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Briefing Paper

The Run-up in Home Prices: Is It Real or Is It Another Bubble?

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Executive Summary

In the last seven years home purchase prices have risen nearly 30 percent more than the rate of inflation. This run-up in housing prices has increased housing wealth by more than $2.6 trillion compared to a situation in which home prices had just kept place with inflation. This is an average of more than $35,000 of additional wealth for each of the nation's 73.3 million homeowners. This paper examines whether the increase in home prices can be grounded in fundamental economic factors, or whether it is simply a bubble, similar to the stock market bubble. The paper notes:

1) There has been no clear upward trend in housing costs relative to other items in the post-war period. In general, housing prices move in step with the overall rate of inflation. This means that the recent spurt in housing prices is a departure from the prior history.

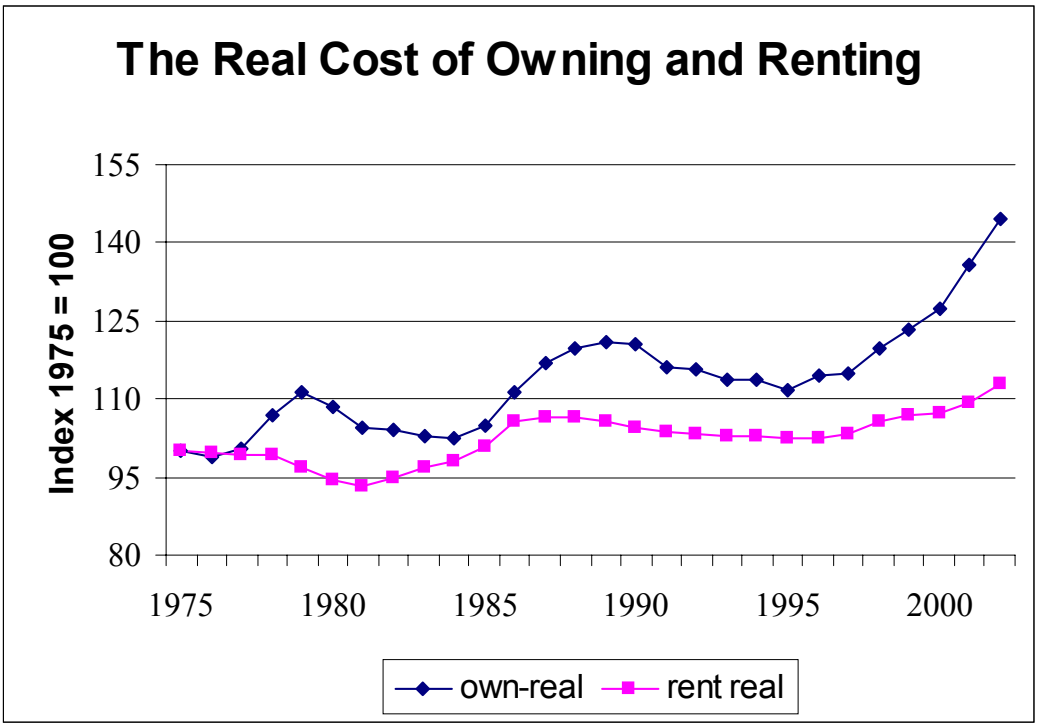
2) There is no clear link between the pace of income growth and the share of housing in consumption. In the period from 1951 to 1972, when income rose very rapidly (considerably faster than in the late nineties), there was only a very modest increase in the share of consumption spending that went to housing.

3) The sharpest increase in the housing share of consumption spending was associated with the baby boom cohort entering the labor force in the seventies and early eighties. The rate of increase in the housing share of consumption slowed precipitously in the mid and late eighties.

4) Current demographics suggest that the housing share of consumer expenditures should be falling for the foreseeable future, as the baby boom cohort approaches retirement.

Two thirds of the run-up in home prices is attributable to a rise in the price of buying a home relative to the cost of renting a home, as shown in Figure 1. This is what would be expected if there is a housing bubble, since it suggests that families are buying homes in large part as an investment rather than primarily as a place to live. A sharp slowdown in the rate of inflation in rental cost index in the last six months, and a record high rental vacancy rate, suggests that demand for rental housing is lagging, which could precipitate the collapse of the bubble.

Figure 1



Source: BLS and OFHEO, see appendix.

5) The recent drop in interest rates cannot explain the divergence of home purchase prices and rental prices. Much sharper movements in interest rates in the eighties did not have anywhere near as large an effect.

6) If low interest rates actually are the main factor behind the run-up in housing prices, then it would support the view that there is a bubble in the housing market, since interest rates are unlikely to remain so low, especially with the government projected to run sizable budget deficits for the foreseeable future.

The collapse of the housing bubble, implying a drop of between 11 and 22 percent in the average of housing prices , will destroy between $1.3 trillion and $2.6 trillion in housing wealth.

7) In the wake of this collapse, residential construction is likely to fall by between 0.6 and 1.3 percentage points of GDP.

8) The loss of this much housing wealth will reduce consumption by between $80 and $160 billion.

9) The average ratio of homeowner's equity to value, at 55.2 percent, is near its low for the post-war period. A sharp drop in home prices will send this ratio far below its previous low point. Since there are considerable differences in housing markets across the country, if housing

prices fall 10 percent nationally, then many regions will see price declines of 20-30 percent. This will create a situation in which millions of families have little or no equity in their homes. This is an especially serious issue with the large baby boom cohort nearing retirement. It will also lead to a surge in mortgage default rates, as many homeowners opt not to keep paying a mortgage that exceeds the value of their home. This could place serious stress on the financial system.

In the late eighties Japan experienced a simultaneous bubble in its stock market and its real estate market. The collapse of these bubbles has derailed its economy for more than a decade. A similar collapse in the United States, coupled with a poor policy response, could have similar consequences here.

Introduction

The recent plunge in stock prices has finally forced most policy analysts and economists to acknowledge that the stock market had a bubble at its 1998-2000 peaks. Similarly, the recent fall in the dollar has increased the recognition that the dollar was also over-valued. The economy has yet to deal with all the disruptions created by the deflation of these two bubbles. This process will take some time, and the correction in the value of the dollar is still far from complete. However, the economy has now developed a third bubble, the collapse of which also poses a serious danger to the economy.

The third bubble is in the housing market. Since 1995, home sale prices have risen far more rapidly than the overall rate of inflation. Over this seven year period, home sale prices have risen by more than 47 percent in nominal terms, an amount that is nearly 30 percent above the overall rate of inflation.[2] This run up in housing prices has translated into an additional $2.7 trillion in housing wealth, more than $35,000 for an average homeowner, compared to a scenario in which home sale prices had only kept place with the overall rate of inflation.[3]

This increase in housing prices has had important short-term consequences for the economy. Most immediately, it has helped to sustain housing sales and construction of new homes, as many families purchase homes at least partly with the belief that their price will continue to outpace inflation in the future. Housing sales have remained at or near record levels throughout the recent recession. High housing prices have also fostered consumer spending generally. As several recent studies have shown, households view the value of their homes as an important source of wealth for the future (e.g. Case, Shiller, and Quigley, 2001; Dynan, K. and D. Maki, 2001; Maki, D. and M. Palumbo). When they see home values climb, they feel less need to save for the future. In addition, increases in home values allow households to directly increase their consumption by borrowing against their increased equity. Partly as a result of this

[2] This figure is based on House Price Index from the Office of Federal Housing Enterprise Oversight.

[3] This figure is obtained by calculating the difference between the current market value of residential housing owned by the household sector (Federal Reserve Board, Flow of Funds Table B.100, lines 2 and 3) and the market value if home prices had simply risen at a non-shelter rate of inflation since the first quarter of 1995 (13.7 percent, based on the Bureau of Labor Statistics index of the CPI, excluding shelter).

run-up in housing prices, consumption has stayed high and savings rates have remained near record lows, even as the declining stock market has substantially reduced the wealth of tens of millions of families.

While the short-term effects of a housing bubble appear very beneficial—just as was the case with the stock bubble and the dollar bubble—the long-term effects from its eventual deflation can be extremely harmful, both to the economy as a whole, and to tens of millions of families that will see much of their equity disappear unexpectedly. The economy will lose an important source of demand as housing construction plummets and the wealth effect goes into reverse. This will slow an economy already reeling from the effects of the collapse of the stock bubble. The loss of housing equity will be yet another blow to baby boomers on the edge of retirement, many of whom just endured large losses in the stock market.

Unfortunately, most of the nation's political and economic leadership remained oblivious to the dangers of the stock market and dollar bubbles until they began to deflate. This failure created the basis for the economic uncertainty the country currently faces. The problems created by the deflation of the stock market and dollar bubbles will be aggravated further by the deflation of the housing bubble. This process will prove even more painful if the housing bubble is allowed to expand still further before collapsing.

The first section of this paper examines the evidence that the housing market is in fact experiencing a bubble. It shows that the nineties have seen a run-up in housing prices that is without precedent in the post-war era. The second section points out some of the likely implications of housing prices returning to more normal levels. The third section briefly examines the economy's near-term prospects, given the likely collapse of the housing bubble. This is followed by a brief conclusion.

The Evidence for a Housing Bubble

While there is no dispute that housing prices have vastly outpaced the inflation rate over the last seven years, it is possible that higher housing prices reflect shifts in underlying fundamentals, which have led people to place increased value on home ownership. This is precisely what Federal Reserve Board Chairman Alan Greenspan argued in recent testimony before the Congress ("Fed Chief Blames Corporate Greed; House Revises Bill," *New York Times*, July 17, 2002, Page A1). This section examines the evidence for such a shift in fundamentals.

Before looking at the data, it is worth noting that very similar arguments concerning shifts in fundamentals were made by those who believed that the stock prices at the peak of the bubble were justified, or that the high dollar could be maintained in spite of soaring current account deficits. Many prominent economists, including Mr. Greenspan, put forward such arguments. In the wake of the recent declines in the stock market and the dollar, these arguments appear much less credible than they may have two or three years ago.

The first issue to consider is whether there may have been a shift in the value that people place on housing, as opposed to other goods. In other words, if there was a shift in people's tastes, either due to income growth, growth in population, or just a random factor leading people to value housing more than they had previously, then higher home prices may be due to fundamental factors, rather than a temporary bubble.

The historical pattern of consumer spending over the post-war era, and the trend in real housing prices, provides some insight into this issue. The first column of Table 1 shows the percentage of consumer expenditures that are attributed to rent or owners equivalent rent, which measure spending on housing as a consumption good, at five different points in the post war era.[4] The second and third columns show the rental price index over this period, as well as the overall consumer price index (CPI) for the same years.

Table 1

Housing Share of Consumption and Relative Price

	Housing Share of Consumption	Rental Price Index	Overall Price Index
1951	13.9%	100.0	100.0
1961	16.6%	126.9	114.8
1971-72	17.4%	160.4	154.6
1982-84	25.2%	323.6	349.6
1993-95	26.8%	498.4	501.8

Source: Bureau of Labor Statistics and Baker 1996, see appendix.

The first point worth noting is that the share of consumer spending going to housing (rent and owner's equivalent rent) did in fact rise over the post-war period, from 13.9 percent in 1951 to 26.8 percent of spending in the years from 1993-95. However, the rate of increase in the housing share of expenditures was sharpest in the period from the early seventies to the early eighties, when it rose from 17.4 percent to 25.2 percent. The rate of growth in the housing share slowed substantially in the period from the early eighties to the mid nineties, rising by just 1.6 percentage points over an eleven-year period.

This history fits well with the basic demographics of the post-war period. The baby boomers were becoming adults and starting their own families in large numbers in the seventies

[4] The concept of owner's equivalent rent was developed by the Bureau of Labor Statistics to approximate the implicit rental cost incurred by a household that owns its own home. It is intended to remove costs that are directly attributable to ownership, such as brokerage fees for realtors. In this way it is supposed to measure the cost of consuming the home, rather than any expenses that might be attributable to the purchase of the home as an investment. The years shown in Table 1 were selected because they correspond to comprehensive revisions of the consumer price index, which required the Bureau of Labor Statistics to carefully estimate the portion of household expenditures that went to each category of consumption. This issue is explained in more detail in the appendix. The price index numbers refer to the first years of the re-based index, 1953, 1964, 1978, 1987, and 1998, respectively.

and early eighties. By the late eighties, the vast majority of baby boomers were already living on their own. Therefore, it is not surprising that the growth in the housing share of expenditures would have slowed significantly. The current demographic structure suggests that there should be some decrease in the demand for housing as the baby boom cohorts get closer to retirement.[5]

A second striking fact is that there is no obvious relationship between the rate of increase in the share of housing in total consumption and the rate of increase in rental costs. Rental costs do increase more rapidly than the overall CPI in the period from 1951 to 1961, as the housing share of expenditures also increases rapidly. Housing costs rise by 26.9 percent over this period, while the overall rate of inflation is just 14.8 percent.

However, in the period from the early seventies (1971-72) to the early eighties (1982-84), housing costs actually increase somewhat less rapidly than the overall CPI (101.7 percent for rental costs, compared to 116.1 percent for the CPI as a whole), even though there is a large increase in the housing share of consumption expenditures over the period. In short, housing construction was apparently able to keep pace with the rapid increase in demand over this period, so there was no increase in the relative price of housing. Taking the period as a whole, there is no clear tendency for housing prices to move at a different rate than other prices. The average annual increase in the rental cost index from 1951 to 1994 was 3.27 percent, virtually identical to the 3.29 percent average annual increase for the CPI as a whole.

Housing is obviously in somewhat fixed supply in the short-term, so it is entirely plausible that a rapid rise in income, like we saw in the late nineties, coupled with the surge in stock market wealth, would lead to a temporary run-up in housing prices, as demand outstrips supply. But the data in Table 1 provide no reason for believing that this effect would be long lasting and lead to a permanent increase in housing prices. The surge in stock market wealth has already been reversed, and the income growth of the late nineties was not extraordinary by post-war standards.

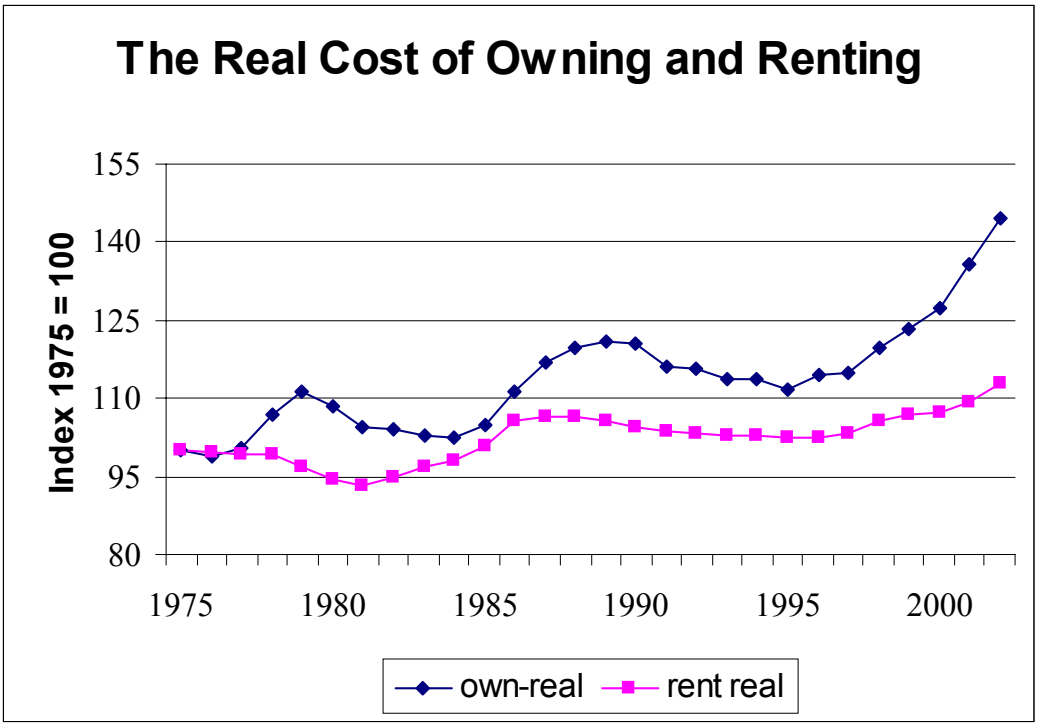
Median family income grew by 2.3 percent annually between 1993 and 2000. By comparison, median family income grew by more than 3.1 percent annually from 1947 to 1973. This much more rapid and sustained rise in family income led to only a very gradual increase in the share of expenditures devoted to housing—and only a modest increase in the relative price of housing, so we should not expect large changes either in the demand for housing or in the relative price of housing from the income growth in the nineties. Also, according to the data from the Consumer Expenditure Survey, the share of family expenditures devoted to housing actually falls slightly as income rises [ftp://ftp.bls.gov/pub/special.requests/ce/share/2000/income.txt]. This would imply that if income were to continue to rise at healthy pace, then the relative demand for housing would decline. In short, this data suggest that a surge in demand can lead to

[5] According to data from the Bureau of Labor Statistics' consumer expenditure survey, the share of consumer expenditures going to shelter peaks at 20.3 percent for households headed by people between ages 25-34. It falls back slightly to 19.8 percent of expenditures for households headed by people between ages 35-44. The share of expenditures devoted to shelter falls further to 18.0 percent for households between ages 45 to 54, and to just 16.7 percent for households between ages 55 to 64. With the baby boomers moving into the latter two age groupings, the changing demographic structure suggests a significant decline in the demand for housing [ftp://ftp.bls.gov/pub/special.requests/ce/share/2000/age.txt].

a temporary increase in housing prices, as demand outstrips supply. But, as new housing comes on the market, this rise in housing prices should be reversed.

While there is no reason for believing that there has been a sharp increase in the underlying demand for housing, there is the possibility that homeownership has become relatively more attractive than renting, which could in turn push up the price of homes. It is worth noting that most of the run-up in the real cost of new homes in the last seven years is the result of a rise in the price of owning a home relative to the price of renting a home. Figure 2 compares the path of the rent index in the CPI with the Office of Federal Housing Price Enterprise Oversight (OFHEO) House Price Index from its inception in 1975 through the first quarter of 2001. Both indexes are deflated by the CPI (minus the shelter component), so they are showing the real costs of home purchases and renting.

Figure 2



Source: BLS and OFHEO, see appendix.

As can be seen, most of the increase in the house price index (HPI) in the last seven years represents a divergence from the CPI rent index. During this period, the rent index has risen by just under 10 percent in real terms, while the HPI has risen by 29.2 percent. In general, these indexes have stayed reasonably close together. There have been divergences in the past, as in the late seventies and late eighties when the HPI index grew more rapidly than the CPI rent index, but in both cases, these divergences were followed by a period in which the HPI declined relative to the CPI rent index.

It should not be surprising that these indexes would tend to move at approximately the same pace, since the movements in one index should affect the movements in the other index. For example, if the cost of buying a home rises sharply, as it has in recent years, it would be expected that this would get passed on in higher rents, as owners of rental units attempt to recoup higher purchase prices from their tenants. Similarly, if rents begin to fall, or at least not keep pace with inflation, it is reasonable to expect that this would eventually exert downward pressure on home prices. As tenants are able to get better deals on rent, they will be less anxious to rush out to buy homes. Also, potential homebuyers who are interested in renting out housing units would be willing to pay less for homes as rents drop.

This latter point is worth noting, especially since there has been some decline in the rate of growth of the CPI rent index in recent months. The nominal rate of increase in rental prices was 4.6 percent through the second half of 2001. This fell to a 4.1 percent annual rate in the first three months of 2002, and just 2.6 percent in the second quarter of 2002.[6] This data is always somewhat erratic, but this pattern seems to suggest a substantial decline in the rate of increase in the rental component. It now appears to be moving at a pace that is very close to the overall rate of inflation. It also worth noting that the rental vacancy rate reached 9.1 percent in the first quarter of 2002, the highest rate on record since the Census Bureau first began collecting these data in 1960.[7]

Before examining whether there can be a plausible explanation for the divergence between home prices and rental prices, it is important to point out that the housing market varies enormously by region. While the national data show that home prices on average have increased far more than the rate of inflation over the last seven years, this is not true everywhere. Table 2a shows the cumulative increase in housing costs in the metropolitan areas with the fast pace of housing price growth over the last ten years. As can be seen, in this top ten list, the cumulative rate of price increase has been close to 80 percent over the last five years. Nine of the ten metropolitan areas with the most rapid increase in housing prices are located in California. Table 2b shows the ten metropolitan areas with the slowest rate of price increase. (Appendix Table 1 shows the five year and one year rates of price increase in each of the fifty states.) The average home price increase for this second group is under 15 percent.

[6] The owners' equivalent rent index had a comparable slowdown, going from a 4.8 percent rate of increase in the second half of 2001, to 4.0 percent in the first quarter, to 3.2 percent in the second quarter of 2002.

[7] Housing Vacancy Survey, Second Quarter, 2002, [http://www.census.gov/hhes/www/housing/hvs/q202tab1.html].

Table 2a

Areas With Most Rapid Housing Price Increases

Metropolitan Area	5-Yr. Increase	1-Yr. Increase
1. Santa-Cruz-Watsonville, CA	88.9%	3.2%
2. San Jose, CA	83.3%	-3.8%
3. Barnstable-Yarmouth, MA	81.8%	13.5%
4. San Francisco, CA	80.8%	1.3%
5. Oakland, CA	80.5%	4.9%
6. Santa Rosa, CA	78.7%	5.2%
7. Salinas, CA	78.2%	6.0%
8. Santa Barbara-Santa Maria Lompoc, CA	75.5%	12.5%
9. San Luis Obispo-Atascadero-Paso Robles, CA	72.4%	11.8%
10. Vallejo-Fairfield-Napa, CA	71.9%	10.0%

Source: Office of Federal Housing Enterprise Oversight, 2002.

Table 2b

Areas With Least Rapid Housing Price Increases

Metropolitan Area	5-Yr. Increase	1-Yr. Increase
1. Honolulu, HI	9.0%	5.7%
2. Springfield, IL	10.3%	1.2%
3.Albuquerque, NM	11.0%	2.5%
4. Spokane, WA	12.5%	3.4%
5. Buffalo-Niagara Falls, NY	12.8%	1.8%
6. Reading, PA	12.9%	4.5%
7. Visalia-Tulare-Porterville, CA	13.6%	5.1%
8. Rochester, NY	14.3%	3.8%
9. Springfield, MO	15.0%	3.8%
10. Rockford, IL	15.1%	2.8%

Source: Office of Federal Housing Enterprise Oversight, 2002.

The large variation in regional housing markets is important for two reasons. First, it seems that many regional markets did not experience a housing bubble, as home prices moved more or less in step with the overall rate of inflation. Presumably, areas that were not affected by the bubble will not see sharp declines in home prices when the bubble deflates. Second, just as housing prices did not rise at the same pace everywhere during the bubble, they will not all deflate at the same rate when the bubble bursts. This means if prices decline by 10 percent nationwide, some regions could see price declines of 20 percent, or more. A 20 percent decline

in prices nation-wide could be associated with price drops of more than 40 percent in some regional markets. Of course, in some areas, rapidly rising prices may be associated with fundamental factors making the region more attractive, just as some of the companies whose stock price experienced large gains in the nineties were actually rapidly growing, profitable companies. Just because prices went up a lot with the housing bubble there is no guarantee that they will fall by a large amount when the bubble bursts.

There could be factors that would justify an increase in the gap between the rent index and the HPI—most importantly lower interest rates. But on closer examination, it is unlikely that these factors explain the divergence shown in Figure 1. While nominal mortgage interest rates are currently at their lowest level since the sixties, it is the real mortgage interest rate (the difference between the mortgage rate and the inflation rate) which should matter for housing prices. This is not much different from the rates of the mid-nineties, before the run-up in housing prices began.

For example, the year-round average for mortgage interest rates in 1993 was 7.2 percent. The rate of inflation in 1993 was 2.7 percent, implying a real mortgage interest rate of 4.5 percent. While nominal mortgage rates have fallen slightly under 6.4 percent in recent weeks [mid-July, 2002], the inflation rate over the last year has been just 1.1 percent, which would imply a real mortgage interest rate of just under 5.3 percent, slightly higher than the mid-nineties rate.[8] Even if homebuyers anticipate that annual inflation will rise to 2.5 percent, it would still translate into a real mortgage interest rate of 3.9 percent. In other words, it is not clear that there has been much, if any, decline in real mortgage interest rates from the period before the rapid run-up in housing prices.

It is also worth noting that the price movements shown in Figure 1 do not support the view that interest rates play a large role in determining the relative price movements of home prices and rental costs. For example, the increases in the real interest rate in the early eighties, due to the sharp slowdown in the rate of inflation, were far larger than the changes in real interest rates in the mid and late nineties. Yet, the change in the relative price of purchasing a home and renting was far smaller than what we have seen in the late nineties.

While it is possible that homebuyers only care about the nominal interest rate because they don't recognize changes in the inflation rate, this still could not provide an explanation for the sharp divergence in the home price index and the rental cost index of the last seven years. There was a much sharper drop in nominal interests from the early eighties to the late eighties, with the mortgage interest rate falling from an average of 14.9 percent in 1981-82 to 9.3 percent in 1987-88. This drop in mortgage interest rates was associated with a much smaller divergence between the home price index and the rental cost index.

There is one final point worth noting about interest rates and the possibility of a bubble existing in the housing market. If it really were the case that low interest rates explained the large gap between the house price index and the rental index, then we would expect this gap to be

[8] Data on mortgage interest rates were taken from the Federal Reserve Board [http://www.federalreserve.gov/releases/h15/data/m/cm.txt]

reversed once interest rates rise. It seems unlikely that mortgage interest rates will remain at their current lows indefinitely. This is especially unlikely given forecasts of large budget deficits for the foreseeable future. If the current low interest rates explain the surge in housing prices, then the housing market will plunge once interest rates return to more normal levels. The interest rate view, while almost certainly wrong for the reasons noted above, actually supports the argument that housing prices are experiencing an unsustainable bubble.

There are other factors that could explain a divergence in ownership and rental prices, but these mostly go the wrong way. For example, mortgage interest is tax deductible for people who itemize. But, this tax deduction would be worth less if the tax rate is lower. The tax cuts passed by Congress last year lowered the marginal tax rate for most taxpayers. This would have reduced the savings from the tax deduction, thereby making home buying relatively less attractive compared to renting. The exact same situation would apply to state and local property taxes.

In sum, it is indisputable that there has been a rapid run-up in the cost of purchasing a home over the last seven years. Since 1995, the real home price index has risen 29.2 percentage points more than the rate of inflation. Approximately two-thirds of this increase is due to an increase in the price of owning a home relative to renting, as the real rent index has risen by just under 10 percent over the same period. There is little basis for assuming that the increase in rental prices can be explained by an increase in the demand for housing relative to other consumption goods, since the nation's demographics actually suggest that the relative demand for housing should be decreasing. There is also little basis for believing that interest rates, or any other factor, can explain the divergence between the rent index and the HPI. The rent index has slowed substantially in the last two quarters, as the vacancy rate has risen. Since these two indexes have generally moved closely together in the past, it is likely that the HPI will follow the rent index in the months ahead, first showing considerably slower growth. In later months, it is likely that that the HPI will fall in real terms, and possibly in nominal terms, until it is back near its pre-bubble position relative to the rent index.

The Consequences of the Deflation of the Housing Bubble

The deflation of the housing bubble will have both significant macroeconomic effects—substantially slowing the economy—and a large impact on the wealth holdings of most of the nation's families. These issues are addressed in turn below.

The housing bubble has helped sustain the economy over the last year and a half through both its direct and indirect effect. The direct effect of the housing bubble has been to increase the demand for residential housing. Due to the bubble, people are buying houses as investments which they expect to rise in value, not simply as places to live. This expectation that prices will continue to rise leads families to buy larger or more houses than they would if they simply viewed their homes as places to live. In 2001, housing averaged just under 4.4 percent of nominal GDP. Its share rose slightly to 4.5 percent in the first quarter of 2002. By comparison, in the years 1993-1995, before the housing bubble began to inflate, spending on housing averaged

just 3.9 percent of nominal GDP. It is reasonable to expect that in the wake of the collapse of the housing bubble, housing expenditures as a share of GDP will return to their pre-bubble levels. In fact, it is likely that housing expenditures may fall somewhat below this level, due to the high levels of residential construction during the bubble years.

The housing bubble has also spurred consumption. Housing spurs consumption in two ways. As a direct effect, there is the purchase of furniture and other household items that is associated with moving into a new house. The indirect effect is the wealth effect resulting from having more equity in a home. When a family sees the value of their home rise, they are likely to feel less need to save for the future, since their wealth is rising without saving. Higher home values also give families an easy method to borrow to support additional consumption, since they can refinance existing mortgages or take out home equity loans against the increased value of their home. Clearly, this has happened on a large-scale in the last year and a half, as refinancing soared to record levels.

A recent study estimated the size of the wealth effect associated with wealth in housing at approximately 6 percent, meaning that every dollar increase in the value of residential housing is associated with 6 cents in additional consumption expenditures (Case, Shiller, and Quigley 2001). By comparison, conventional estimates of the wealth effect from stock put the effect at 3 to 4 percent (e.g. see Dynan, K. and D. Maki, 2001 and Maki, D. and M. Palumbo, 2001.) This means that on a per dollar basis, the impact of wealth in housing is considerably larger than the impact of wealth in stock. The relatively larger wealth effect from housing can help to explain why consumption spending has remained strong in 2001 and 2002, even as the stock market has lost close to 50 percent of its value.

However, if the housing market is being driven by a bubble, then this spur to consumption will eventually be lost as well. This estimate of the housing wealth effect makes it possible to get a rough estimate of the demand that will be lost from the deflation of the housing bubble. Table 3 shows estimates of the drop in demand from consumption and residential investment that will result from the deflation of the housing bubble. The "big bubble" scenario assumes that the entire increase in the home price index relative to the rental cost index (some of

Table 3

The Impact of the Deflation of the Housing Bubble

	Lost Wealth	**Decline in Annual Consumption**	**Decline in Housing Investment**
Big Bubble	$2,638 billion	$158 billion	$136 billion
Little Bubble	$1,319 billion	$79 billion	$63 billion

Source: Federal Reserve Board Flow of Funds and author's calculations, see appendix.

which took place in the eighties) represents a bubble, which will be reversed. The assumption about the impact on housing investment is large, as is appropriate given the size of the assumed decline in housing values (22 percent).[9] This scenario assumes that housing investment drops from its current level of 4.5 percent of GDP to the 3.2 percent share of GDP that it hit at the trough of the 1990-91 recession. The little bubble scenario assumes that only half of the increase in the home price index relative to the rent index is attributable to a bubble.

The reduction in demand resulting in either scenario would be substantial. In the "big bubble" scenario the reduction in demand would be equal to approximately 2.9 percent of GDP. If such a decline were not offset with higher demand elsewhere, this falloff would be associated with an increase in the unemployment rate of approximately 1.5 percentage points. In the "little bubble" scenario, the reduction in demand would be equal to approximately 1.4 percent of GDP. Even this more modest impact would be substantial in an economy that is still suffering from an investment slump in the wake of the collapse of the tech bubble of the late nineties.

As important as the macroeconomic effects of the collapse of the housing bubble may be, the impact on household finances may be even more serious. For most households, their home is by far their most important asset. If the value of their home drops unexpectedly with a collapsing housing bubble, then many families will suddenly find themselves with considerably less wealth. The drop in the value of a home may matter little to a family that expects to remain in its current home for a long period of time. However, it could make a great deal of difference to families that are approaching retirement, who may have anticipated moving into a smaller home, and using some of the equity in their current home to provide part of their retirement income. In this case, the end of the housing bubble would mean that that families would stand to gain much less potential income by this sort of downsizing. This could substantially reduce the retirement income of many families.

The end of the housing bubble could also lead to serious financial disruptions, since many families are already heavily indebted. The ratio of non-mortgage debt to disposable income stands at a record high of 21.9 percent, more than three full percentage points above the peak debt ratios hit in the eighties cycle.[10] The average ratio of homeowners' equity to the market value of residential real estate was 55 percent in the first quarter of 2002. While this ratio was slightly lower in 1997 and 1998, the most recent figure is far below historic averages. The ratio of equity to value was more than 67 percent throughout the sixties, seventies, and eighties. Since the population is on average considerably older than in prior decades, this fall in equity to value ratios is striking.

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[9] It is important to note that this "big bubble" scenario is not extreme. It is likely that part of the recent rise in the rental cost index is itself attributable to the bubble, as higher home sale prices have led to higher rental prices. If the house price index fell back to the level of the non-shelter CPI, a genuinely extreme scenario, it would imply a decline in housing prices of 30.8 percent from their levels in the first quarter of 2002.

[10] This ratio is derived from the May consumer credit report from the Federal Reserve Board and the May personal income report for the Commerce Department. This figure understates actual indebtedness compared to prior periods, since there has been a huge growth in car leasing over the last decade. Car leases are equivalent to debt for practical purposes, and can be seen as a substitute for purchasing a new car, but are not included in the Federal Reserve Board's debt data. If lease obligations were added to debt, it would raise the level of consumer indebtedness by approximately 2 percentage points.

However, equity to value ratios will fall sharply if housing prices were to drop as a result of a bubble deflation. Table 4 shows equity to value ratios for the prior 5 decades, and for 2001. It also shows what the equity to value ratios would be in the event of a sharp drop in housing prices. The "big bubble collapse" scenario assumes a 22 percent decline in housing prices. The "small bubble collapse" scenario assumes an 11 percent decline in housing prices. The table shows that in the big bubble collapse scenario the average equity to value ratio would fall to just over 40 percent. Even in the "small bubble collapse" scenario the value to equity ratio would be under 50 percent, far lower than any prior point in history.

TABLE 4

Ratio of Homeowner's Equity to Market Value

Period	**Equity/Market Value**
1950-59	77.1%
1960-69	66.7%
1970-79	67.5%
1980-89	67.7%
1990-99	56.8%
2001	55.2%
Big Bubble Collapse	42.6%
Small Bubble Collapse	49.6%

Source: Federal Reserve Board, Balance Sheets table b.100, line 52, and author's calculations, see text.

The impact of this sort of decline in the housing market would of course vary enormously between regions. The downturn in housing prices will not be spread evenly across regions, just as boom of the last seven years has not been spread evenly. (It is not a simple matter to predict which regions will be hardest hit; high rates of price appreciation over the last decade may reflect a real improvement in the relative attractiveness of a particular region.) But the regional variation in housing markets means that if prices decline nationally by an average of 11 percent, then there will be regions where the decline is 15 or 20 percent, and if the national decline is 22 percent, then some regions will surely experience declines of 30 percent or more. With declines of this magnitude, and the low current ratios of equity to value, many homeowners will be left with mortgages that exceed the value of their home. Such a situation would add considerable risk to mortgages in regions that face the sharpest fall in prices.

It is worth noting that the seventh district bank of the Federal Reserve system, which is located in Chicago, reported last fall that several banks in the district were concerned that

housing was over-valued and were limiting their loans accordingly.[11] While some banks, at least in the seventh district, may have restrained their mortgage lending, it is unlikely that most banks across the country showed the same caution. Therefore, a sharp plunge in housing prices is likely to lead to a large rise in mortgage defaults, and place serious stress on a banking system that already is suffering as a result of several major corporate bankruptcies.

The Post-Bubble Economy

The growth spurt at the end of the nineties was characterized by three bubbles: the stock market bubble, the dollar bubble, and the housing bubble. The interaction from the unwinding of these three bubbles will seriously complicate the economic picture, presenting a considerably more difficult challenge than dealing with any of the bubbles in isolation.

The effect of a collapse in the stock and housing market are similar—both will lead to reduced demand as consumers cutback spending when they see their wealth diminished. In both cases, there are depressing effects on other sectors as well. In the case of the stock market, the collapse of the bubble effectively ended a major source of financing for the tech sector. While much of this investment may have been wasted, it did provide an important source of demand for the economy at the peak years of the bubble. Similarly, the housing bubble has been a major force propelling residential construction, as builders have responded to rapidly rising home prices. When this bubble bursts, homebuilding is likely to fall off substantially.

The bursting of both bubbles also leads to important secondary effects. In the case of the stock bubble, these include diminished endowments for foundations and universities, under-funded pensions, and declining capital gains tax revenue at all levels of government. These secondary effects will compound the more direct contractionary impact of the bursting of the bubble, as the non-profit sector and state and local governments are forced to make cutbacks, and firms with defined benefit pension plans will have to increase contributions to their workers' pensions. In the case of the housing bubble, a sharp decline in homeowners' equity and a resulting wave of mortgage defaults could leave much of the financial system in a precarious position, especially in the wake of several large corporate bankruptcies.

The best policy response to the collapse of these bubbles is strong stimulus. This is exactly what the Federal Reserve Board has done with its low interest rate policy of the last year and half. The federal government has also helped to stimulate the economy, with the budget shifting from a surplus of 2.4 percent of GDP in 2000 to a deficit equal to approximately 1.5 percent of GDP in 2002. While this shift will not be large enough to fully offset the impact of the collapse of both bubbles, it is a significant step in the right direction.

However, the collapse of the dollar bubble produces a different set of problems. The immediate impact of the drop in the dollar is to raise the price of imports to the United States

[11] This can be found in the Beige Book from September 19, 2001 [http://www.federalreserve.gov/fomc/beigebook/2001/20010919/default.htm].

while reducing the cost of U.S. exports to foreigners. This will have the positive effect of stimulating net exports, which will help boost the economy. However, the negative side of this situation is that higher priced imports will lead to higher inflation. Imports currently account for about 15 percent of GDP. If import prices rise by 10 percent as a result of a falling dollar, this would translate into an additional 1.5 percentage points of inflation. While a rise in the inflation rate of this size (e.g. from 2.0 percent to 3.5 percent) is not especially harmful by itself, the Fed may respond to such a rise in inflation with higher interest rates, thereby slowing economic growth. It is also possible that such a rise in inflation might lead to higher long-term interest rates, even without the action from the Fed.

While the decline in the dollar will complicate the task of designing effective macroeconomic policy, it is inevitable, and it will create less hardship the sooner it happens. The nation cannot run current account deficits equal to 4.5 to 5.0 percent of GDP indefinitely, just as it could not run budget deficits of this magnitude indefinitely. The current account corresponds to net foreign purchases of U.S. financial assets. The supply of available financial assets would be exhausted within a couple of decades, if trade deficits resulting from the high dollar remain constant as a share of GDP. The sooner the dollar is brought down to a more sustainable level, the less it will have to fall.

At present, the economy is also badly in need of the stimulus that would be created by increased net exports. In the wake of the collapse of the stock market bubble, investment spending has fallen by an amount equal to approximately 1.2 percent of GDP compared to its 2000 peak. With the collapse of the housing bubble, housing construction is likely to fall back by 0.6 to 1.3 percentage points of GDP. If the savings rate were to return to just 5 percent, approximately half its historic average, then it would lead to a falloff in consumption equal to approximately 2 percentage points of GDP. If the savings rate rose back to its historic average (which would be desirable with so many baby boomers nearing retirement), the falloff in consumption would be close to 6 percentage points of GDP. The shift from a federal budget surplus to a deficit is an important source of stimulus in this situation, but there will be a need for considerably more stimulus. Without a sharp reduction in the trade deficit, it is hard to see how this can come about.

Conclusion

In the last seven years, home sale prices have increased nearly 30 percent more than the overall rate of inflation. Approximately one-third of this increase corresponds to an increase in the price of rental housing relative to other goods and services. The other two thirds is attributable to an increase in home purchase prices relative to rental prices.

This paper shows that there is no obvious explanation for a sudden increase in the relative demand for housing which could explain the price rise. There is also no obvious explanation for the increase in home purchase prices relative to rental prices. In the absence of any other credible theory, the only plausible explanation for the sudden surge in home prices is the existence of a

housing bubble. This means that a major factor driving housing sales is the expectation that housing prices will be higher in the future. While this process can sustain rising prices for a period of time, it must eventually come to an end.

At present market values, the collapse of the housing bubble will lead to a loss of between $1.3 trillion and $2.6 trillion of housing wealth. This collapse will slow the economy both by derailing housing construction and by its impact on consumption through the wealth effect. In addition, millions of families are likely to face severe strains in their personal finances. The average ratio of equity to home values is already near record lows. This ratio will plunge precipitously if the housing bubble collapses, leaving many families with little or no equity in their homes. This situation is especially troublesome since the population is comparatively old, with much of the baby boom generation on the edge of retirement.

The Japanese economy experienced simultaneous bubbles in its housing and stock markets in the late eighties. The collapse of these two bubbles has left Japan's economy nearly stagnant for more than a decade. The United States faces the same sorts of risk from the collapse of its stock market and housing bubbles. It was poor economic policy to allow these bubbles to develop in the first place, but if we follow the right policies in dealing with the fallout from the collapse of these bubbles, it should still be possible for the United States to escape Japan's fate.

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Appendix

The first column in Table 1 shows the housing share in total consumer expenditures in the base year for the consumer price indices since 1953. These years were selected, since data from the consumer expenditure surveys from these years are available. The share is equal to the sum of the shares of the owner equivalent rent and rent components. For the years from 1951 to 1972-3, the survey used a home ownership component instead of owner equivalent rent. Baker 1996 calculates a rental equivalence share based on estimates of the portion of the homeownership component that went to non-rent expenses. The second column in the table shows the rental index from the consumer price index. This index was used exclusively, since it is available for the whole period, and there were several aggregation problems which created an overstatement in the owners' equivalent rent index for part of the nineties. The third column shows a merged index of the CPI-U-X1 from 1951 to 1978 and the CPI-U-RS from 1978 to 1995, the years when it is available.

Figure 1 shows the rent index from the CPI and the OFHEO Home Price Index from the first quarter of 1975 to the first quarter of 2002, taking the first quarter of each year. The indexes are deflated by the CPI-non-shelter index.

Tables 2a and 2b show the cumulative 5 year and 1 year rates of price increase for the metropolitan areas with the 10 highest and 10 lowest rates of price increase, according to OFHEO Home Price Index.

Table 3 shows the lost housing wealth assuming alternatively that housing prices decline by 22 percent in the big bubble scenario and 11 percent in the little bubble scenario. The figure for total housing wealth is taken from the 2001 estimate of the value real estate owned by households (Federal Reserve Board Flow of Funds table B.100 line 2 and 3). The wealth effect is assumed to be 6 percent as indicated in Case, Shiller, and Quigley, 2001.

Appendix Table 1

Home Price Increases By State – Annual Averages

	Rank (5-year)	5-year	1-year	since 80
Alabama	41	4.4%	3.6%	3.7%
Alaska	47	3.6	4.9	2.3
Arizona	17	5.7	4.5	3.8
Arkansas	46	3.8	3.0	3.2
California	4	9.8	7.4	5.5
Colorado	6	8.6	5.9	5.3
Connecticut	11	6.9	8.0	5.4
Delaware	23	5.3	6.5	5.3
District of Columbia	2	10.0	11.7	5.2
Florida	13	6.6	8.3	4.1
Georgia	14	6.6	4.8	4.6
Hawaii	51	2.4	6.1	4.6
Idaho	48	3.4	3.1	3.7
Illinois	27	5.0	5.4	4.6
Indiana	40	4.4	3.7	3.9
Iowa	28	4.9	4.3	3.4
Kansas	20	5.5	4.5	3.3
Kentucky	34	4.7	3.8	4.1
Louisiana	31	4.8	3.9	2.6
Maine	7	7.8	8.6	5.5
Maryland	24	5.3	7.8	4.8
Massachusetts	1	10.6	10.1	7.7
Michigan	12	6.7	4.8	4.9
Minnesota	5	8.8	9.0	4.7
Mississippi	36	4.5	3.1	3.1
Missouri	22	5.5	5.5	3.9
Montana	35	4.6	5.7	3.9
Nebraska	33	4.7	3.7	3.7
Nevada	44	3.9	5.5	3.5
New Hampshire	3	10.0	9.9	5.6
New Jersey	10	7.3	9.4	5.7
New Mexico	50	2.8	2.9	3.7
New York	8	7.7	7.7	6.6
North Carolina	29	4.8	3.4	4.5
North Dakota	45	3.8	2.6	2.7
Ohio	30	4.8	4.4	4.1
Oklahoma	32	4.7	3.2	2.2
Oregon	37	4.5	3.8	4.8
Pennsylvania	38	4.5	5.9	4.6

Rhode Island	9	7.6	12.1	5.9
South Carolina	18	5.7	3.8	4.2
South Dakota	26	5.0	4.6	3.7
Tennessee	39	4.4	3.3	4.0
Texas	21	5.5	2.9	2.7
Utah	49	3.3	1.9	4.4
Vermont	19	5.6	7.6	5.0
Virginia	15	6.1	7.5	4.7
Washington	16	6.0	4.0	5.2
West Virginia	43	4.2	6.1	3.1
Wisconsin	25	5.0	4.5	4.1
Wyoming	42	4.3	5.8	2.4