# Midsummer Meltdown
## Prospects for the Stock and Housing Markets

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## About the Author

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## Acknowledgements

# Executive Summary

This paper examines the factors that have led to the recent instability in financial markets, specifically the housing bubble and the recent run-up in stock prices. Prices in both the housing market and the stock market are often moved by psychological factors that have little to do with fundamentals.

The paper notes that the economists and analysts who give advice to the public and policymakers are often caught up in the psychology of financial bubbles along with everyone else. Furthermore, the media often rely on sources with a direct interest in the perpetuation of bubbles. For example, the most widely cited expert in news stories on the housing market in 2005 and 2006 was David Lereah who at the time was the chief economist for the National Association of Realtors, and is also the author of the book *Why the Real Estate Boom Will Not Bust and How You Can Profit From It.*

In December of 2000, after the stock bubble had already begun to deflate and a recession loomed just around the corner, the 31 prominent economic forecasters surveyed for the  Philadelphia Federal Reserve Board's Livingston Survey still anticipated strong economic growth for 2001. Furthermore, they expected the stock bubble to grow still larger. The median forecast of the S&P 500 for the end of 2002 was 1640, nearly 7 percent higher than the market's bubble peak in March of 2000.

It is easy to recognize when prices have diverged from fundamental values. The paper points out that the value of stocks must ultimately relate to corporate profits. There are widely used economic projections, such as those from the Congressional Budget Office (CBO), which provide a basis for assessing stock prices. If the CBO projections are assumed to be reasonably accurate, it was easy to show in the late nineties, and again in 2007, that stock prices are substantially overvalued.

In the case of housing, government data show that house sale prices had moved at roughly the same pace as the overall rate of inflation over the whole post-war period until 1995. A series constructed by Yale economics professor Robert Shiller shows house prices have tracked inflation for the 100 years prior to 1995. Since 1995, house prices have risen by more than 70 percent after adjusting for inflation. This increase in excess of inflation has created more than $8 trillion in housing bubble wealth.

There is no fundamental factor of supply or demand that could explain this sudden rise in house sale prices. Also, there has been no remotely comparable increase in rents over this period.

The run-up in house prices has led to a predictable oversupply of housing. The inventory of unsold new homes is more than 50 percent higher than the previous record in 1989. The inventory of vacant ownership units is almost twice the 1989 record. This oversupply of housing is far beyond anything that the country has ever experienced.

This oversupply is now causing prices to fall in many markets. In some bubble areas, such as San Diego and Washington, D.C., real prices have fallen by close to 10 percent over the last year. Deceptive mortgage lending practices contributed to the bubble and have imposed serious hardships on millions of families, but the real problem was the downturn in prices. Price declines are likely to be self-perpetuating since lower prices will lead to more defaults and foreclosures, as homeowners find themselves with negative equity. The rise in default rates will also reduce demand, as lenders will

view the mortgage market as being risky and will therefore demand higher interest rates on mortgages.

The correction of the housing bubble is likely to throw the economy into a recession and quite possibly a very severe recession. Residential construction directly accounts for almost 5.0 percent of GDP presently. Based on past patterns, this can be reduced by between 0.9 and 1.7 percentage points of GDP (between $120 and $230 billion in 2007) as the market corrects. The end of the bubble will eliminate between $4 and $8 trillion of housing bubble wealth. Given conventional estimates of the housing wealth effect, this will lead to a reduction in annual consumption of between $160 and $540 billion. Finally, the end of the housing bubble is likely to put an end to the recent wave of speculation that drove the stock market above trend levels. The loss of $4.5 trillion in stock bubble wealth will lead to a reduction in annual consumption of $135 to $180 billion, due to the wealth effect.

The total effect from the end of the housing and stock bubbles will be to reduce annual demand by between $415 and $950 billion. If this correction happens quickly, it is virtually certain to lead to a recession and quite possibly a very severe recession. The end of these bubbles is also likely to impose serious hardships on state and local governments that lose property tax revenue. It may also lead to larger shortfalls in pension funds and public employee retiree health care funds.

The decision by policy makers to ignore the growth of the stock and housing bubbles will have very serious consequences both for the economy and the financial decisions of tens of millions of families. Tens of millions of homeowners have made financial decisions and retirement plans based on the assumption that their house would hold its value and quite likely appreciate even more. For the vast majority of families, a home is by far its most valuable asset. These homeowners are poorly prepared for a sharp drop in house sale prices. As a result of the inevitable correction, they will enjoy a much less comfortable retirement than they had anticipated.

# Introduction

The recent plunge in stock prices, coupled with reports of rising mortgage default rates and growing problems in the secondary mortgage market, appears to have caught many analysts by surprise. This should not have been the case. The fundamentals in both the stock and housing market suggested that real problems were likely, if not certain, in the not very distant future. At any point in time, markets will be driven by psychological factors reflecting investors' optimism or pessimism; however, prices must at some point be brought into line with underlying values: profits in the case of stock and the rental value of shelter in the case of housing.

This paper briefly examines the fundamentals in these two markets and the extent to which current prices are inconsistent with underlying values. It also speculates on the process through which these markets might adjust and the implications of these adjustments for the economy.

The first section briefly explores the record of economists and analysts in predicting the prospects for the stock and housing market. The second section examines the relationship between current stock prices and the likely course of future profit growth. The third section examines prospects for house prices. The fourth section examines the implications of a collapse of these financial bubbles for the economy. This is followed by a short conclusion.

# Dangerous Times: Where are the Experts?

Predicting fluctuations in financial markets will always be difficult, primarily because of the importance of psychological factors, but it is in principle possible to assess market prices relative to fundamental factors: corporate profits in the case of the stock market and the rental value of housing in the case of the housing market. Unfortunately, this is not the analysis generally performed by the experts who get cited in the media. In times of irrational exuberance, these experts are often among the most exuberant.

This can be seen with a quick examination of the Livingston Survey, a survey of 31 prominent economic forecasters conducted twice annually by the Federal Reserve Bank of Philadelphia, as summarized in **Table 1**. The December 2000 survey shows that the economists sampled expected the economy to grow at a healthy pace through the next two years, completely missing the recession that is dated as having begun just three months later.

**TABLE 1**
**Economic Forecasts, December 2000**

|  | 2001 | | 2002 | |
| --- | --- | --- | --- | --- |
|  | Projection | Actual | Projection | Actual |
| Unemployment | 4.3% | 4.8% | 4.5% | 5.8% |
| GDP growth | 3.1% | 0.8% | 3.4% | 1.9% |
| S&P500 (year-end) | 1490 | 1145.0 | 1639.5 | 899.0 |

Source: Federal Reserve Bank of Philadelphia

The median forecast from the 31 economists surveyed was that the economy would grow 3.1 percent in 2001 and 3.4 percent in 2002. Actual growth for the two years was 0.8 percent and 1.9 percent, respectively. The forecasters expected that unemployment would remain low, projecting an average rate of 4.3 percent in 2001 and 4.5 percent in 2002. The average unemployment rates for the two years ended up being 4.8 percent and 5.8 percent.

Perhaps even more striking than their failure to foresee the recession is the fact that the economists surveyed not only expected the stock market bubble to persist, they actually expected it to get even larger. The average forecast for the S&P 500 index for the end of 2002 was 1640, nearly 100 points above the peak reached in March of 2000. Certainly this group of economists did not recognize the stock market as being driven up by an irrational bubble. This is especially striking since the bubble had already begun to deflate by this point. The Nasdaq had fallen by almost 40 percent from its peak in March and even the broad S&P 500 index, which consists of large established companies, was down by more than 10 percent.

In short, when it came to the stock market bubble, the experts provided few words of warning for ordinary investors trying to figure out what to do with their 401(k)s. Those who listened to the experts would have seen the market value of their stock portfolios shrink by close to 50 percent from the peaks of 2000 to the troughs reached in the summer of 2002. While the market has since rebounded from the 2002 lows, it is still flirting with levels approaching the 2000 peaks. Since inflation has been approximately 2.6 percent annually over the last seven years, the real value of the S&P 500 is still more than 20 percent below its 2000 level. This means that families who held stock from the peak of the bubble have still seen negative real returns since 2000, even after adding in the dividends received over this period.

**TABLE 2**
**Media Citations on Housing Market, 2005-2006**

| | | | | New York Times | | Washington Post | |
|---|---|---|---|---|---|---|---|
| **Bulls** | **2005** | **2006** | **Total** | **2005** | **2006** | **2005** | **2006** |
| David Lereah, National Association of Realtors | 796 | 1000 | 1796 | 9 | 7 | 14 | 12 |
| Doug Duncan, Mortgage Bankers Association | 217 | 180 | 397 | 8 | 1 | 2 | 5 |
| David Seiders, National Association of Homebuilders | 224 | 428 | 652 | 2 | 4 | 12 | 6 |
| **Total** | **1237** | **1608** | **2845** | **19** | **12** | **28** | **23** |
| | | | | | | | |
| **Bears** | | | | | | | |
| Robert Schiller, Yale University | 276 | 240 | 516 | 4 | 3 | 0 | 1 |
| Edward Leamer, UCLA | 44 | 44 | 88 | 0 | 4 | 0 | 1 |
| Dean Baker, Center for Economic and Policy Research | 133 | 115 | 248 | 7 | 8 | 9 | 8 |
| **Total** | **453** | **399** | **852** | **11** | **15** | **9** | **10** |

Source: Lexis Nexis, searched 30 July 2007.

Those looking for advice on the wisdom of homeownership were no better served by the experts most often cited in the media. When it came to assessing the state of the housing market the media would often turn to organizations that had a direct stake in promoting home buying: the National Association of Realtors (NAR), Mortgage Bankers Association (MBA), and the National Association of Homebuilders (NAHB). All three organizations have a clear interest in promoting a positive view of the housing market, regardless of the actual situation. Yet, spokespeople from the three organizations dominated coverage of the housing market.

**Table 2** shows the number of times that the chief economist from each of the three organizations was cited in major media outlets in 2005 and 2006, along with the number of citation for three leading housing "bears" over the same period. The number of citations in the *New York Times* and *Washington Post* are also broken out separately.

As can be seen, David Lereah, chief economist of the National Association of Realtors, and the author of *Why The Real Estate Boom Will Not Bust and How you Can Profit From It* is by far the most frequently cited expert on housing. In fact, in both 2005 and 2006 he was cited more frequently than all three housing bears combined. This is true for both media coverage in general and the housing coverage in the *Washington Post*. It is worth noting that the *New York Times* was far more balanced in its presentation of views from bulls and bears.

In short, when prices of stock and housing reached levels that were clearly unsustainable, the public could hear few words of warning from the media. The experts that the media relied upon were overwhelmingly proponents of the irrational exuberance that had overtaken these markets.

In many cases, the experts worked for organizations that had a direct material interest in sustaining the bubbles. Voices of caution were rarely presented. When it came to some of the most fundamental financial decisions that families face, investing retirement funds and buying a home, the media were badly misinforming the public.

# Prospects for the Stock Market: What Are the Fundamentals?

In principle, prices in the stock market are supposed to reflect the future value of corporate profits. However, stock prices can get out of line with reasonable expectations of future profits, as they did in the late 90s. The ratio of stock prices to corporate earnings exceeded 30 at the peak of the market in 2000, more than twice its historic average. While the current price to earnings ratio in the stock market is not hugely out of line with its long-term average (it was 18.7 at the end of 2006[1]), it appears as though 2006 was a cyclical peak for corporate profits. The capital share of corporate income in 2006 reached 20.8 percent in 2006, the highest share since the mid-sixties. (The after-tax profit share was 14.3 percent in 2006, slightly lower than the 14.5 percent share reached in 1997, the profit peak of the last cycle.)

Profits do not remain at cyclical peaks indefinitely. In fact, profits appear to have already begun to decline from their 2006 peak. Before-tax profits in the first quarter of 2007 were 7.2 percent lower than in the third quarter of 2006.[2] It is reasonable to expect that over time, corporate profits will return to their long-term average as a share of corporate income. Based on this assumption, the Congressional Budget Office (CBO) projects that inflation-adjusted corporate profits in 2017 will be just 13.1 percent higher than in 2006.[3] This implies a real growth rate of just 1.1 percent a year over this period.

If the CBO projections are used as basis for calculating stock returns, it is necessary to believe that either price to earnings ratios will again rise to the bubble levels of the late 90s, or that investors are willing to accept returns that are far less than what they have historically received from owning stock.

**Figure 1** shows the price to earnings ratios in the stock market over the years 2006 to 2017, if stocks provide their historic 7.0 percent average real rate of return, and the CBO projections for corporate profits prove accurate. In this scenario, the price to earnings ratio for the market as a whole will exceed 26 by the end of 2017. The only time that PEs reached this level since the 1929 crash was in the late nineties. In other words, if CBO's projections for corporate profits prove accurate, the only way that investors will be able to gain their historic rate of return on stocks is if the nineties bubble re-inflates. This is not impossible, but probably not the most likely (or desirable) scenario. Furthermore, if PEs reached such an inflated level in 2017, then they would have to continue rising even more rapidly in future years to sustain a 7.0 percent real rate of return. By 2037, the PE ratio would have to be more than 45.

Alternatively, it is possible to calculate the return that is consistent with the PE ratio remaining at its current level, and the profit growth projections from CBO. Assuming that corporations spend 60 percent of after-tax profits on either dividend payouts or share buybacks (approximately the recent average), then the real return that is consistent with a constant PE ratio is 4.3 percent. While this is somewhat higher than the 2.7 percent real return available on inflation indexed government bonds (an extremely safe asset), it seems unlikely that most investors would be willing to hold stock for

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[1] This is calculated as the ratio of the market capitalization of U.S. corporations to the ratio of after-tax corporate profits. The former is taken from Federal Reserve Board, Flow of Funds, Table L.213, line 1. After-tax profits are taken from the Bureau of Economic Analysis, National Income and Product Accounts (NIPA), Table 1.14, line 11 minus line 12.

[2] NIPA, Table 1.14, line 8.

[3] This calculation is explained in the appendix.

**FIGURE 1**
**Price to Earnings Ratio**
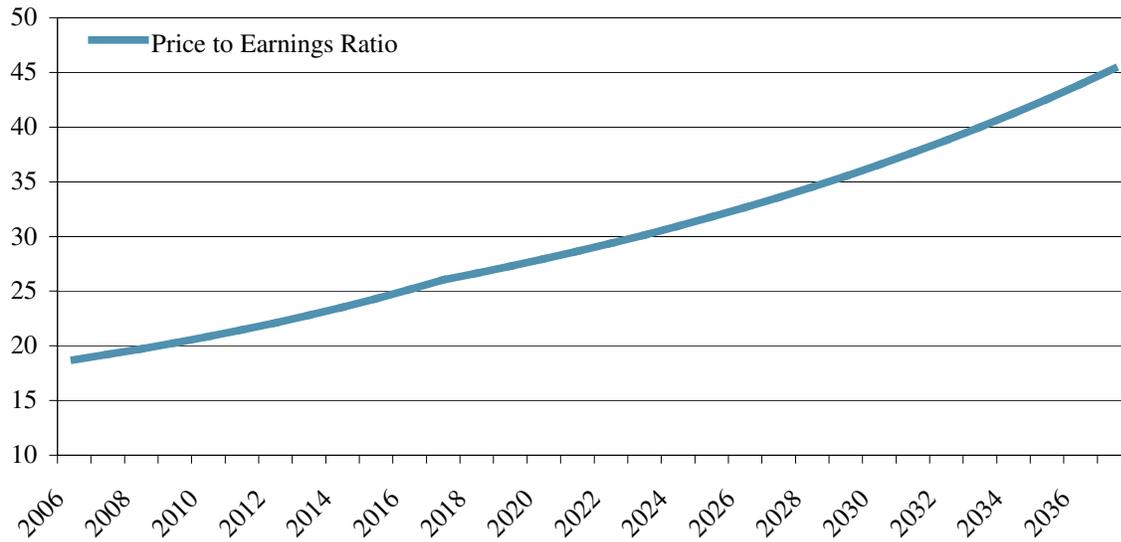


Source: CBO, BEA, and author's calculation, see appendix.

such a 1.6 percentage point premium over government bonds. In other words, if the CBO profit projections prove correct, current stock prices seem inconsistent with rates of return that investors would view as acceptable. The stock market may not be as over-valued as it was in the 90s, but the CBO profit projections imply that investors in the stock market will fare poorly given current prices.

Of course, CBO may prove to be overly pessimistic in its profit growth projections. However, the assumption that profits return to cyclical averages is a reasonable one. It is possible that profits will be a somewhat higher share of income in the future than in the past or that overall economic growth will be faster than projected by CBO. But, it is unlikely that profit shares will remain near their cyclical peaks indefinitely or that growth will be substantially higher than the rate projected by CBO. In order for stocks to yield a 7.0 percent real return with a constant PE, profits would have to be almost 40 percent higher in 2017 than projected by CBO. Given the credibility that CBO's projections are given in other contexts, it would be extraordinary to assume that it could be so far off on such an important economic variable. Furthermore, if profit growth turns out to be substantially more rapid than CBO has projected, it would be necessary to make adjustments to CBO's projections for tax revenue, budget deficits, Social Security, and the finances of other programs, especially if the upward adjustment is due to more rapid economic growth.

The underlying point here is that projections for the stock market must be tied to projections for the profit growth, which are in turn embedded in projections for economic growth. Over the short-term, the stock market is driven by psychological factors and there is no necessary link between good or bad profit news and movements in stock prices. However, over the long-term, the stock market must bear a relationship to fundamentals, specifically profits.[4] The fact that analysts generally did not look at the fundamentals when discussing the market in the nineties, or again when the market became over-valued in the current decade, is a serious failing. Many workers and taxpayers will be hurt by this failure when public and private pension funds face shortfalls as a result. In

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[4] Weller and Baker (2005) develop a formula for projecting stock returns based on the ratio of stock prices to trend earnings. This sort of analysis would provide investors with a far better mechanism for projecting returns than simply assuming a fixed rate of return that is independent of the price to earnings ratio at a point in time.

addition, many workers are likely to enjoy less comfortable retirements because they relied on advice from analysts who did not bother to do their homework.

# Housing: Why is it Hard to See a Bubble?

Throughout the post-war period, nationwide house sale prices have on average moved largely in step with the overall rate of inflation. This trend changed in the mid-nineties as shown in **Figure 2**.[5] Yale economist Robert Shiller has constructed price indexes for housing going back to the 1890s which show that over this longer period, house prices largely moved in step with the overall rate of inflation (Shiller, 2005) Since 1995, house sale prices have risen by more than 70 percent, after adjusting for the rate of inflation. This increase created more than $8 trillion in housing wealth compared with a scenario in which house prices had continued to rise at the same rate as inflation.

Given that the government data show house prices largely tracking inflation for forty years prior to the mid-nineties, and that Shiller's data show house prices tracking inflation for one hundred years, it should have aroused suspicion that house prices suddenly began to far outpace the rate of inflation in the mid-nineties, especially since this also coincided with rise of the stock bubble. This break with a long historical trend should at least have prompted analysts to find fundamental factors that could explain such a shift.

At the most basic level of supply and demand, there are no obvious candidates. On the demand side, income did grow at a healthy pace in the late nineties, with real per capita income rising at an annual rate of 2.6 percent from 1996-2001. But this was not as fast as the 2.8 percent annual growth rate during the long post-war boom from 1947-73.[6] Since that boom did not cause house prices to rise more rapidly than inflation, there was no reason to expect that the late nineties boom would cause a substantial run-up in prices. Furthermore, income growth has actually been quite weak through the current decade, averaging just 1.8 percent annually since 2001.

Population trends also would not explain a sudden price surge. Population has been increasing largely due to immigration over the last decade; however, the effect of this growth on the housing market is considerably smaller than the impact of the baby boomers first forming their own households in the seventies and eighties. The number of families has increased at a 1.1 percent annual rate from 1995 to 2005. This compares to a 1.3 percent rate from 1970 to 1985.[7]

On the supply side, many analysts have raised issues of environmental restrictions on building and/or limits on the supply of suitable land in many areas. However, the period since 1995 was not a boon time for environmentalists as pro-development Republicans swept into control of Congress and many state houses in 1994. While there are limits on available land, this did not first become true in 1995. Furthermore, building actually took place at a very rapid pace over this period, with housing starts in the years from 2003 to 2006 averaging more than 30 percent higher than in the years from 1993-95.

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[5] Data on house sale prices come from the Office of Federal Housing Price Oversight's House Price Index. For years prior to 1975, the Bureau of Labor Statistics' home price index is used. For the years from 1975-1982, price movements are an average of the change in the two indices (Baker 2002).

[6]  National Income and Product Accounts, Table 7.1, Line 11.

[7] These calculations are based on the Census Bureau's estimates of the number of families in the United States, Historical Income Tables, F-1 [http://www.census.gov/hhes/www/income/histinc/f01ar.html].

**FIGURE 2**
**Real House Price Index**
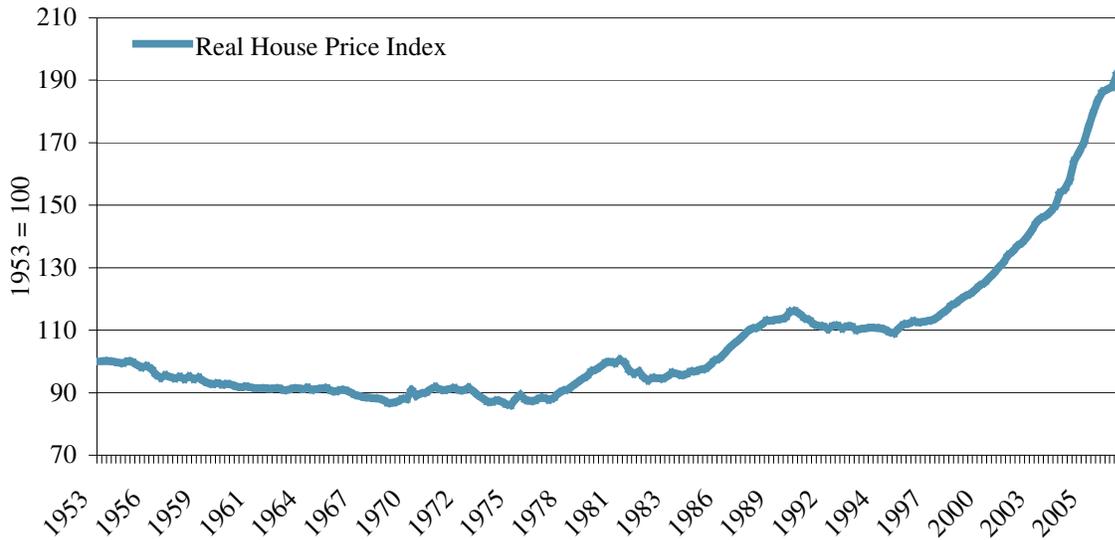


Source: OFHEO, BLS, and author's calculations.

**FIGURE 3**
**Real Rent Index**
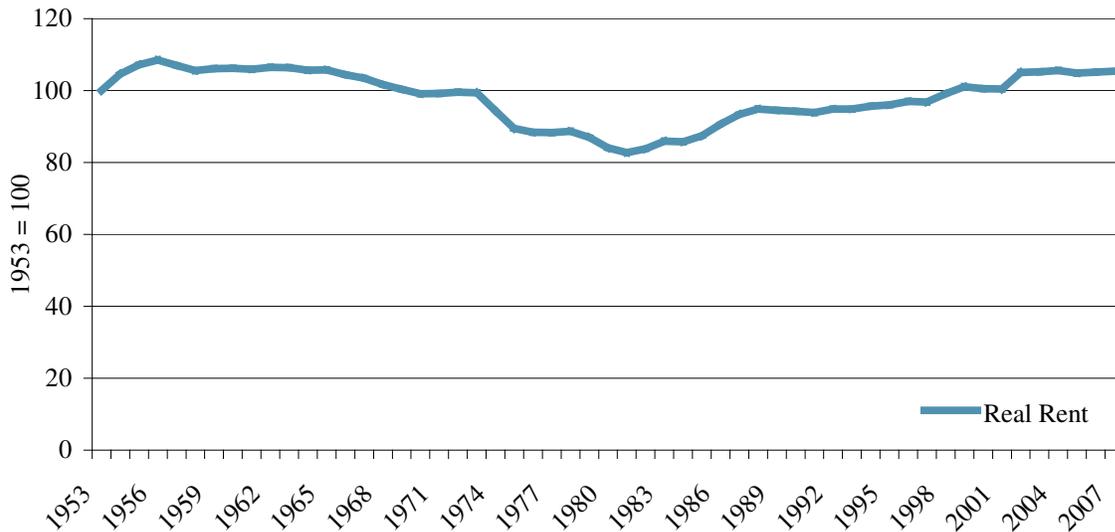


Source: OFHEO, BLS, and author's calculations

One final check on the fundamentals argument is the trend in rents. In principle, if fundamental demand or supply factors are responsible for the run-up in house prices since 1995, then they should have a comparable effect on the market for rental housing, since owning and renting are to some extent substitutes. **Figure 3** shows the path of real rents over the half century. It shows that rents did rise substantially more rapidly than overall inflation in the eighties, reversing a decline in the seventies. Rents outpaced the overall rate of inflation about 0.3 percentage points annually in the early nineties. The gap increased to 1.6 percentage points annually from 1997 to 2002. However, real rents have been virtually flat since 2002. This pattern is difficult to reconcile with the 70 percent rise in real house prices over this period.

Since there is no obvious explanation for the run-up in house prices based on the fundamentals of supply and demand, and there has been no remotely comparable increase in rents, it should have been evident to housing analysts that the housing market was experiencing a bubble. This means that much, if not all, of the real appreciation in house prices will disappear, with the only real question being the timing and the mechanics of the meltdown.

# Buildup for a Meltdown

The dynamics of the housing bubble followed a predictable path. As prices got more and more out of line with fundamentals, financing became ever shakier. Lenders were forced to continually relax standards to allow buyers to be able to afford housing at bubble-inflated prices. Requirements for downpayments dwindled to zero, with many homebuyers actually borrowing more than the full value of their home. Lenders also relaxed rules on documentation. The Alt-A market, which consists primarily of borrowers with good credit histories, but inadequate documentation of income and assets, accounted for 20 percent of all mortgages by value in 2006.[8] And of course, subprime loans, most with adjustable rates, grew to comprise 20 percent of the market in the 2006. (Subprime mortgages accounted for 25 percent of the mortgages issued in 2006, but because the typical subprime mortgage was smaller than the overall average, the subprime share by dollar value is smaller than the share of total mortgages.) As long as loans could be quickly dumped into the secondary mortgage market, mortgage issuers had little concern about the ability of borrowers to actually pay off their loans.

On the supply side, the rapid increase in construction led to a growing oversupply of housing. The inventory of unsold new and existing houses rose rapidly through 2006 as shown in **Figures 4 and 5**. The inventory of new homes rose by more than 80 percent against its level at the beginning of the decade and the inventory of unsold existing homes stands at nearly twice its 2004 levels.

In addition, the number of vacant housing units in both the rental and ownership markets hit record highs. Vacancy rates for these markets are shown in **Figures 6a and 6b**, respectively. The vacancy rate is a good measure of the actual tightness in the housing markets since it directly reflects the relationship between the supply of housing and the demand for actual living space as opposed to speculation. The vacancy rate in the ownership market is also a good measure of the stress that sellers are experiencing. A seller that has moved out of a house and does not have a tenant paying rent is likely to feel far more pressure to sell than if the house is occupied.

The rental vacancy rate peaked at 10.4 percent in the first quarter of 2004, and has edged down slightly in the last few years. It typically has been in the neighborhood of 6-8 percent and it had never previously crossed the 9.0 percent threshold. The rise in the vacancy rate in ownership units is even more striking. This has always been low, never exceeding 1.9 percent in the post-war period, until the recent run-up. The vacancy rate hit a peak of 2.8 percent in the first quarter of 2007, edging down slightly to 2.6 percent in the second quarter. Since there are more than twice as many ownership units as rental units, the recent rise in the vacancy rate for ownership units more than offsets the modest decline in the vacancy rates for rental units.

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[8] Data on mortgage market shares by type is taken from Credit Suisse (2007).

**FIGURE 4**
**Unsold Existing Homes**
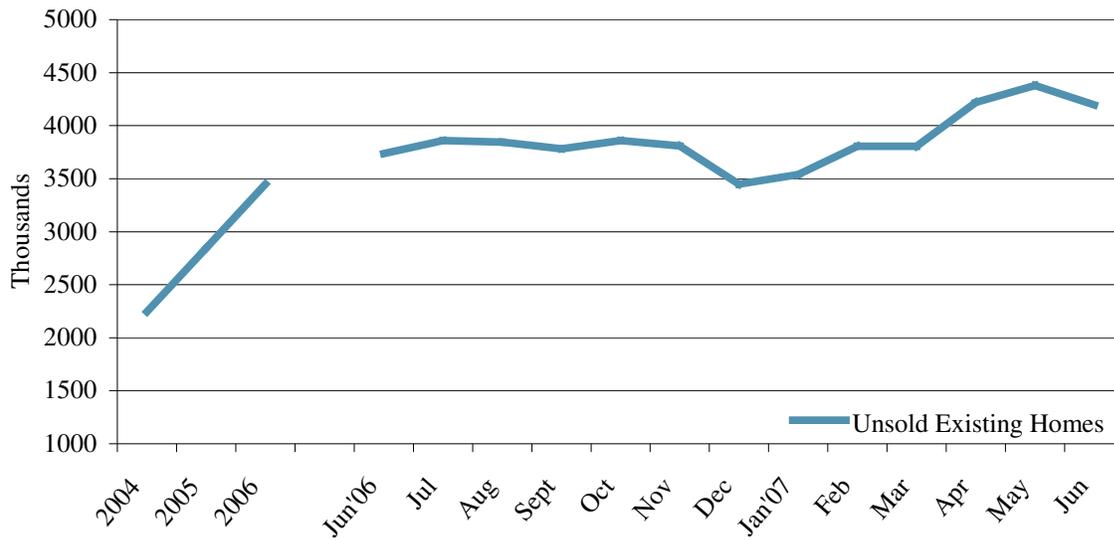


Source: National Association of Realtors

**FIGURE 5**
**Unsold New Homes**
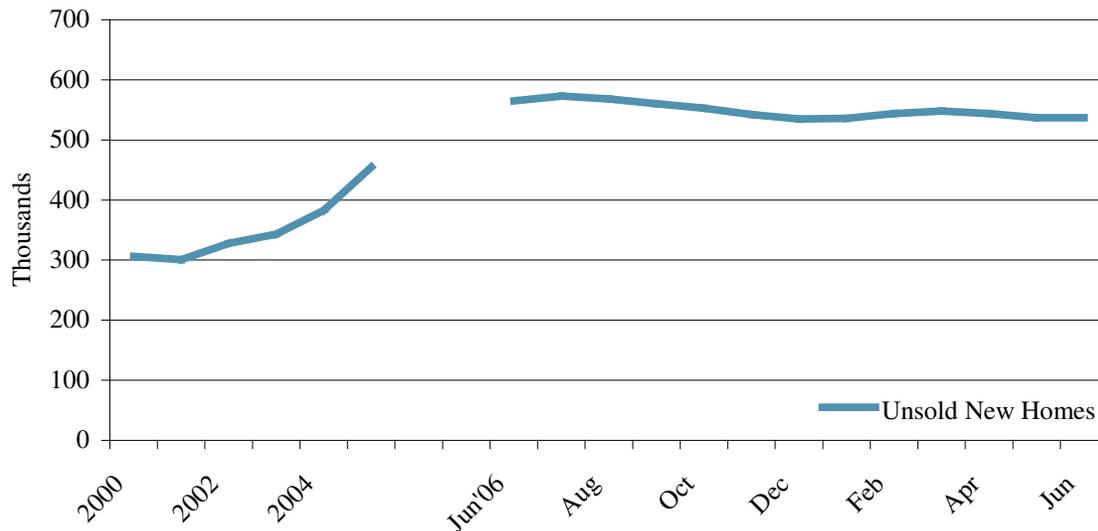


Source: Census Bureau

It is important to realize that this level of oversupply of housing puts the country into uncharted territory. For example, the peak inventory of unsold new homes of 573,000 in July of 2006 was more than 50 percent higher than the previous peak of 377,000 hit in May of 1989. While the population is 21 percent larger at present than it was in 1989, when the age structure is adjusted for its propensity to become new homebuyers, it is less than 8 percent greater at present than it was at the beginning of the nineties.[9]

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[9] This calculation assesses the rate at which households switch from being renters to homeowners by age group. The rate of switching is very rapid for households headed by people in their 20s and 30s. It is very slow for households headed by people in their 40s and 50s. In the beginning of the nineties, most baby boomers were still in their 20s or 30s. Now the entire baby boom generation is at least in their 40s. The calculation uses the average rate of homeownership by age of consuming unit in the 2005 Consumer Expenditure Survey

**FIGURE 6a**
**Rental Vacancy Rate**
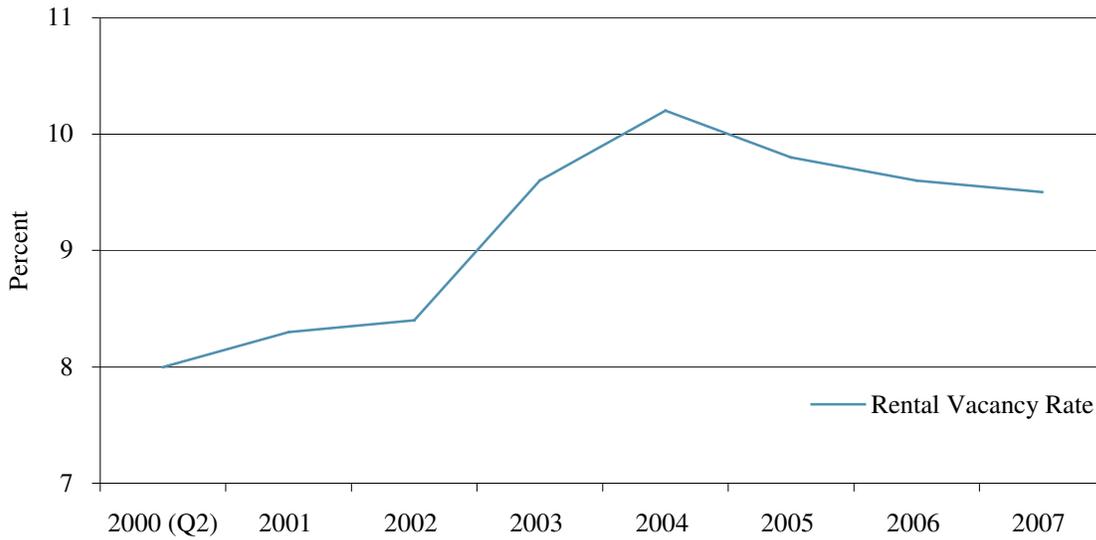


Source: Census Bureau

**FIGURE 6b**
**Vacancy Rate for Ownership Units**
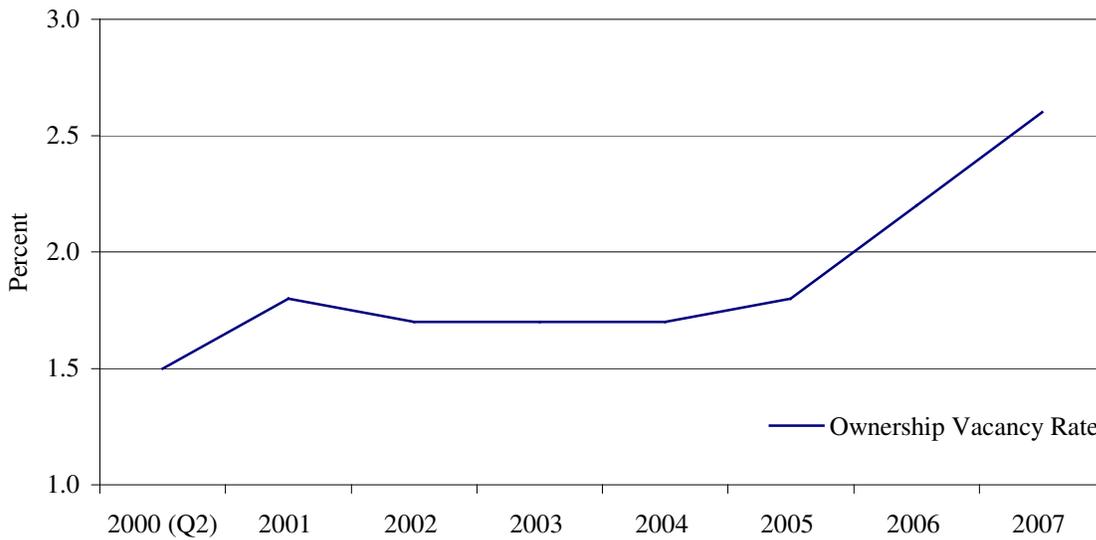


Source: Census Bureau

In many ways the vacancy rate for ownership units is probably the best measure of the size of the housing glut. Most homebuyers are also home sellers, so the bulk of the inventory of new and existing homes will be sold by people who already own a home. In other words, they will be placing their current home on the market in order to buy a home already on the market. However, the number of vacant ownership units can only be reduced by an increase in the number of

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[ftp://ftp.bls.gov/pub/special.requests/ce/share/2005/age.txt]. It assumes that the households buy homes at a sufficient rate each year so that the rate of ownership for each age grouping is equal to the estimate in the summary. It is assumed that the ownership rates at end point for an age grouping are between the averages for the adjacent groupings. The starting rate of ownership for units headed by a 20 year-old is arbitrarily assumed to be 5 percent. The ratio between the Census estimate of population by age group in 2005 and the CEX estimate of consumers by age group is applied to 1990 Census data to get an estimate of consumer units by age group for that year.

**FIGURE 7**
**House Price Changes, Year over Year**
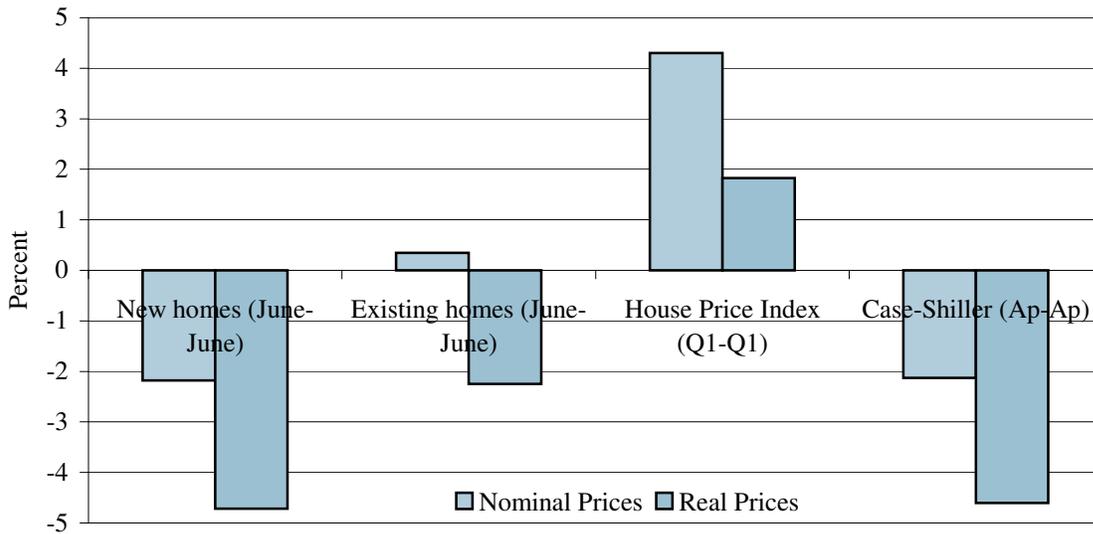


Source: NAR, Census Bureau, OFHEO, Macromarkets.com and author's calculations.

homeowners or converting an ownership unit into a rental unit. (It can also be reduced by an increase in the number of people who have second homes, but this grows very slowly.) There are currently more than 2 million vacant ownership units, almost twice the peak of 1,082,000 vacant units in 1989.[10]

The large oversupply has had the predictable effect of lowering prices, although the exact extent of the price declines is difficult to determine. **Figure 7** shows the year over year nominal and real price declines using the most recent data from the HPI, the median price index for existing homes, the median price index for new homes, and the Case-Shiller index. Each of these measures is likely to understate the true extent of the price decline.

The most important reason for the understatement, which affects all four measures, is that the indices are based on contracted prices. In the last year, it has become common for sellers to offer a variety of incentives, such as concessionary mortgages (generally in the case of builders), payment of condo fees, and, in some cases, outright kickbacks. These incentives can easily be 2-4 percent of the sale price. At the peak of the market, few sellers were offering any concessions to buyers. In fact, in many areas buyers could not even include an inspection clause in contracts.[11] While there is only anecdotal evidence on the value of the various concessions now included in contracts, these concessions mean that the actual price has declined somewhat more than the contracted prices measured in these indices.

The median price indices, for both new and existing homes, will also be affected by changes in the mix of housing. There is reason to believe that the meltdown in the subprime segment of the market may have the effect of skewing the mix towards more expensive houses. Most of the people getting subprime mortgages were moderate income homebuyers. As these people find it harder to get mortgages, moderate income homebuyers will comprise a smaller share of the market, which means

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[10] Census Bureau, 2007. "Housing Vacancies and Homeownership, Historical Data" Table 7,
[http://www.census.gov/hhes/www/housing/hvs/historic/histtab7.html].

[11] An inspection has considerable value since it substantially reduces the probability that the purchaser will buy a home with major structural problems.

that the median homebuyer will be at a higher point along the income scale. For this reason, an index that tracks median prices may currently be understating the actual fall in house prices.

The house price index avoids this problem because it tracks resales of the same house through time. However, the main index includes data from both actual sales and refinancing. In the latter case, the data is based on an assessment done for the mortgage issuer rather than a sales contract. However, OFHEO does publish an index that is based exclusively on sales. This index has risen by 3.0 percent over the last year, 1.3 percentage points less than the HPI index shown in figure 7.[12] The Case-Shiller index is also a repeat sales index, so it should not be affected by the skewing of the housing market towards higher end buyers. However, it is only available for twenty metropolitan areas, so it may not be as representative as the other indexes.

While the data may be imperfect, it does provide fairly solid evidence that prices are falling nationally in nominal terms and even more rapidly in real terms. Three of the four indices show a price decline year over year after adjusting for inflation. The median price index for new homes shows the largest real price decline, falling by 4.7 percent from June 2006 to June 2007. The drop in the Case-Shiller index is almost as large: 4.6 percent from April 2006 to April 2007. Some of the metropolitan area price declines in the Case-Shiller index are quite striking. For example, it shows that nominal house prices have fallen year over year by almost 6 percent in Washington, D.C., by almost 7.0 percent in San Diego, and almost 10 percent in Detroit.

Falling house prices are the root cause of the problems in the subprime market. The teaser rates and resets on adjustable rate mortgages may be the proximate cause of the crisis. However, if house prices had continued to rise, the specific mortgage terms would not have been a problem. Homeowners could always borrow against their new equity to meet their mortgage payments or sell their house and pocket a gain. Deceptive mortgage lending practices contributed to the bubble and have imposed serious hardships on millions of families, but the real problem is the downturn in prices.

This is important to recognize because it argues against the claims of many analysts that the problems will be restricted to the subprime segment of the housing market. It is understandable that the problems would appear first in the subprime market, since these are buyers who generally have little or no financial cushion. However, it is almost inevitable that the problems will spill over into the rest of the market. Subprime and Alt-A mortgages together accounted for 40 percent of the housing market in 2006. With credit tightening rapidly for these segments of the market, millions of potential homebuyers will find it far more difficult to get mortgages.

The resulting weakness in this large segment of the market will make it more difficult for millions of prime borrowers to move up into more expensive homes, as they are forced to sell their current home at a lower price than they had anticipated. This domino effect is likely to put downward pressure on house prices across the board.

Of course, default rates will follow weakness in house prices. As more homeowners find themselves with negative equity, they will have greater incentive to default. The number of homeowners with negative equity is almost certainly already at a record high. The ratio of equity to value has been plummeting in recent years as homeowners have been borrowing against their equity almost as

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[12] Another problem with the HPI is that it only includes homes that have mortgages that can be included in Fannie Mae and Freddie Mac mortgage pools. In 2007, these mortgages were capped at $417,000. Since this is less than the median house price in the most expensive metropolitan areas, the HPI excludes most of the upper half of the market in many cities.

quickly as their houses rose in price. The ratio of equity to value was at 52.7 percent at the end of the first quarter. It had been over 60.0 percent as recently as the mid-nineties.[13]

While there would be no problem if all homeowners had equity equal to more than 50 percent of their house value, this is clearly not the case. Many homeowners have been conservative and have paid down their mortgages as quickly as possible. According to the BLS Current Expenditure Survey, 37.3 percent of homeowners own their homes outright.[14] If the paid off homes have the same average value as those with outstanding mortgages, then the average ratio of equity to value in the 62.7 percent of homes with outstanding mortgages would be less than 25 percent. (Homes with mortgages probably have a higher average value than paid off homes, since they are more likely newer homes bought [by younger buyers] in hotter markets.)

Given the large number of people who have recently bought homes with little or no down payment, or who have borrowed extensively against the equity in their house, there will undoubtedly be millions of homeowners with negative equity if the decline in house prices persists for many more quarters. Their incentive to default in these circumstances will be especially great if they come to expect that prices will continue to fall. As the default rates rise even among prime borrowers, mortgage credit will become stricter among this group as well. This will further constrain demand, placing additional downward pressure on house prices.

# The Housing Market and the Economy

The weakness in the housing market will feed back into weakness in the economy through three channels:

1) the direct effect of reduced employment in housing-related sectors;
2) the reduction in consumption as a result of lost housing wealth; and
3) increases in interest rates, as creditors become more cautious following losses in mortgage lending.

The first channel is the most obvious. The glut in housing will lead to a reduction in construction and a falloff in sales. This process is already well underway. Residential construction (which includes financing fees and real estate commissions) peaked at 6.3 percent of GDP in the 4th quarter of 2005. Since then it has fallen back by an amount equal to 1.4 percentage points to 4.9 percent of GDP. However, it can still drop much further. In the years 1993-95, when the economy was in the middle of the last recovery, but before the housing bubble took off, residential construction averaged 4.1 percent of GDP. It is reasonable to think that the residential construction share of output may return to this pre-bubble level. However, there may be a period in which this sector contracts to levels below its long-term trend to allow the excess housing inventory to be absorbed. Residential construction fell to 3.4 percent of GDP in the 1991 recession and just 3.2 percent of GDP in the 1982 recession. If a decline to the 1993-95 shares is considered an optimistic outcome, and a decline to the 1982 share a pessimistic outcome, this implies a further contraction in the housing sector of 0.9 to 1.7 percentage points of GDP.

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[13] Federal Reserve Board, Flow of Funds, Table B100, Line 50
[http://www.federalreserve.gov/releases/z1/current/z1r-5.pdf].

[14] Bureau of Labor Statistics, Current Expenditure Survey, 2005. Table 7 – Housing Tenure and Type of Area
[ftp://ftp.bls.gov/pub/special.requests/ce/standard/2005/tenure.txt].

The second channel is the reduction in consumption that will result from the loss of housing bubble wealth. The size of this effect will depend both on the amount of housing bubble wealth that disappears in a crash and the actual size of the wealth effect. The difference between the value of the country's housing stock at present and the value that it would have if it had just grown in step with the overall rate of inflation is more than $8 trillion. Of course not all of this wealth will necessarily disappear with the bursting of the housing bubble. It is possible that some of the rise in house prices is justified by fundamental factors and will persist after the bubble. It is also possible that house prices will overshoot on the downside, a common tendency in financial markets. This is especially likely if buyers come to expect that prices will continue to decline and, therefore, are reluctant to buy homes even after they have already lost much of their value. In addition, if a credit crunch develops in the housing market as a result of widespread defaults, prices may drop below their trend value. To set extreme values, if half of the run-up in prices persists, then there will be a loss of $4 trillion in housing wealth. If prices overshoot on the low side for a period of time, then the loss in wealth can perhaps be as much as $9 trillion.

The estimates of the size of the housing wealth effect on consumption are generally put in the range of 4-6 percent. The low-end calculation of the lost wealth due to the bursting of the bubble and the low end estimate for the size of the wealth effect implies a reduction in annual consumption equal to $160 billion a year. The high-end calculation of lost wealth coupled with the high-end estimate of the size of the wealth effect implies a reduction in annual consumption of $540 billion a year.

The third effect from a crash of the housing bubble is its impact on credit markets more generally. International financial markets have come to view many loans as being associated with very little risk, as demonstrated by a sharp fall in the spreads between the interest rates on government bonds and a wide variety of other loans. Mortgage-backed securities were a major class of assets that benefited from this reduced risk perception. It is likely that widespread defaults in the mortgage market, will lead to sharp declines in the value of mortgage backed securities, which will lead to an increase in spreads in credit markets more generally. Such an increase would be attributable both to an increased perception of risk among investors and also to the potential loss of trillions of dollars of wealth in mortgage-backed instruments.

Such a tightening of credit would affect markets around the world, but its most direct effect on the U.S. economy may be to end the tide of buyouts that has played an important role in boosting the stock market in the last couple of years. This could eliminate the over-valuation in the stock market of the last couple of years. If the stock prices fell to their historic average price-to-earnings ratio of 14.5 against trend earnings (approximately a 23 percent decline from recent levels), it would imply a loss in wealth of approximately $4.5 trillion. The wealth effect on consumption out of stock wealth is generally estimated at between 3-4 percent. This would imply a reduction in consumption of $135 billion to $180 billion a year.

**Table 3** shows the range of effects calculated for each of these channels. The cumulative range for the loss of demand is between $415 and $950 billion annually, the equivalent of between 3.1 and 7.0 percent of GDP. Even the low-end of this range implies a severe recession if the effect is felt over a relatively short period of time. The higher end would imply a more severe recession than any in the post-war era.

**TABLE 3**
**Economic Impact of the Collapse of the Housing Bubble**

|  | Billions of 2007 dollars | | Share of GDP | |
|---|---|---|---|---|
|  | Low | High | Low | High |
| Direct Effect of Housing Contraction | $120 | $230 | 0.9% | 1.7% |
| Housing Wealth Effect on Consumption | $160 | $540 | 1.2% | 3.9% |
| Stock Wealth Effect on Consumption | $135 | $180 | 1.0% | 1.3% |
| **Total** | **$415** | **$950** | **3.1%** | **7.0%** |

Source: Author's calculations, see text.

The actual macroeconomic impact of the unwinding housing and stock bubbles will depend on the time period over which it takes place. As with the growth of the bubble this will depend largely on psychological factors. If homeowners come to believe that house prices will continue to fall in the future, then many will try to sell their homes sooner than would otherwise be the case. Similarly, potential homebuyers will be more hesitant to purchase houses if they believe that they will continue to fall in price. In addition, lenders will be far more reluctant to make money available for home mortgages if they believe that there is a high risk of default.

For these reasons, it is easy to envision scenarios in which the housing bubble unwinds rapidly. However, if expectations adjust more slowly, and homeowners continue to believe that house prices will in general appreciate through time, then the unwinding may take much longer.

It is worth noting that from the standpoint of current homeowners and prospective homebuyers a quick unraveling is more desirable than a gradual one, even if the macroeconomic consequences may be more severe. If a homeowner has a house that will lose a substantial portion of its value over the near future, then she will be better situated to deal with this loss of wealth if it happens sooner rather than if it is delayed for a substantial period of time. For example, if the homeowner is preparing for retirement, she would benefit from knowing sooner rather than later how much equity she can actually expect to have accumulated from her house. This would allow her to plan her savings, and possibly her retirement decision based on her actual wealth rather than wealth that is only a bubble illusion.

In the same vein, millions of homebuyers are purchasing homes each year at bubble-inflated prices. Many of them will subsequently sell these houses at large losses in real terms. They would be hugely benefited if the bubble deflated before they purchased their houses.

For these reasons, tens of millions of homeowners or potential homeowners will be far better off if the housing bubble deflates quickly, so that they do not make extremely important life decisions based on temporarily inflated house prices. Allowing the housing bubble to grow to its current proportions was an extremely serious policy error by the Federal Reserve Board. Delaying the deflation of the bubble would compound this error.

When the bubble eventually does deflate, many of the secondary effects will also be substantial. For example, property tax revenue for many state and local governments soared along with property values. If these governmental units made plans based on the assumption that property tax revenues would remain at current levels, or, even worse, sustain their recent rate of growth, they will face serious budget shortfalls in future years. Similarly, many public and private pension funds may find that some of their investments turn sour – especially those based on real estate or heavily leveraged investments that are dependent on access to cheap capital. Large pension fund losses could pose a

substantial burden on state governments that are already coping with under-funded pensions and employee health care retirement funds.

Finally, the hedge and private equity funds that have thrived on access to cheap credit may suddenly find that their mode of business is considerably more difficult. It is far easier to provide large returns with cheap credit in a rising stock market than expensive credit in a falling market. The rapid growth of these funds is likely to slow and possibly be reversed when the housing and stock market adjust to more normal levels.

# Conclusion

Like Japan in the eighties, the United States has experienced a stock and real estate bubble developing side by side. While the bubbles in Japan collapsed simultaneously at the end of the decades, the collapse of the U.S. stock bubble likely helped to feed the growth in the housing bubble. Its continued expansion over the last seven years has led to accumulation of more than $8 trillion of housing bubble wealth.

However, bubbles always create the conditions for their unraveling. In the case of the housing bubble, the main condition is an enormous oversupply of housing which has led to record inventories of unsold homes and record high vacancy rates in both rental and ownership units. This oversupply is already leading to falling prices in many areas. These price declines are likely to lead to a downward spiral as more and more homeowners find themselves with negative equity, which will lead millions to default. At the same time, the growing wave of bad mortgages will lead to a further tightening of credit that will choke off demand, putting even more downward pressure on prices.

The housing bubble was recognizable, as some economists did warn of the potential problem several years ago based on an analysis of the fundamentals in the housing market. However, as was the case with the stock bubble, those who focused their analysis on fundamentals were largely ignored in the media and in policy circles. Instead, many of the most visible voices were explicit bulls on the housing market, and often people with a vested interest in sustaining the bubble. The economy and the country are likely to pay a very large price for this policy failure.

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# Appendix

**Figure 1** – The projection for corporate profits for 2017 in Figure 1 is taken from CBO (2007) Table 2-1. The profit projection in this table is for book profits. This projection is adjusted up to equal accounting profits by multiplying by the average ratio of accounting profits to book profits for the years 1992-2000 (1.067), NIPA Table 1.14 line 11 divided by line 32. After tax profits were obtained by applying the average corporate tax rate over this period (30.4 percent), NIPA Table 1.14, line 14 divided by line 13. All the numbers are put into 2006 dollars by dividing by the 26.8 percent cumulative inflation projected for this period by CBO (Table 2-1).

The price to earnings ratio calculated in Figure 1 assumes that profits grow at a constant rate from their current level to their projected level for 2017. It is assumed that 60 percent of after-tax profits are paid out in dividends each year, with the gap between a 7.0 percent real return being made up by a rise in share price. In other words, the rise in share prices = 7.0 percent – [60 percent of after-tax profits / value of outstanding stock]. This calculation assumes that the gap between the foreign profits of U.S. corporations and the U.S. earnings of foreign corporations does not increase relative to corporate profits generated in the United States. This is a conservative assumption since CBO actually projects that the domestic earnings of foreign corporations will rise relative to the foreign profits of U.S. corporations over this period.

**Figure 2** – This figure shows the rate of increase in the Bureau of Labor Statistic home price index from the consumer price index for the years from 1953 to 1975. It shows the average increase between this index and the Office of Federal Housing Enterprise Oversights House Price Index (HPI) for the years from 1975 to 1982. It shows the rate of increase in the HPI for years after 1982. The indices are deflated by CPI-U-RS for years after 1978 and the CPI-U-X1 for years prior to 1978.

**Figure 3** – The rent used in this figure is the owner equivalent rent component of the CPI for years after 1982 and the rent proper component for years prior to 1982. The indices are deflated by CPI-U-RS for years after 1978 and the CPI-U-X1 for years prior to 1978.

**Figure 4** – Data on unsold new homes is taken from the Census Bureau, [http://www.census.gov/const/fsalmon.pdf].

**Figure 5** – Data on inventories of existing homes is taken from the National Association of Realtors (NAR) [http://www.realtor.org/Research.nsf/files/EHSreport.XLS/$FILE/EHSreport.XLS].

**Figure 6a and 6b** – Data on vacancy rates for rental and ownership units is taken from Census Bureau's release on vacancy data for the 2nd quarter of 2007 [http://www.census.gov/hhes/www/housing/hvs/qtr207/q207press.pdf].

**Figure 7** – Data on price changes for new homes is taken from Census Bureau's release of June, 2007 data on new home sales [http://www.census.gov/const/newressales.pdf]. Data on the price of existing homes were taken from the NAR's release of data on existing homes sales for June [http://www.realtor.org/Research.nsf/files/EHSreport.XLS/$FILE/EHSreport.XLS]. The House Price Index data was taken from OFHEO's release of HPI data for the first quarter of 2007 [http://www.ofheo.gov/media/pdf/1q07hpi.pdf]. The data for the Case-Shiller Index is taken from the MacroMarkets release of the Case-Shiller index for April of 2007. [http://macromarkets.com/csi_housing/sp_caseshiller.asp]. The real increases were calculated using the CPI-U as deflator.