

The Contribution of Home Value Appreciation to US Economic Growth¹

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ABSTRACT *Home value growth has played an important role in mitigating the effects of the 2001 US economic recession and sustaining subsequent economic growth. Home price appreciation builds home equity, which stimulates consumption expenditures in two ways. The first channel is through a wealth effect on consumption; a number of studies have found that the home equity wealth effect is much stronger than the stock equity wealth effect. Second, home equity extraction through first mortgage refinance or placing of second mortgages enables additional home improvement and consumer durable spending. Home values are driven by local economic conditions, not a valuation bubble; local markets with a strong economy will continue to enjoy house price growth above the national average, while weak economies will also experience weak house price performance.*

KEY WORDS: house prices, wealth effect, valuation bubble

Introduction

Many analysts of the US economy have been surprised by the strength and durability of consumer spending since 2000. One might have thought that the crash of the tech stock bubble (stock values peaked in March 2000), onset of recession (March 2001), and tragedy of the 11 September 2001 terrorist attacks would have been sufficient to put a brake on personal consumption spending. In contrast, consumer expenditures have been one of the bright spots in the US economy.

The strength of the housing market has been the reason for continued buoyancy in household spending. The robustness of overall housing demand has been fuelled by low and declining mortgage rates. By June 2003, 30-year, fixed-rate mortgage rates had fallen to their lowest level in 45 years, sparking continued growth in home sales and new construction. The overall high level of housing demand has prompted home values to increase, even after controlling for general consumer inflation, leading to growth in net household wealth through home equity accumulation.

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Table 1. Characteristics of the US housing system, 2002

Population	288 million
Number of households	105 million
Homeownership rate	67.9%
One-family home sales	
Previously owned houses	5.6 million
Newly built houses	1.0 million
Condominiums and co-ops	0.8 million
Total	7.4 million
One-family sales prices (median)	
Previously owned houses	\$158 200
Newly built houses	\$187 600
Condominiums and co-ops	\$137 200
Single-family mortgage originations	\$2.7 trillion
Mortgage debt outstanding	
Single-family	\$6.1 trillion
Multifamily	\$0.6 trillion
Total residential	\$6.7 trillion
Home equity in owner occupied homes	\$7.6 trillion

This article reviews the effect of home equity wealth accumulation upon consumer expenditures, the beneficial economic role played by the mortgage market in enabling families to tap their home equity and convert it into cash, and surveys recent home value trends while addressing the likelihood of a fall in these values.

Table 1 summarizes a variety of statistics on the US housing and mortgage markets. More than two-thirds of US households own their homes. One-family housing dominates the landscape, with sales reaching a record 7.4 million properties in 2002, or about 8 percent of the one-family housing stock. New construction is more expensive than older houses, and condominiums and cooperative apartments are the least expensive of the group. Single-family mortgage originations reached a record volume of \$2.7 trillion during 2002, with close to 60 percent of the originations for refinance. The flow of new originations is especially impressive when compared with the stock of single-family debt outstanding at the end of 2002: \$6.1 trillion. Thus, approximately 40 percent of all single-family mortgage debt was originated in that year. Overshadowing the stock of debt is the aggregate value of home equity that owners have accumulated in their homes: \$7.6 trillion, or about 55 percent of the value of the single-family housing stock.

The Home Equity Wealth Effect

In aggregate across the USA, home equity grew by \$2 trillion over the past 3 years, reaching \$7.7 trillion by the end of March 2003, as shown in Figure 1. Home equity—the difference between the home value and the amount of mortgage debt on the property—is the single largest component of net wealth for most families in the USA. According to the 2001 Survey of Consumer Finance, home equity comprises 50 percent of household net wealth

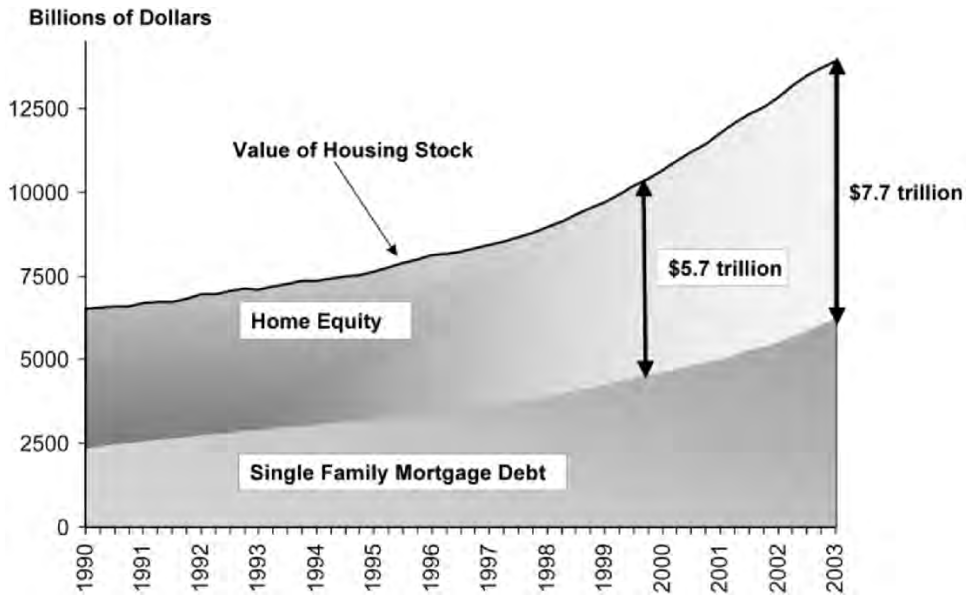


Figure 1. US home equity growth, 1990–2003 (source: Board of the Governors of the Federal Reserve System).

for one-half of all households. Thus, an increase in real home equity (that is, adjusting for general inflation) is a significant component to overall wealth building.

While home equity gains have been significant, the loss in stock market wealth has also been substantial. The Wilshire 5000, a broad measure of US stock values, fell from its March 2000 peak of \$14.3 trillion to \$7.8 trillion by September 2002, a loss of \$6.5 trillion. Why have the gains in home equity wealth had a more powerful effect on consumer spending than the loss of stock market wealth?

The answer lies in two facts. First, families view gains in home equity wealth as more 'permanent', whereas gains (or losses) in stock market wealth are seen as more 'transitory'. Consumer spending is more likely to experience a wealth effect out of permanent increases in wealth. Home equity growth is more stable largely because home values are far less volatile than stock prices. Since 1970, the quarterly growth rate of home values has averaged 6.0 percent (at an annual rate) with a standard deviation of 4.8 percent, while the market value of corporate equities has gained 15.0 percent on average with a standard deviation of 33.4 percent. Clearly, stock values have been far more volatile than house prices. As a consequence, aggregate home equity in the USA has grown 8.6 percent per quarter (annualized) with a standard deviation of 7.9 percent, far less variable than stock market gains.²

Second, home equity wealth is more broadly held across the USA than stock market wealth. The US homeownership rate stood at 68 percent in the second quarter of 2003 while only 52 percent of American families hold stock either

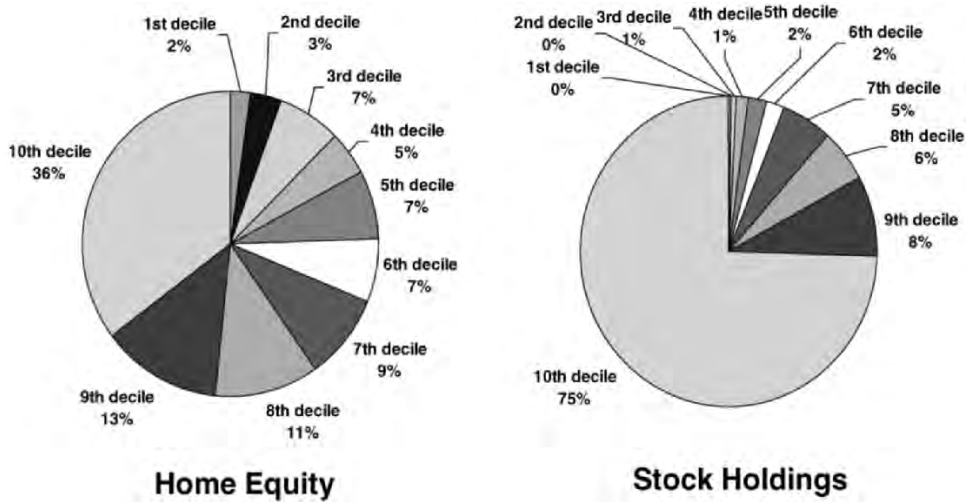


Figure 2. US home equity and stock holdings per income decile, 2001 (source: Survey of Consumer Finances 2001).

directly or indirectly.³ Further, homeowners cut across a wide cross section of demographic groups. Thus, when a rise in home values generates home equity wealth, both lower and higher income families gain. In fact, about three-quarters of all stock market wealth is held by the highest decile of income earners in the USA, and almost none by families whose earnings fall in the lowest third of the income distribution. Home equity wealth is more evenly distributed, with lower, middle, and higher income families benefiting from a general rise in home equity, as shown in Figure 2.

Empirical research has verified that the home equity 'wealth effect' is greater than the stock market effect on consumption. Case *et al.* (2001) and Bayoumi and Edison (2002) both use a cross section of nations to separate the home equity and stock equity effects on overall consumption and find that the housing wealth effect is stronger. Based on estimates for 1984–2000 for the USA, the latter study found that each \$1 increase in housing wealth led to a 7 cent increase in consumption, whereas a \$1 increase in stock wealth caused a 4.5 cent increase. Research staff at the Board of Governors of the Federal Reserve System have also found stronger marginal propensities to consume out of housing wealth, as reported by Chairman Greenspan (2001); he placed the effect on personal consumption expenditures generated from realized capital gains on home sales to be about 10–15 cents on the dollar, compared with a general 'wealth effect' of 3–5 cents incorporating all components of household wealth. The International Monetary Fund (2003) has also reported larger wealth effects from home value changes than from comparable stock equity movements.

Home Equity 'Extraction'

The growth in home equity has not only stimulated aggregate consumption through a 'wealth' effect, but it has provided an opportunity for families to

convert some of this equity into cash by placing second mortgage loans (such as with home equity lines of credit) or 'cashing-out' equity as part of a refinance of an existing first mortgage.⁴ The secondary market activity of Freddie Mac and Fannie Mae has played an important role in ensuring a steady flow of credit to primary market lenders to meet the mortgage credit needs of US families, as noted by Chairman Greenspan:

Especially important in the United States have been the flexibility and the size of the secondary mortgage market. Since early 2000, this market has facilitated the large debt-financed extraction of home equity that, in turn, has been so critical in supporting consumer outlays in the United States throughout the recent period of stress. (Greenspan, 2002)

Refinance stimulates family consumption and investment in two ways. First, families benefit by paying lower mortgage rates, which saves about \$10 billion per year in total mortgage interest costs. Second, families have engaged in a record level of cash-out refinance, which serves as a cash infusion to a family's balance sheet. During 2002 alone, families converted about \$100 billion in home equity into cash at the time of their conventional mortgage refinance, which they have plowed back into the economy.⁵

Figure 3 shows Freddie Mac's estimate of the aggregate volume of cash taken out during refinance, or 'extraction of home equity' as Chairman Greenspan prefers to call it. The volume increased significantly during the 2001–2003 refinance boom with more than a \$300 billion cash infusion to families across the USA over the period. A survey conducted by the Board of Governors of the Federal Reserve System (2002) of senior loan officers at commercial banks found that the median amount cashed out equaled about 10–15 percent of the balance of the loan that was paid off.

What do families do with the cash that they take out? A study that covered refinancing in 2001 and early 2002 found that about 61 percent of the monies went toward home improvements and the repayment of other debts; the use of the remaining funds was approximately split between consumer expenditures and various financial or business investments (Canner *et al.*, 2002, Table 6). The recent senior loan officer survey also confirms this pattern: the two most common uses were home improvements and debt consolidation, with consumer expenditures and investments following next. Regardless of the use, the cash taken out is put back into the economy, helping to stimulate economic growth.

Is there a House Price Bubble in the USA?

Home value gains in the USA have been significant in recent years. Appreciation for the average one-family home reached its recent zenith of 8 percent during 2000 and 2001. Since then, appreciation has moderated but remained strong. Appreciation slowed to about 7 percent nationwide in 2002, but was up 39 percent (27 percent in real terms, after subtracting inflation as measured by the Consumer Price Index) over the 5 years ending in 2002, as measured by the Conventional Mortgage Home Price Index. The sustained growth in home values has fed speculation that home values may crash, and with it—via the home equity 'wealth effect'—consumption spending and US economic growth.

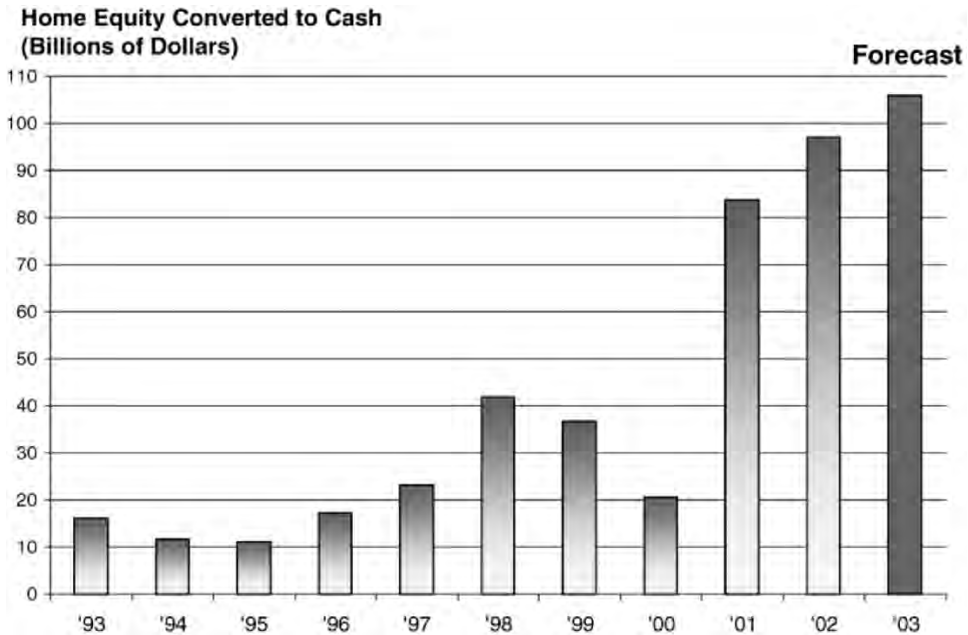


Figure 3. US mortgage cash-out refinances, 1993–2003 (source: Freddie Mac).

The late Charles Kindleberger described an asset price bubble in the following way:

The word *mania* emphasizes the irrationality; *bubble* foreshadows the bursting. In the technical language of some economists, a bubble is any deviation from ‘fundamentals,’ whether up or down.... [A] bubble is an upward price movement over an extended range that then implodes. An extended negative bubble is a crash. (Kindleberger, 2000, p. 16)

There is no national home value bubble in the USA and it is very unlikely that there is any within a metropolitan area either. There are three characteristics of an asset that affect the likelihood of its being subject to a valuation bubble. First, the greater the *uncertainty* of future returns on the asset, then the greater the probability of a valuation bubble. The uncertainty of future returns tends to be much greater for a pure investment asset than it is for a pure consumption asset. Assets that have a wide distribution of possible future cash flows are likely to invite more speculative investment behavior, too.

Second, the lower the *transaction costs* of acquiring or selling the asset, then the greater the likelihood of a valuation bubble. An asset that can be acquired very inexpensively may have more casual investors in the market, as well as those who are in for solely speculative reasons: they view recent price gains as a prelude to future gains, and buy the asset for the purpose of selling it soon thereafter for a gain.

Third, the shorter the *holding period* of the asset, then the greater the chance of a valuation bubble. If the asset is typically only held for a short period of time, this may invite speculative behavior and investors who are focused only on the short run (expected) gain, rather than the long-term intrinsic value.

An excellent recent example of an asset class that experienced a valuation bubble is high-tech stocks. The high-tech laden NASDAQ index nearly doubled from 1419 to 2688 in 1 year (between 8 October 1998 and 19 October 1999), and then almost doubled again in less than 5 months to 5049 (on 10 March 2000); it then dropped by more than half to 2292 in less than a year (2 January 2001), and again by more than half to 1114 before bottoming out (9 October 2002). The value gain was startling since many of the firms that comprised the index were not earning any profits! High-tech stocks meet all three characteristics of an asset that is susceptible to a bubble. First, the future earnings were highly uncertain with a wide distribution of possible payoffs. Second, transaction costs are low in the USA and have declined over time with the advent of discount brokers and greater use of technology. Third, a share of stock is held on average for 3 months, and one could be a day trader by buying early in the day and selling later the same day.

Along the probability spectrum for valuation bubbles, single-family housing is likely at the opposite end from high-tech stocks. First, while single-family housing has an investment component to it, it also has a substantial consumption component to it: The family that is an owner occupant consumes shelter services from the asset. In the USA, 84 percent of the one-family housing stock is owner occupied.⁶ The investment component of one-family housing can be proxied by historical and projected rent flows. Both the consumption value of housing services and the investment component (that is, rent) have been more stable historically than corporate earnings. Over the past half-century, the value of housing consumption has grown 7.6 percent (annualized) with a standard deviation of 2.5 percent, the rent component of the Consumer Price Index grew 4.7 percent with a standard deviation of 4.0 percent, and aggregate corporate profits have grown an average of 8.9 percent with a standard deviation of 25.0 percent.⁷

Second, transaction costs to buy or sell a home are large compared with other assets. Real estate broker fees generally are 6 percent of the home sales price, and there are costs associated with deed recordation, local taxes, and obtaining a mortgage.

Third, owner families tend to stay in their homes an average of 14 years, according to the 2001 American Housing Survey, and there are no day traders! Thus, single-family housing is very unlikely to be subject to a valuation bubble. Real estate price bubbles, however, have occurred many times in the past. Usually these speculative bubbles have been associated with undeveloped land (often with the belief that natural resources lay underneath) or nonresidential structures, which lacks household 'consumption' value and may face significant swings in vacancy rates and rent flows.⁸

All three reasons weigh against a housing price bubble. In fact, the average single-family home has appreciated every year since 1950, as shown in Figure 4. The last time home values fell nationally for a sustained period was during the Great Depression of the 1930s, when national home values fell about a third. And that's what it would take to have a national house price collapse, that is, an

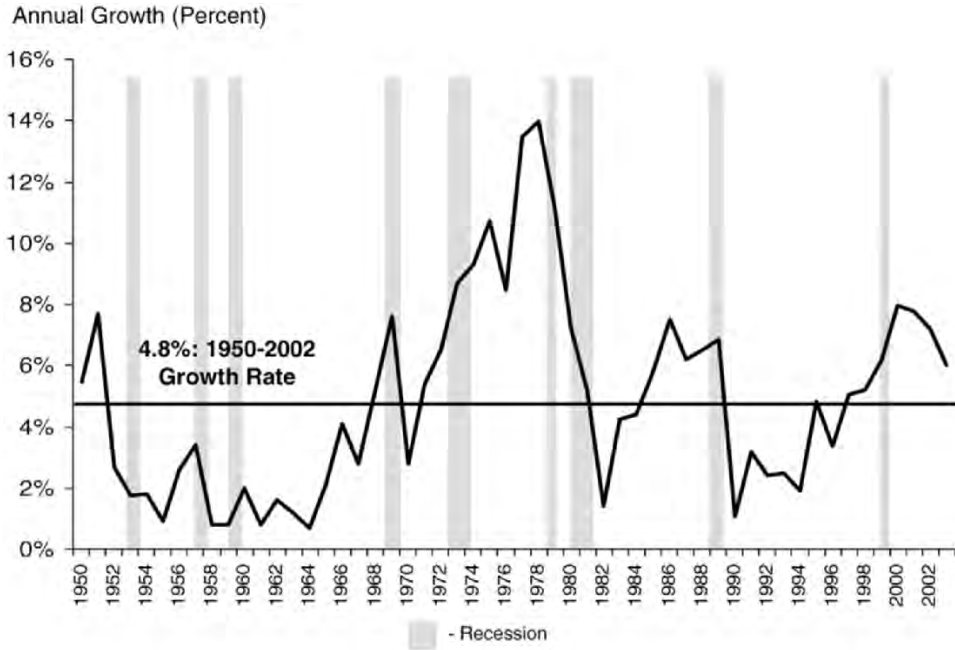


Figure 4. US house price growth, 1950–2002 (source: E. H. Boeckh and Associates, BLS, Census Bureau Freddie Mac).

economic calamity on the scale of the 1930s depression. In contrast, the 2001 recession has been one of the mildest on record.⁹

A necessary prerequisite for a national home value drop is a large and growing inventory of unsold homes on the market. Figure 5 plots one inventory measure—the months' supply of homes available for sale—for previously occupied and newly built one-family houses. For both housing types the inventory is at the lowest level in 30 years and has remained stable. Thus, there are no oversupply conditions that could precipitate a fall in national home values.

Home value growth over the past business cycle has also been in step with family income growth. Over short periods of time income growth and home value growth may diverge, as occurred in the first half of the 1990s when income growth was stronger than house price appreciation, or over the past few years where the converse has generally been the case. However, over a business cycle both income growth and house price growth should be similar. Figure 6 illustrates that has been the case from the 1991 trough to the 2001 trough, for the USA as a whole and for nine regions.¹⁰

An increase in mortgage rates may reduce housing demand and slow home value appreciation, but overall mortgage payment ratios remain at about the same level as 15 years ago, well below their peak. Figure 7 plots the aggregate mortgage payment-to-disposable income measure for the USA prepared by the Board of Governors of the Federal Reserve System. Ratios appear low because

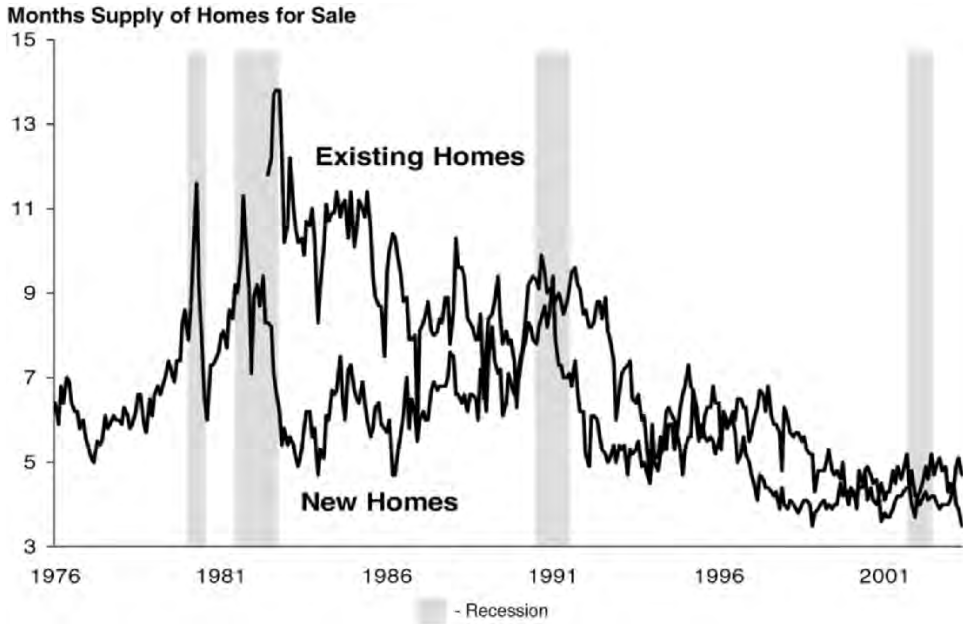


Figure 5. US housing inventories, 1976–2001 (source: National Association of Realtors, Bureau of Census).

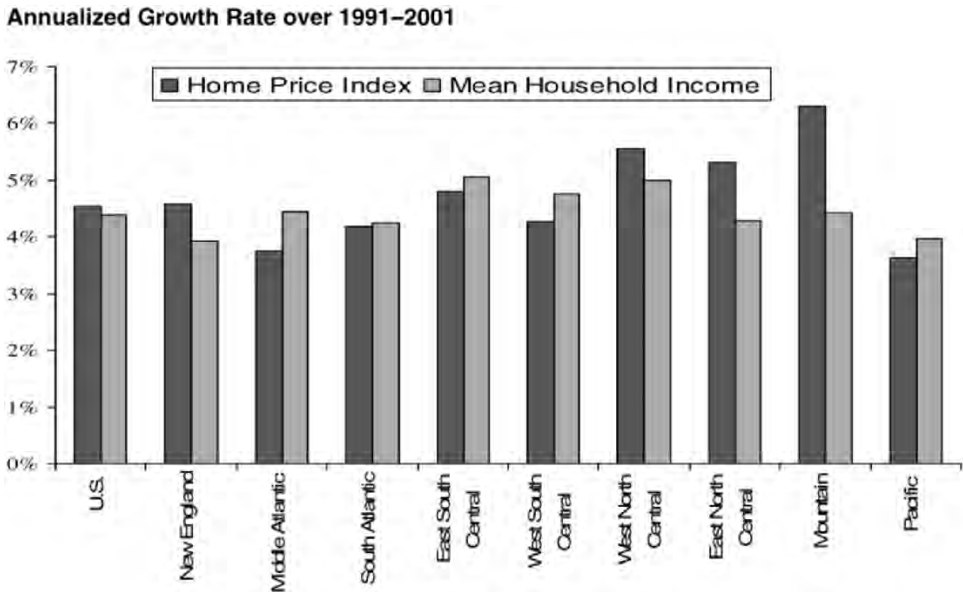


Figure 6. US home value growth in relation to income growth (source: Freddie Mac and Census Bureau).

36 percent of owner families do not have a mortgage, and because renting families' income is included in the denominator of the ratio.¹¹ At first glance, it appears that the ratio is rising and at or near a peak. In truth, the rise reflects the strong homeownership gains in the USA over the past 9 years:

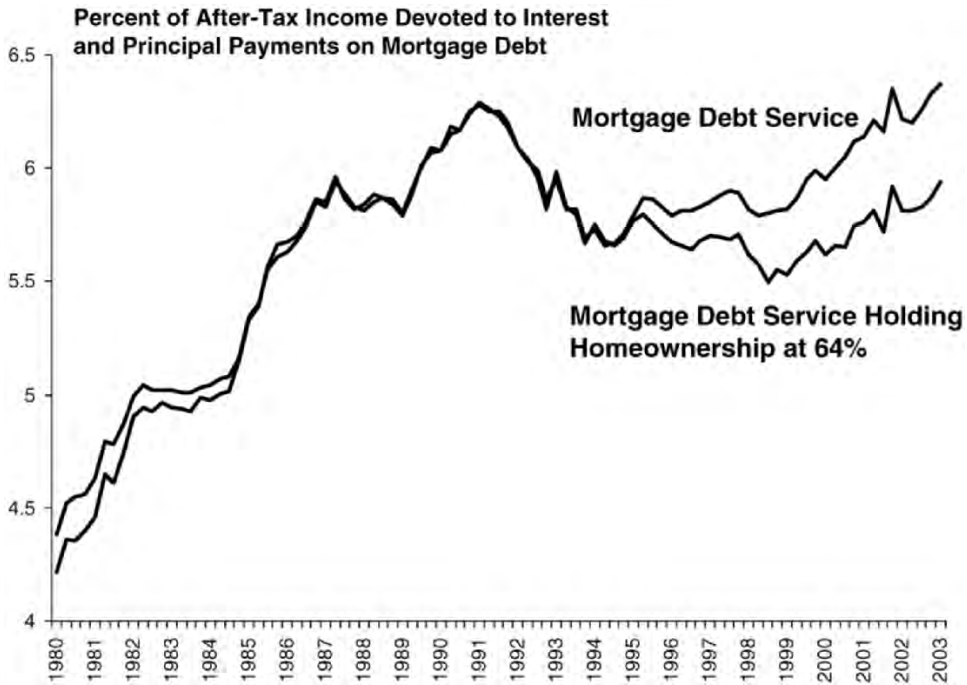


Figure 7. Mortgage debt burdens relative to homeownership rates (source: Federal Reserve, Freddie Mac).

homeownership has risen from 64 percent in 1994 to 68 percent in the second quarter of 2003. Thus, millions of families have exchanged rent payments for mortgage debt payments over this time period. Using regression techniques to control for the change in homeownership, it is clear that had the owner rate remained at 64 percent, the overall ratio would be much lower and well below its peak.¹²

Concluding Remarks

Despite the sanguine outlook for the national market, local house prices can decline. The experience of Washington, DC of the early 1990s is a recent example: average home values fell 10 percent between the second quarter of 1992 and the end of 1994, according to Freddie Mac's Conventional Mortgage Home Price Index. Local house prices will be stagnant or decline in markets where employment has fallen or job creation is weak. Thus, markets that were more severely affected by the 2001 recession are likely to have some price declines. And markets that have had a large run up in home value should expect to have a marked deceleration in home value appreciation, under-performing the national average in future years. Local economic conditions determine home value growth, both positively and negatively, not the workings of a valuation bubble.

The housing and mortgage markets have played a vital role in limiting the depth of the 2001 US economic recession and providing a catalyst for subsequent economic growth. Housing consumption and residential fixed investment average about 14 percent of US Gross Domestic Product over time, but their contribution to economic growth since 2001 has been far more significant. Zandi (2002) has estimated that housing and mortgage activity accounted for nearly one-third of US economic growth between 2000 and 2002.

With economic growth projected to accelerate in 2004—the Board of Governors and the Federal Reserve Bank Presidents project growth to be between 3.5 and 5.25 percent in 2004 (Board of Governors of the Federal Reserve System, 2003)—other sectors will play a larger role in economic growth, and housing will play a smaller role. Nonetheless, home equity wealth accumulation will continue to play a major role in overall household wealth accumulation and consumption spending in the future.

Notes

1. The opinions expressed are those of the author and do not necessarily reflect those of Freddie Mac.
2. Home value growth was measured by Freddie Mac's Conventional Mortgage Home Price Index (www.freddiemac.com). The market value of corporate equities and aggregate value of home equity were from the Flow of Funds data released by the Board of Governors of the Federal Reserve System (www.federalreserve.gov). The period of analysis was first quarter of 1970 to the first quarter of 2003.
3. Homeownership data were from www.census.gov. Stock holdings were reported in Aizcorbe *et al.* (2003, Table 6).
4. "Households have been able to extract home equity by drawing on home equity loan lines, by realizing capital gains through the sale of existing homes, and by extracting cash as part of the refinancing of existing mortgages, so-called cash-outs. Although all three of these vehicles have been employed extensively by homeowners in recent years, home turnover has accounted for most equity extraction.... Indeed, of the estimated net increase of \$1.1 trillion in home mortgage debt during the past year and a half, approximately half resulted from existing home turnover" (Greenspan, 2003).
5. To identify the amount of mortgage rate reduction and volume of cash-out activity, we identified refinance loans that Freddie Mac purchased and which paid off a first mortgage loan in Freddie Mac's portfolio. This enables one to directly measure the average rate reduction, as well as the amount of increase in loan balance for a cash-out refinance. During 2002, the average family reduced its mortgage rate by one and one-eighth percentage points. Based on the average loan size purchased by Freddie Mac this year (about \$130 000–140 000), the average family shaved \$100 per month off their mortgage payment, or an estimated \$10 billion per year across all families in the USA.
6. The 2001 American Housing Survey for the USA, Table 2-1, shows that 84 percent of one-family houses, condominiums, and cooperatives were owner occupied (www.census.gov).
7. Housing consumption and corporate profits were from the Bureau of Economic Analysis' National Income and Product Accounts, Tables 2.2 and 6.16 (www.bea.gov), while the shelter component of the Consumer Price Index was from the Bureau of Labor Statistics (www.bls.gov). The period of analysis was the first quarter of 1953 to the first quarter of 2003.
8. Kindleberger (2000, pp. 42–43) provides a list of speculative frenzies around building sites, agricultural land, and real estate.
9. There have been many instances of a decline in real national home values since 1950, most recently during the early 1990s. The violent swings in value envisioned by a burst bubble, however, should be manifested in nominal value changes, as was clearly the case with the collapse in the NASDAQ index.
10. An analysis from the 1990 peak to the 2000 peak would show the same pattern. Regression analysis across 163 metropolitan areas shows a significant positive relationship between income growth and home value appreciation.

11. The 2001 American Housing Survey for the USA, Table 3-15, reports that 36 percent of households own their home free and clear of mortgage debt (www.census.gov).
12. The quarterly model is estimated from the first quarter of 1980 to the first quarter of 2003 and regresses the aggregate mortgage debt service ratio on the homeownership rate, aggregate loan-to-value ratio for the single-family housing stock (the ratio of single-family mortgage debt outstanding to the value of the housing stock), the annual growth in home values (as measured by the Conventional Mortgage Home Price Index), and the weighted average mortgage rate of 30-year fixed-rate mortgages in Freddie Mac's portfolio; the data sources are the US Census Bureau, the Board of Governors of the Federal Reserve System, and Freddie Mac.

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