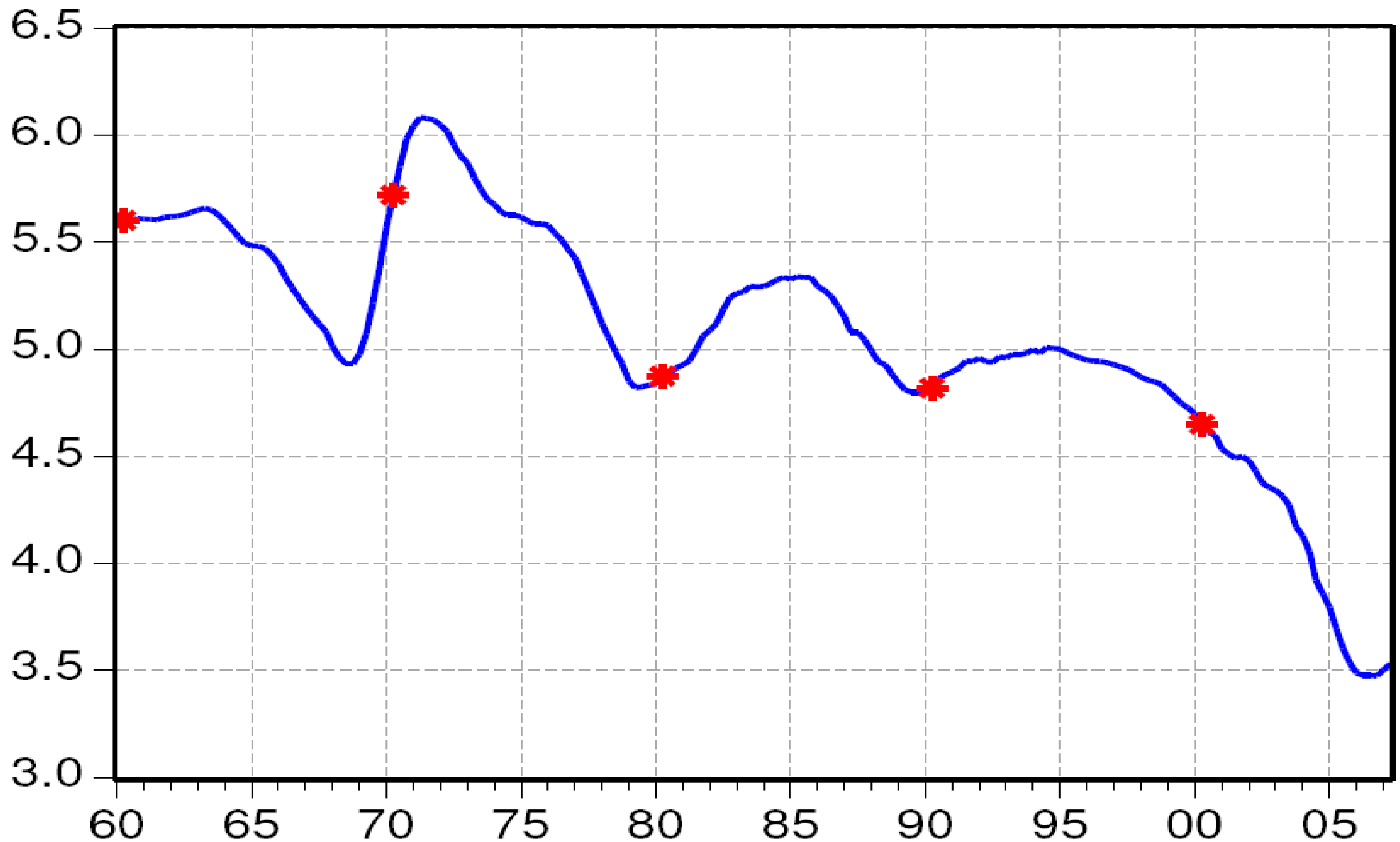
The Number Of Vacant Houses Has Increased Since Early 2005



Change In The Number Of Households

- A declining homeownership rate implies households are relocating somewhere. Where?
- There is no evidence that the rental sector is booming: vacancies are high and real rents are unchanged
- It is likely that a substantial number of previous homeowning households are now doubling up or moving in with parents.
- Household formation was very strong in 2005, but it slowed by 13% in 2006, and then it slowed again by 59% in 2007. Thus far in 2008 the number of households is declining, this unprecedented in the U.S. for at least 40 years.

Rent To Price Ratio For Housing: 1960-2007



Potential Size Of The Correction In House Prices

- If the correction completely reversed the house price boom, there would be a 40-50% fall in real prices from the peak in 2005.
- This implies another 25-35% decrease beyond what has already occurred.
- The timing is unclear: the correction could occur over an extended time, but the decline is relatively rapid now.

Impact On The U.S. Economy

- During the 1997-2006 boom, households withdrew a substantial amount of home equity though the use of home equity loans and cash-out refinancings.
- Haurin and Rosenthal, using two household level data sets, estimated the change in consumption in response to house price appreciation is relatively large: \$0.10 to \$0.15 per \$1 of change in home equity.
- The end of the housing boom suggests that this boost to U.S. consumption stopped in late 2006, but there was little apparent effect on GDP growth through 2007:3.
- A slowdown is now occurring, with the last two quarters of real growth being 0.6% and 0.9%.

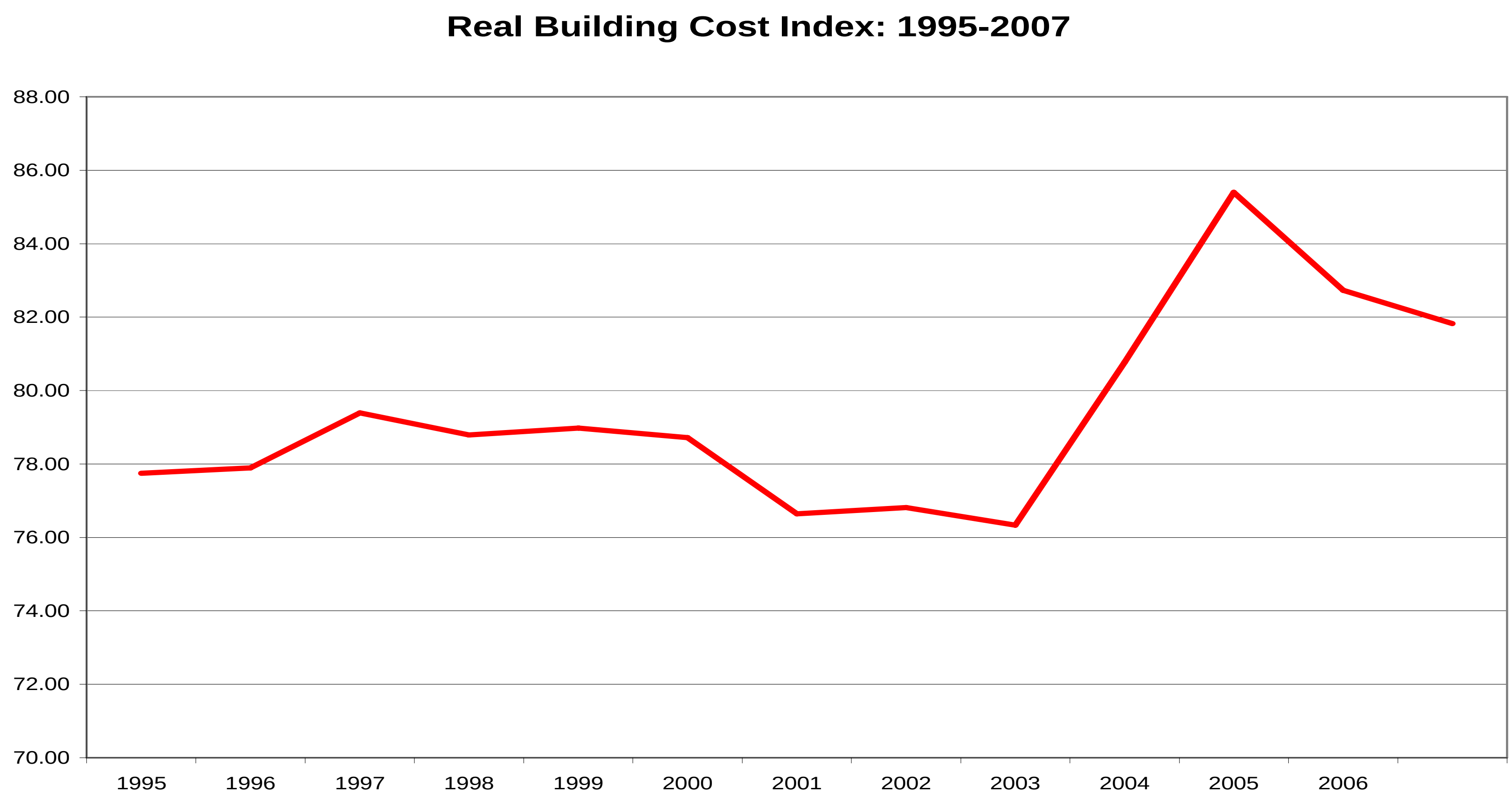
How Large Could The Effect Of Declining House Prices Be On U.S. Consumption?

- Assume the peak to trough loss in real property value will be 40%
- Make assumptions about the effect on home equity and the extent that real house prices have fallen thus far
- The consumption effect would range from a reduction of 2.1% to 5.2% of U.S. GDP. This would be spread over time.
- Supportive evidence: the amount of home equity lending is rising at a much lower rate than previously. They rose in nominal terms at a 31% annual rate in 2001-05, but only 7% from 2005-2008.

2. Why Did The Boom In The Housing Market Occur?

- Supply factors
  - Changes in the cost of housing (including skilled labor and materials) appear not to be the cause of the boom
  - Restriction of supply are likely a factor in some metropolitan areas, but not nationally. They are a “facilitator of the boom,” but not a fundamental cause

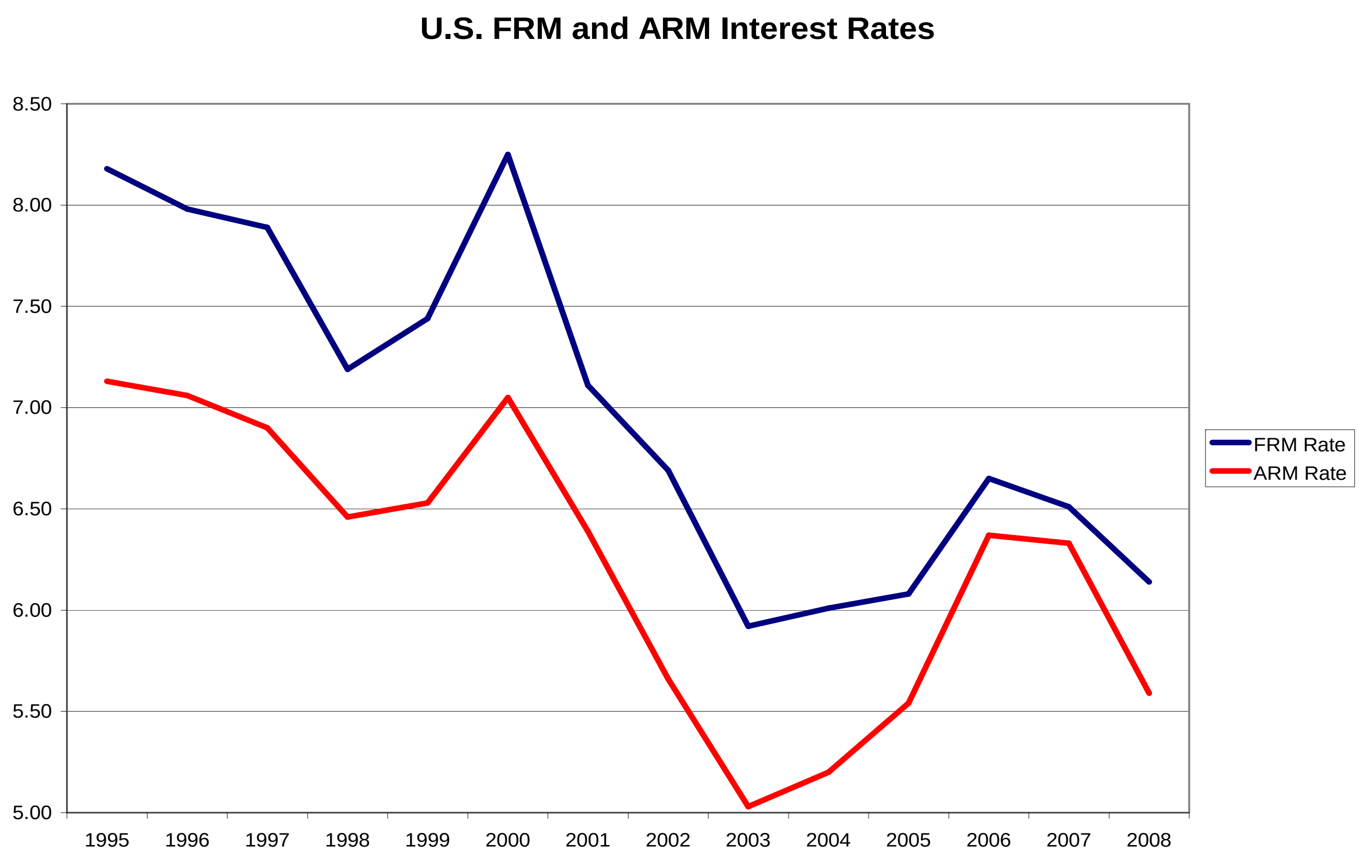
Real Building Cost Index: 1995-2007



Demand Side “Facilitating Factors”

- Real household income increased 10.8%: 1995-2005
- U.S. population increased 11.3%: 1995-2005
- Nominal mortgage interest rates decreased over this period—U.S. first-time homebuyers are very sensitive to interest rates

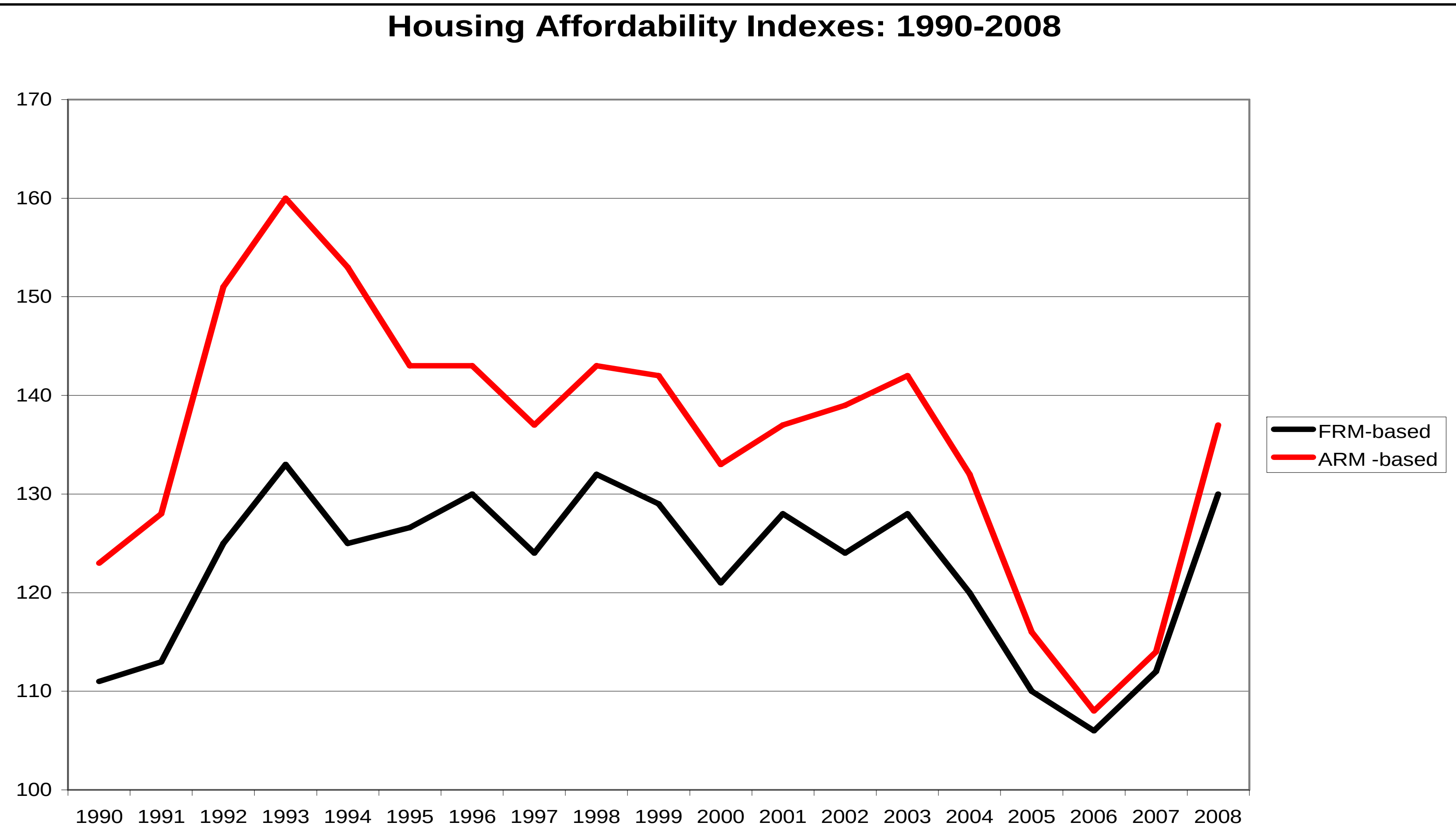
U.S. FRM and ARM Interest Rates: 1995-2008



Potential Indexes Of Housing Demand

- The Housing Affordability Index by the National Association of Realtors is a composite measure of a household's ability to buy a house. It is based on measures of mortgage interest rates, median household income and median house prices. However, the HAI <u>declined</u> throughout the boom period, indicating housing was less affordable as the boom progressed.
- Conclusion: the HAI is not a good index of the demand for housing

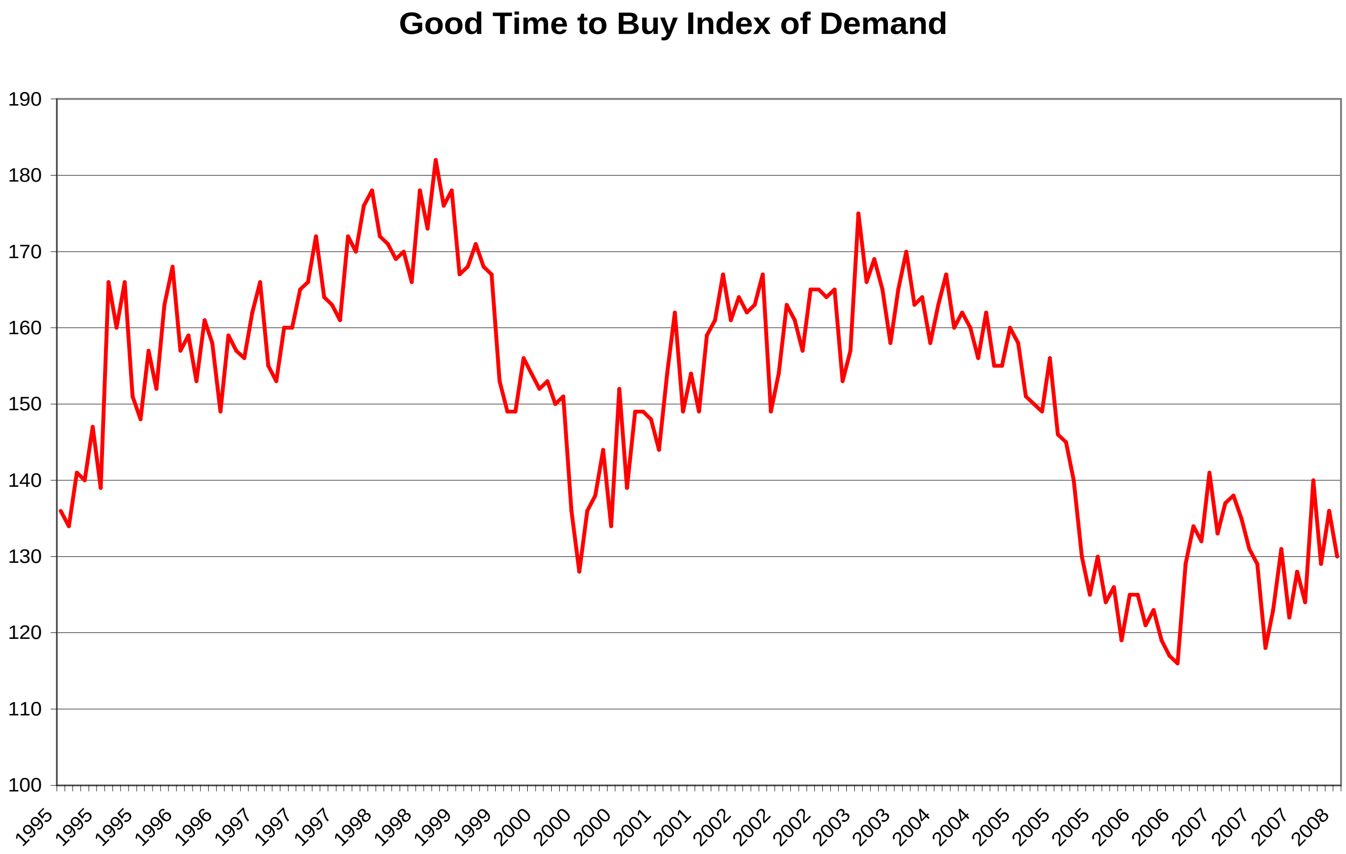
Housing Affordability Index: 1990-2008



An Alternative Index Of Housing Demand

- Data are from a national survey by U. Michigan
- Index = 100 + %(Good time to buy a house) - %(Bad time to buy a house)
- The index rises steeply from during the beginning of the boom, then it dips just before the 2000-01 mild recession, then rises again to a very high level and peaks in mid-2003, but remains high through May 2005.

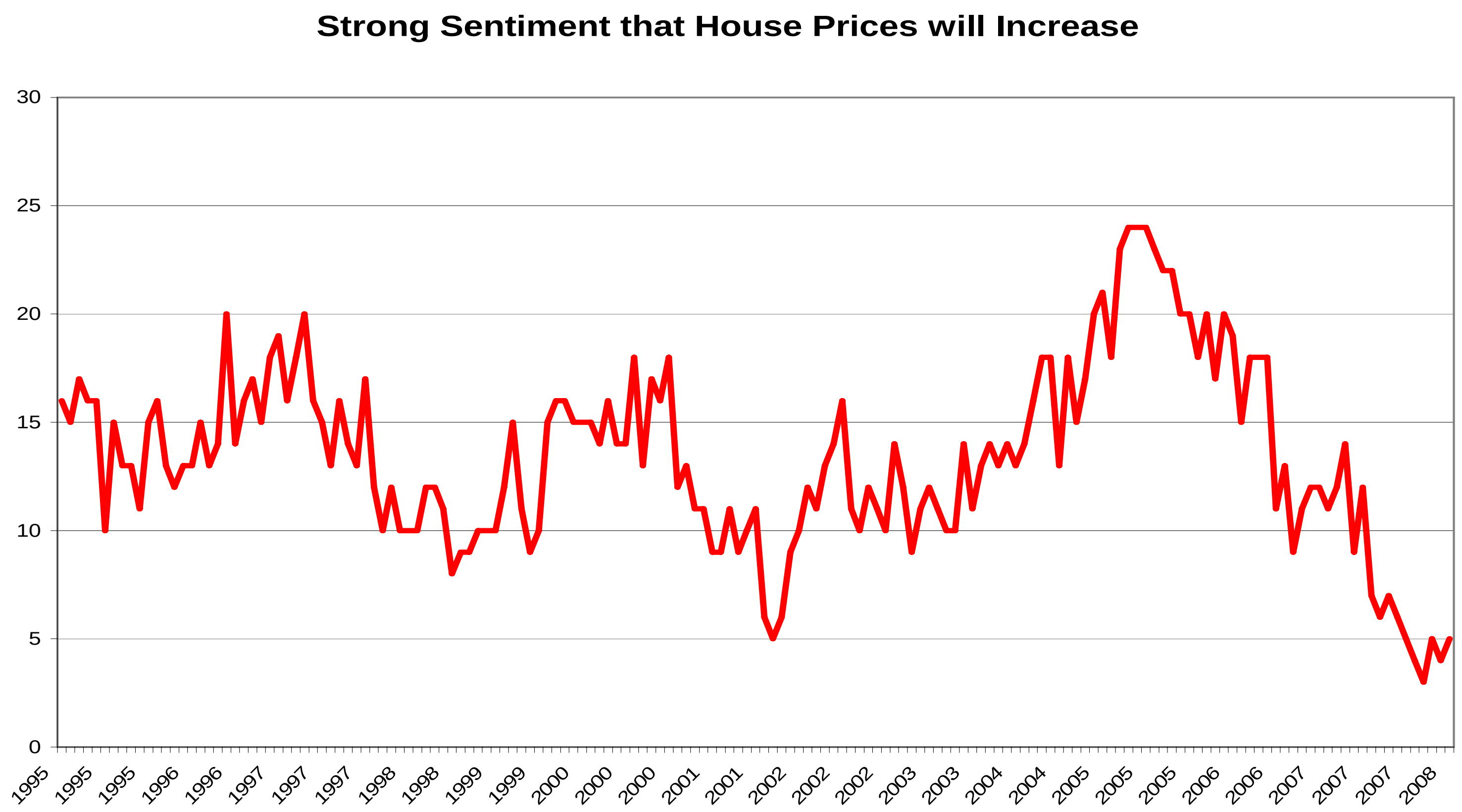
Index Of Whether It Is A Good Time To Buy A House: 1995-2008



Why Was Demand High In 2002-2005, When House Prices Were High?

- Two explanations for strong demand during the housing boom
  - Households expected a continued high rate of increase in house prices, this expectation lowering the user cost of homeownership.
    - Households' House Price Expectations Peaked in June 2005
    - This explanation corresponds well with the demand index
  - Innovations in the mortgage market allowed households to overcome barriers to homeownership.

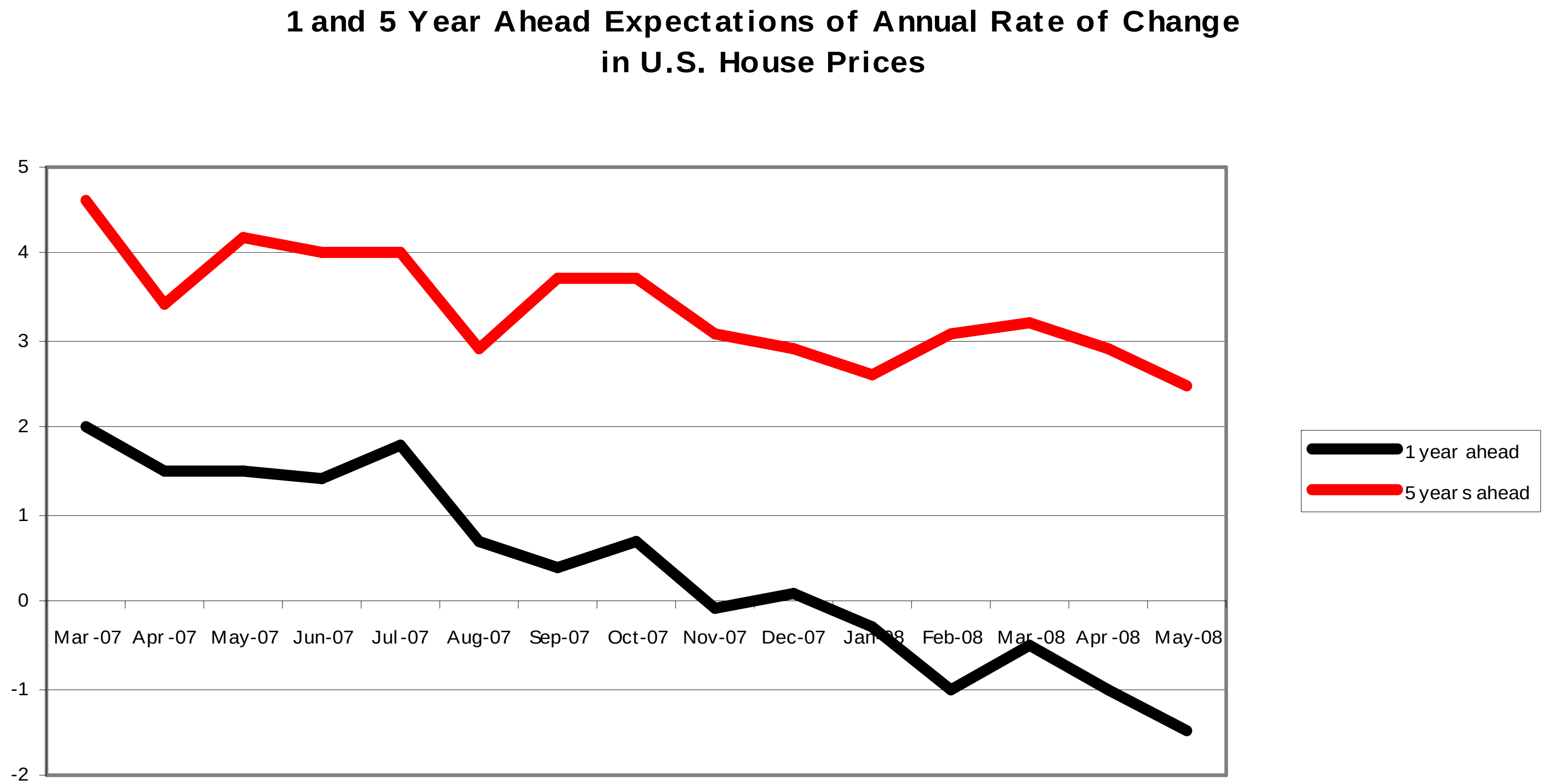
Survey Data About How Strongly Households Felt That House Prices Would Rise In The Future: 1995-2008



A Fundamental Cause of the House Price Boom: Excessive House Price Expectations

- Case and Shiller (2003)--survey data about households' house price expectations in four major cities in 1988 and 2003
  - 1988: the average annual expected increase over the next 10 years: 14.3%, 14.8, 8.7, 7.3 in the four cities.
  - 2003: expectations were 13.1%, 15.7, 14.6, and 11.7.
  - Both were extraordinarily high
- Recent national survey data confirms house price expectations remain very high relative to actual house price changes
- Implication: the user cost of housing is now very high

1 and 5 Year Ahead House Price Expectations: March 2007-May 2008



The Mortgage Market's Facilitating Role In The Housing Boom And Its Subsequent Role In The Bust

- Martin Feldstein provided a summary of the mortgage market in 2007.
- "Mortgage money also became more abundant as a result of various institutional changes. Subprime mortgages were the result of legislative changes and of the application of statistical risk assessment models. In addition, securitization induced a lowering of standards by lenders who did not hold the mortgages they created. Mortgage brokers came to replace banks and thrifts as the primary mortgage originators. All of this had been developing since the 1990s but it contributed to mortgage problems when rates fell after 2000. Once defaults became widespread, the process could snowball, putting more homes on the market and driving prices down further. Banks and other holders of mortgages would see their highly leveraged portfolios greatly impaired. Problems of illiquidity of financial institutions could become problems of insolvency."

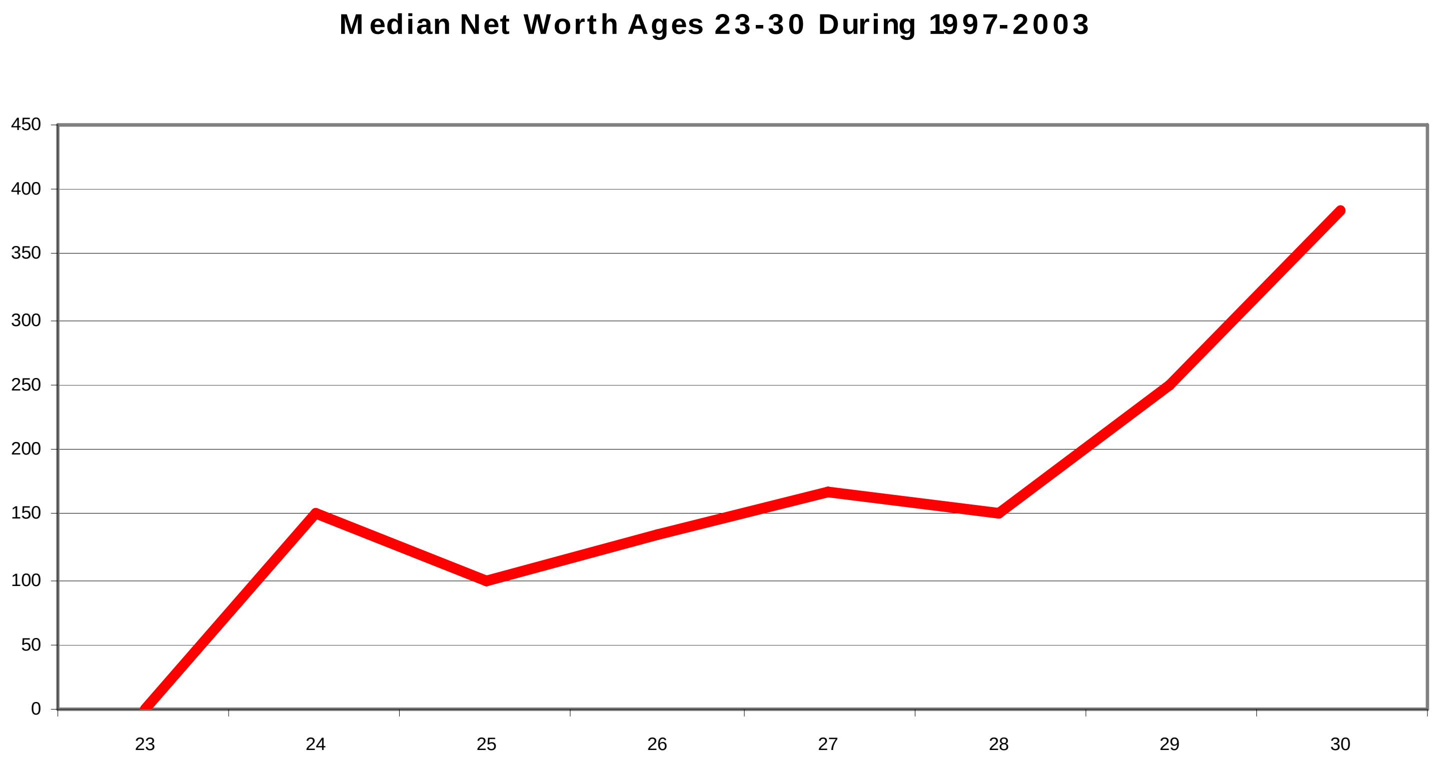
Could Mortgage Market Innovations Have Caused The Boom?

- If households were not income or wealth constrained, they would make optimal tenure choice decisions
  - Mortgage demand would simply reflect the demand for homeownership and mortgage innovations would likely have only minor effects on tenure choice because the innovations did not reduce the cost of borrowing; rather, they reduced the required down payment or initial monthly payments

Many Renters Were Constrained By Mortgage Lenders' Requirements

- However, some households are constrained and either cannot make a down payment or cannot meet the monthly payment to income constraint on their desired house. Implication: they will remain as renters or purchase a downsized house.
- Strong evidence that in the 1980s and early 1990s that a large proportion of households' housing choices were constrained (Linneman & Wachter 33%; Zorn 66%).
- During 1997-2003, young renters' net worth was very low

Median Net Worth of U.S. Renters Ages 23-30: 1997-2003



The Mortgage Industry Innovated Mortgage Products That Lowered Down Payments

- Down Payment requirements fell to 5% in the early 1990s. First-time homeowners increased their median LTV from 87% in 1989 to 95% in 1995 (NAR data).
- 1997: Freddie Mac's introduced a 97% loan-to-value ratio (LTV) first mortgage combined with a second mortgage for the remaining 3% plus any closing costs.
- Implication: given the high number of constrained households, these innovations induced large numbers of households into demanding homeownership, facilitating the housing boom

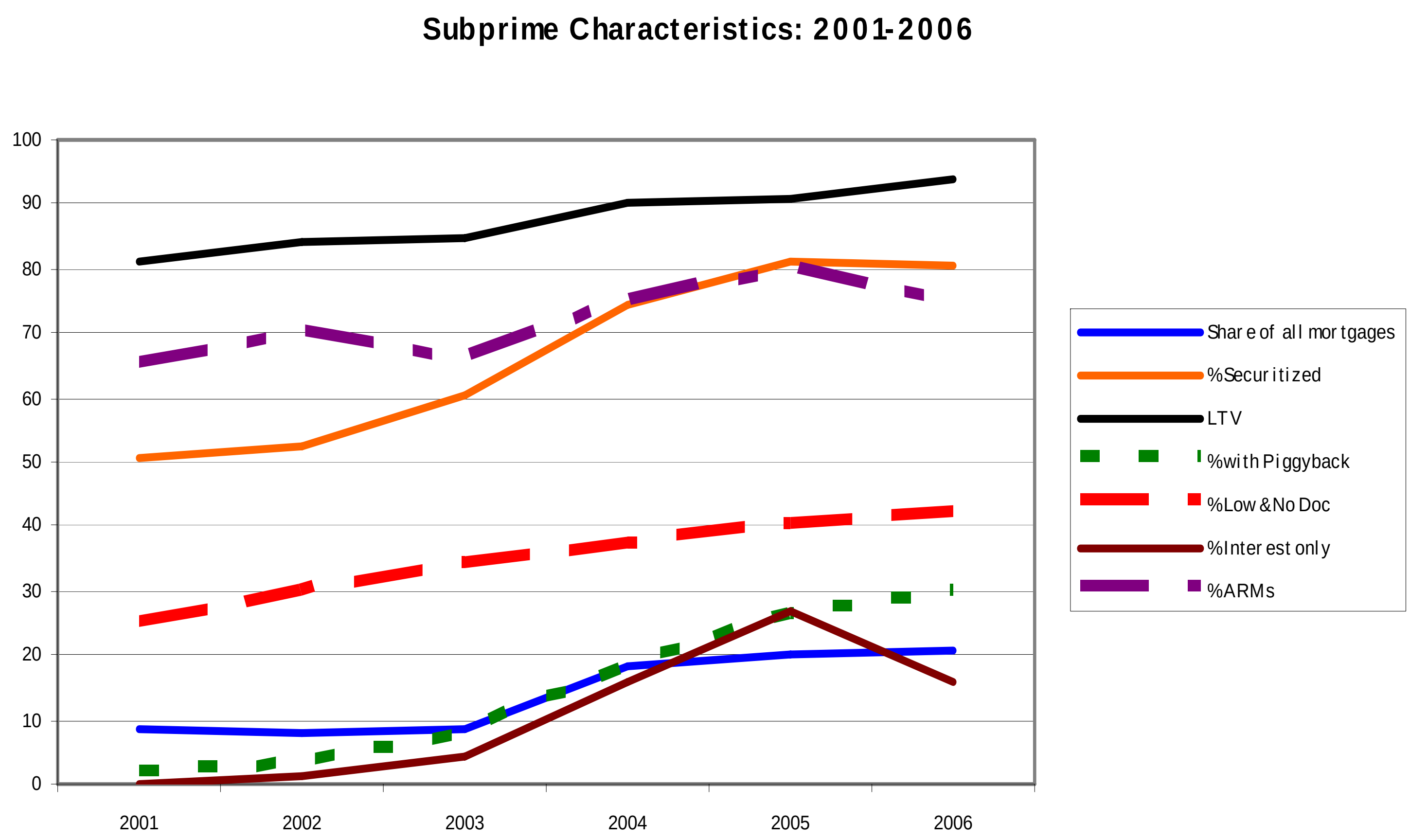
The Mortgage Industry Innovated Mortgage Products That Lowered Monthly Payments

- Loans with low “teaser” interest rates that would remain fixed for 2-3 years, then reset to market rates (typically 6 percentage points above LIBOR). They also allowed qualification for the loan to be based on the initial monthly payment.
- Loans that required little or no documentation of income and wealth

The Mortgage Industry Introduced Risk Based Pricing of Loans

- This expanded the pool of potential borrowers to those with low credit ratings
- This group of potential borrowers included a disproportionate share of racial and ethnic minority households. U.S. legislation required lenders to serve their local communities and risk based pricing of mortgages facilitated meeting goals (CRA).

The Subprime Mortgage Market



Characteristics of the Stock of U.S. Subprime Loans

- 3.3 million securitized first mortgage subprime loans at the end of 2007.
- Average loan balance = $180,000, the average interest rate = 8.72%, average FICO score = 617.
- 66% had prepayment penalties at origination and 41% still have operative prepayment penalties.
- At inception
  - the median LTV was 0.88
  - 21% were piggyback loans
  - 12% were interest only loans
  - 33% were no or low doc loans
- 36% were for home purchases and 56% were cash out refinancings.
- Of the group of subprime ARMS
  - 39% are resetting the interest rate from the teaser rate in 2008, 18% in 1-2 years, 6% in 2 or more years.

Near Subprime = Alt-A Mortgages

- In 2006
  - 70% were ARMS
  - 40% were piggyback loans
  - 82% were no or low documentation loans
  - 42% were interest only loans
  - 40% had negative amortization initially.

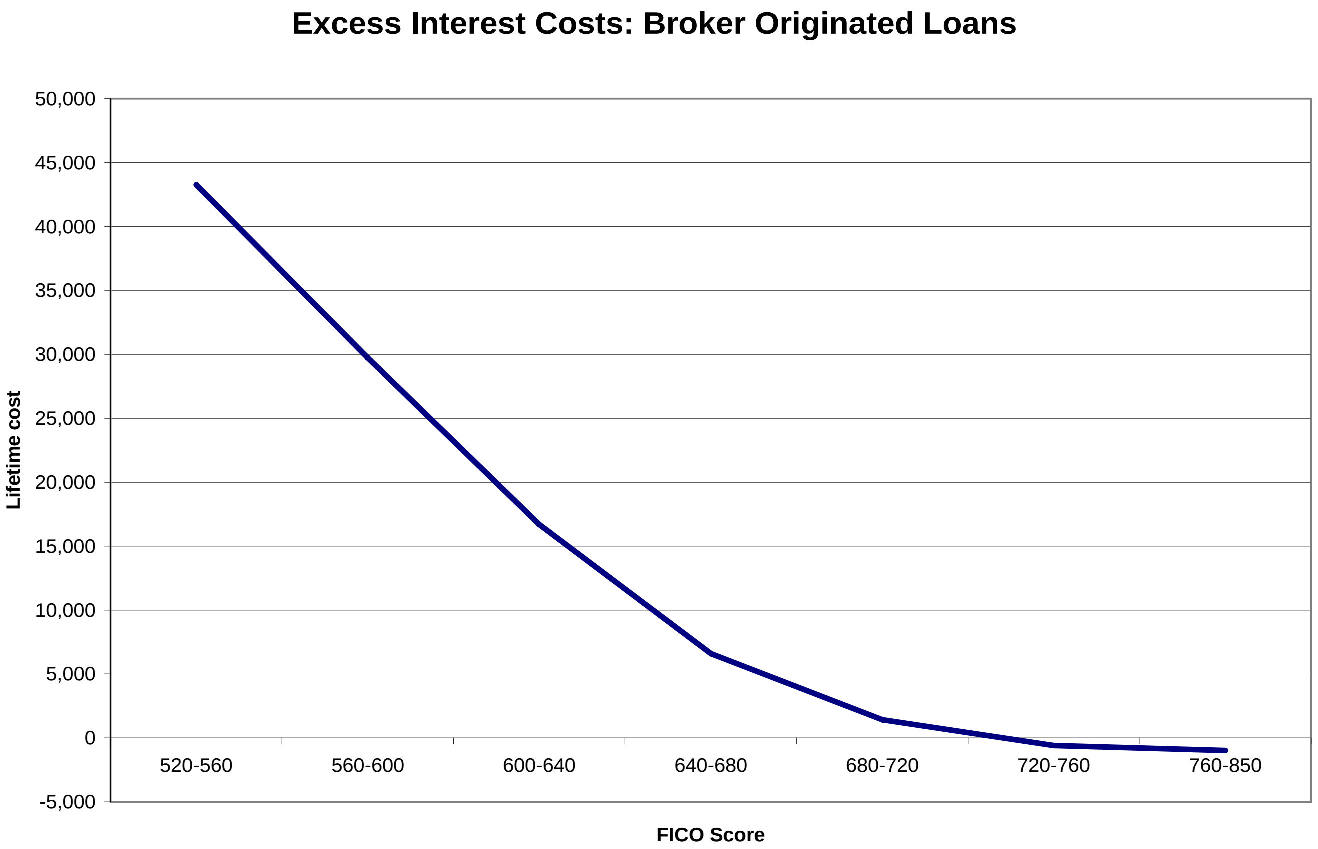
Why Did Some Households Obtain Subprime Loans That Were "Expensive" Given Their Credit Rating?

- Households did not plan to remain in the house for a long period of time, thus post-reset interest rates did not matter
- "Predatory" borrowers
- Poor credit management by households
- Borrowers did not know the terms of their mortgage
  - Studies by Essene and Apgar (2007) and Haurin (2006)
- Misplaced trust in mortgage brokers

Mortgage Broker Environment

- Subprime loan rates are not advertised
- Households may lack information about mortgage products
- Profits are a function of volume of transactions and “yield spread premium,” which is earned when borrowers pay more than they should given their credit rating
- Analogy in the U.S. = used car salesperson
- Result 1: the boom was facilitated by the increase in households accessing the mortgage market
- Result 2: the bust was facilitated as the mortgages reset and “marginally” qualified households defaulted

Mortgage Brokers vs. Other Lenders: Ernst, Bocian, and Li (2008) study



Another Facilitating Factor

- There is strong evidence that in the U.S. appraisers overvalued properties to facilitate transactions.
  - Evidence: a court decision in New York State found that eAppraiseIT picked appraisers who appraised properties at values high enough to permit WaMu's loans to close and pressured appraisers to change appraisal values that were too low to permit loans to close.

How Did These Originations Get Sold?

- Who would buy subprime and similar mortgages? And at what price?
- “What were they thinking?”
- Brief history:
  - In the mid 1990s investors started buying securities backed by subprime loans (MBS).
  - In the late 1990s, consumer finance companies became the largest originators of subprime loans and they typically retained them in their portfolios.
  - However, in the early 2000s there was a substantial shakeout among subprime lenders (six of the top 10 failed) and major banks acquired the subprime lenders (WaMu, Citigroup, Chase Manhattan Mortgage Corporation, HSBC Finance Corporation).

Various Scenarios

- Investment banks bought loans from mortgage brokers, formed securitized subprime mortgage loans into mortgage backed securities (MBS) and collateralized debt obligations (CDOs), these were rated by 3rd party agencies and then sold as risk-differentiated tranches to various investors.
- An anecdotal story

Tranches and Rating Agencies

- Tranches range from senior or investment grade (low risk), to mezzanine (mid risk), to equity (aka “toxic waste”), which are high risk and high coupon rate.
- No “regulatory oversight,” but third-party rating agencies evaluated the credit risk and set the rating (Moody’s, S&P, Fitch).
- Rating agencies charged a relatively high price for rating these complex instruments

Results

- Many of the tranches received investment grade ratings, permitting an expanded market of potential buyers
- Total CDO sales estimated to be $503 billion worldwide in 2006.
- In the U.S., subprime mortgages are 28% of CDO securities.
- Tricks of the trade

Who Bought These Structured Instruments?

- Investment grade tranches:

Banks	55%
Asset managers	19%
Insurance companies	18%
Pension funds	4%
Hedge funds	3%
Other	1%

- Equity (risky) tranches:

Banks	32%
Asset managers	22%
Insurance companies	19%
Pension funds	18%
Hedge funds	10%

Conclusions Regarding Mortgage Market Innovations

- The expansion of the mortgage market due to innovative mortgages was a fundamental cause of the housing boom, and retreating from these more exotic mortgages will contribute to the bust
- Facilitating factors included
  - Mortgage brokerage and innovations in mortgage securitization
  - “Cooperative” appraisers and rating agencies

Was the U.S. Federal Reserve A Facilitating Factor?

- Claims and criticisms
  - The Fed kept interest rates too low too long-2004
  - Greenspan encouraged the use of ARMs and innovation of subprime loans
  - Greenspan believed that a house price bubble was not a threat
  - The Fed did not extend regulatory oversight to subprime originators
  - The Fed “supported” the house price boom because it stabilized the economy

3. The End of the Boom

- The evidence suggests that the peak of the housing boom was May-June 2005. Thereafter:
  - expected house price growth began to fall
  - the user cost of owning increased
  - Housing supply continued to rise until early 2006
  - Subprime foreclosures began to increase
  - Real house prices peaked, and turned down, feeding a downwards spiral in demand

When Will the U.S. Housing Crisis End?

- Depressing factors
  - The normal flow of first-time owners has been disrupted
  - “Failed” homeowners do not return to owning for 10-14 years, even if there was no foreclosure
  - There is a large supply of existing homes for sale
    - Also a large latent supply (nominal loss aversion)
    - Foreclosed houses sell at a discount and negatively affect surrounding properties’ values
  - Expected house price appreciation rates are still falling

The Future

- A number of experts are predicting a turnaround in U.S. house prices and housing construction by January 2009.
- I foresee a different future:
  - Housing construction and new home sales will hit a trough in late 2008 but their recovery will be very mild.
  - Nationally, real house prices will continue to decrease for at least 18 months (there will be local market exceptions). The rate of decrease will continue to be large for at least 12 months, perhaps longer.

4. Lessons Learned

- Lesson 1: the housing crisis is the direct result of the housing boom from 1996-2005. Policies that would have muted the boom would have greatly reduced the severity of the current crisis.
- Lesson 2: households' house price inflation expectations are at times not well linked to changes in "fundamentals". They can be irrationally exuberant
  - Was the cause "media frenzy"?
  - Recommendation: collect and monitor data about house price expectations.

Lessons Learned

- Lesson 3: Mortgage brokers do not have a fiduciary responsibility for their customers, this different from securities brokers.
  - Recommendation: change the responsibilities and incentives for mortgage brokers, or change their reputation to be that of a “used car salesperson”.
  - N.Y. state attorney general will
    - Monitor the pricing of loans
    - Monitoring whether minority households are steered toward high interest loans
    - Increase consumer education programs about mortgage costs
    - Improved disclosure about the advantages, disadvantages, and relative costs of different mortgage products.

Lessons Learned

- Lesson 4: Fix the appraisal procedure to make it arm’s length.
  - Recent N.Y. State’s agreement with Fannie Mae and Freddie Mac: only buy loans that meet new standards designed to ensure independent and reliable appraisals.

Lessons Learned

- Lesson 5: Do not let foreclosed houses sit empty for a long period; there are substantial negative externalities.
  - Change state level policies that delay the resale of a foreclosed house
  - Consider/create policies were current occupants who are delinquent on their mortgage payment can switch to renting the unit during a transition period. These homeowners have no equity in the house nor wealth to recapture.

Lessons Learned

- Lesson 6: Do not attempt to solve the housing crisis by having the Federal government take over the role of being the lender of risky loans, rather than the private market.
  - Federal Housing Authority activities
  - Fannie Mae and Freddie Mac
- These policies may slow down the pace of foreclosures and the adjustment, but they may create more problems in the future than they are solving in the present.

Lessons Learned

- Lesson 7: Caveat Emptor: Let the Buyer Beware.
  - Borrowers: regarding the mortgage broker and appraiser
  - Institutions purchasing MBSs and CDOs or whatever structured instruments are invented in the future.