



## W(h)ither Home Values?

Special Commentary from the Office of the Chief Economist  
by [Frank E. Nothaft](#), Freddie Mac's chief economist  
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National average home values were up 14 percent between the second quarter of 2004 and the second quarter of 2005 – the fastest rate of appreciation since 1978. More striking was the real, or inflation-adjusted, appreciation rate. Back in 1978, home values also rose 14 percent, but inflation in the Consumer Price Index (CPI), less shelter, was 7.8 percent; over the year ending June 2005, this measure of inflation was only 3.2 percent. Thus, real house price growth over the year ending June was more than 10 percent, the fastest in at least 40 years.

Increases in real (that is, inflation-adjusted) family incomes explain some of the relative rise in home values over the past four decades. Economists refer to shelter as a “normal” good, meaning that families consume more housing when their incomes rise. Since 1963, home-value appreciation has outpaced consumer price inflation (CPI less shelter) by about 1.5 percent per year. The real price growth of the past year is large relative to this historical trend and has fueled speculation that house prices may stagnate, or fall, in coming years.

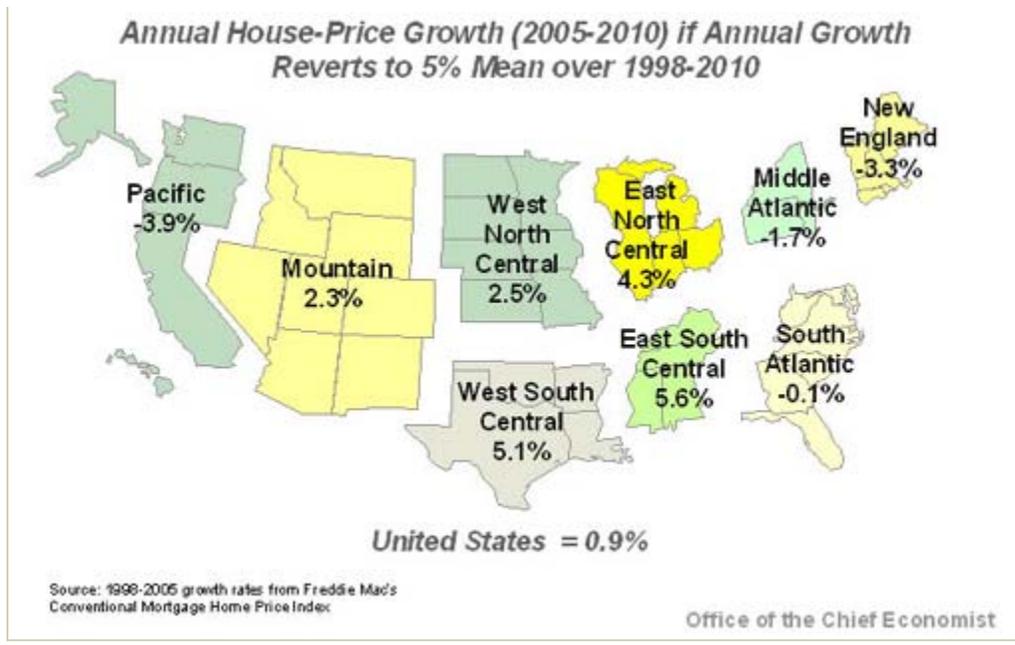
### Mean Reverters

The challenge in predicting future house-price movements (or any economic data) is to have a model that fits historical patterns. One simple approach is to view home-value appreciation as gravitating to its long-term average growth; any prolonged deviation from this long-term average causes economic pressures that cause appreciation rates to “revert” toward the long-term “mean,” or average. Thus, the “mean reversion” view is one that expects an extended period of above-average growth to be followed by a period of below-mean appreciation, in order to revert to the long-term trend growth rate.

For example, over the past half-century, the average annual appreciation rate for a single-family home has been about 5 percent per year. Since 1998, home-value appreciation for the average house has exceeded this long-term average. Thus, a “mean reverter” could project a deceleration in home-value growth over the next, say, five years in order for home-value growth to revert to its long-term mean of 5 percent per year for the entire 1998-2010 span. Exhibit 1 shows the projection that would result, by region and for the United States, if one were to apply this approach. Annual house-price growth nationally would have to slow to just 0.9 percent, or 4.6 percent cumulative gain over the next 5 years, to regain an average growth rate of five percent over the whole period 1998-2010. The New England and Pacific states would lose an average 3.3 and 3.9 percent per year, respectively, or roughly 15 to 18 percent cumulatively, in average home values over five years. The East and West South Central states, which have performed below average over the past few years, would be expected to grow at more than 5 percent per year. This experiment is very simple, and it assumes that every region will grow at the national average rate rather than at its own long-term average rate over the 12-year span. This is not likely to be the case, but it does provide a sense of what it might take to get back to “normal” over the next five years.

**Exhibit 1:  
A Mean Reverter's Projection**



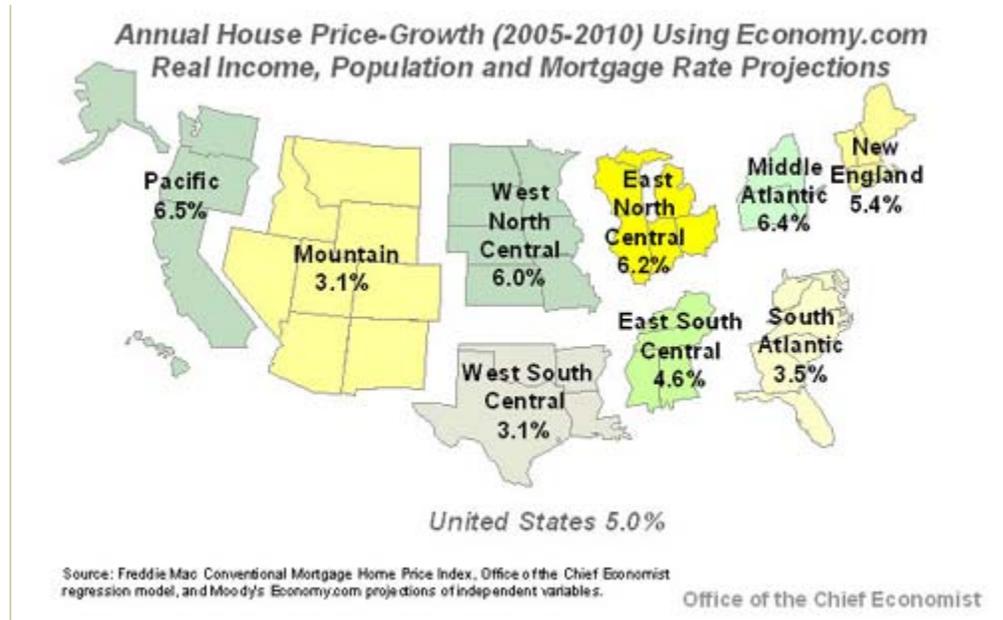


### A Fundamentalist View

An alternative model would factor in key economic variables that drive home-value gains, and then project appreciation based on forecasts of these underlying variables. For example, one approach would be to model home-value changes as driven by family income, population growth and mortgage rates. By using a forecast of income, population and mortgage rates – and their historical relationship in affecting home-value changes – we then obtain a forecast of home-value appreciation.

Exhibit 2 gives an example of this approach. Using data from 1976 to 2004 to obtain regression estimates of the linkage between income, population, mortgage rates and home values, and then using the five-year forecast of income, population and mortgage rates provided by Moody's Economy.com, the exhibit shows the five-year projection of home-value growth by region and for the United States. In this experiment, we see stronger home-price appreciation on the coasts than in the middle of the country and a national growth rate of 5 percent per year. Population has been migrating to the coasts over the past half century, and land constraints are tighter there than in the central states; in short, this is where we would expect to see stronger growth.

**Exhibit 2:  
A Fundamentalist View**



### You Can Make Your Own Forecast!

Exhibit 2 uses a specific model and a specific forecast for each region. Using the models we have estimated, you can generate your own five-year forecast of house-price growth, using your own assumptions regarding income, population, mortgage rates and consumer price inflation. The estimated parameters are shown in Exhibit 3. To illustrate, the 2005-2010 forecast of home-value growth for the Pacific region was based on the following projections provided by Moody's Economy.com: real income growth of 1.65 percent per year; population growth of 1.24 percent per year; and average 30-year fixed-rate mortgage rate of 7.26 percent. Multiplying each value by the parameter in the table and summing the products with the value of the intercept gives a projected real house-price growth rate of 3.92 percent per year. Using Moody's Economy.com projection of CPI inflation, we derived a projection of CPI less shelter inflation of 2.56 percent per year, yielding a projection of nominal house-price growth per year for the Pacific division of about 6.5 percent (= 3.92 + 2.56). You can use your own estimates of these values to generate your forecast for average home-value appreciation by region.

Geographic Area	Intercept	Income Growth	Population Growth	30-year Fixed Mortgage Rates
New England	-0.28	1.13	9.58	-0.36
Middle Atlantic	3.98	1.03	3.58	-0.38
East North Central	8.48	0.43	0.74	-0.81
West North Central	9.85	0.24	--	-0.94
South Atlantic	0.16	0.31	3.79	-0.56
East South Central	5.50	0.39	0.48	-0.62
West South Central	-0.41	0.42	4.44	-0.70
Mountain	-2.72	0.23	3.96	-0.58
Pacific	2.70	0.77	7.79	-1.34

Note: The population growth variable in the West North Central division had the incorrect sign and was omitted from the analysis.

Source: "Reversion to the Mean Versus Sticking to Fundamentals: Looking to the Next Five Years of Housing Price Growth," Amy Crews Cutts and Frank E. Nothaft, Freddie Mac [Working Paper #05-02](#) [PDF 332K], November 2005.

Deputy Chief Economist Amy Crews Cutts contributed to this article.

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