

Momentum Amplifies Swings in Housing

Broad swings in the housing market are intrinsic, and cast doubts on the market as the engine of economic expansion.

by Shelly X. Liang, PhD, Research Fellow

Today housing is a market with a large number of buyers and sellers, acting on widely available information. People trade relatively frequently, and sometimes own more than one home. This is in contrast to past generations when people tended to buy or build a house and stay in it for the rest of their lives.

The change provides reason to expect that, like the stock market, the housing market would be relatively efficient. Efficiency implies that price changes are random, and that there are no discernible trends. No trends means no run-ups, no extended declines, and no bubbles.

But even casual observation reveals that this is not the case. In recent years there have been long periods of price trends in this market, and researchers have repeatedly demonstrated inefficiencies.

This suggests a market driven by positive feedback, resulting in price trending, high volatility, and inherent instability. And, contrary to what many have argued, it is not likely the best choice as a central driving force behind our economic welfare. We would do well to reduce our reliance on housing as an economic engine. For the

same reasons, it probably does not make sense to view housing as an investment that dominates most household portfolios.

Economists have been looking at the peculiar nature of the housing market for some time. As early as 1989, Karl Case, a Senior Fellow at the Joint Center for Housing Studies at Harvard University, and Robert J. Shiller, Arthur M. Okun Professor of Economics at Yale,

A housing market driven by positive feedback results in price trends, high volatility, and inherent instability.

found trends in the changes of real home prices in the individual metropolitan areas of Atlanta, Dallas, Chicago, and San Francisco. The fast increase in prices before the subprime meltdown and the subsequent sharp decline also provided evidence to doubt housing market efficiency.

The positive feedback hypothesis gives us an alternative framework to market efficiency that seems more consistent with our recent experience in the housing market. According to the hypothesis, there are two types of home buyers: rational home buyers and

feedback buyers. Rational home buyers form their demand based on their expectations of future returns using information regarding market fundamentals such as income, unemployment rate, inventory, and rental prices. Feedback buyers base their demand mainly on past prices or returns. Positive feedback buyers buy houses in rising markets, and sell in falling markets.

Similar to its effect in the stock market, positive feedback in the housing market causes prices to diverge from values determined by the fundamentals, and eventually price bubbles may emerge. As prices rise too far from the fundamentals and finally people start to sell, the bubble bursts. We saw a bubble develop in the early years of the past decade. The bursting of the bubble was the catalyst for the financial meltdown that led to the recession.

A market like this *amplifies* the effects of trading. Shiller (2000) argues that the feedback from initial price increases to further price increases contributes to the evolution of speculative bubbles in the housing market. The positive feedback mechanism, which he called an “amplification mechanism,” works on the downside as well. Clapp

and Tirtiroglu (1994) examined the housing markets in a group of neighboring towns in Hartford, Conn., and found that housing prices diffuse from one town to

another. This is consistent with the positive feedback hypothesis, not the efficient market hypothesis.

While the national Case-Shiller house price index and the 20-city

composite index both show a spike around 2007, there has been a lot of variation across regions with regard to the degree of price volatility.

Chart 1 shows the 10-year cumulative returns from 1997 to 2007 for the 20 largest metropolitan statistical areas, ordered from lowest to highest. Among the 20 metro areas, Dallas had the lowest cumulative return of 29%. Los Angeles, by contrast, experienced 236% return during the 1997-2007 period.

From the cities given in Chart 1 at top left, we select the top three and bottom three cities according to the 10-year cumulative returns from 1997-2007. We analyze their price trends in Chart 2 at bottom left. The distinction is obvious. Dallas, Cleveland and Detroit have much flatter price trends than their counterparts at the other end. While Los Angeles, Miami, and San Diego metropolitan areas enjoyed much faster increases before 2007, they also suffered larger declines thereafter.

The chart seems to suggest that in each metro area, faster price increases in the past carry through in the future but are eventually followed by sharper declines in a longer time horizon. This amounts to serial correlation leading to bubbles, followed by the collapse (bubbles bursting). This is evidence of a feedback process.

Using the 20 metropolitan statistical areas, we can more directly examine the relationship between past price movements and future returns. In every year studied, I divide the 20 housing markets into five levels, or quintiles, based on the cumulative returns in the past three years. The top 20% of markets are referred to as winner markets, and the bottom 20% of markets as loser markets.

In each group, I calculate the weighted cumulative return of purchasing houses in that year and holding it for different periods of time. I conduct this experiment on a yearly rolling basis. Finally, I

Chart 1: Cumulative Returns by Metropolitan Statistical Area (1997-2007)

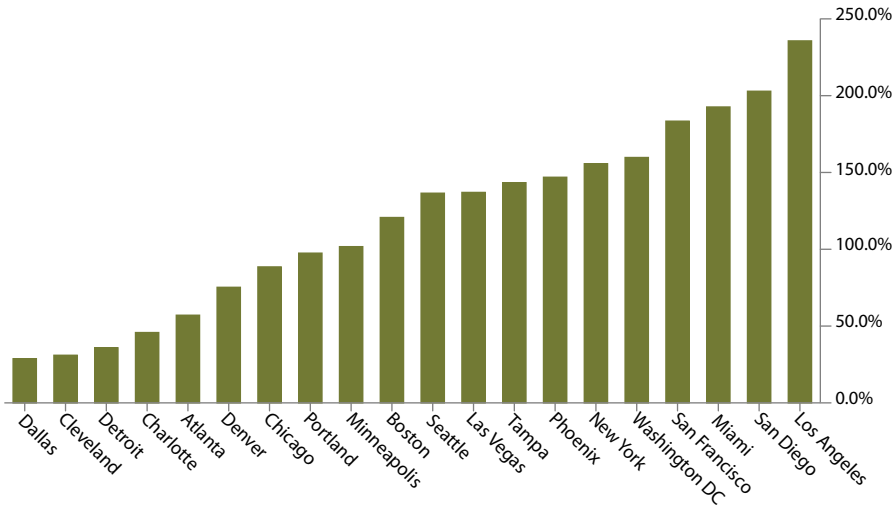
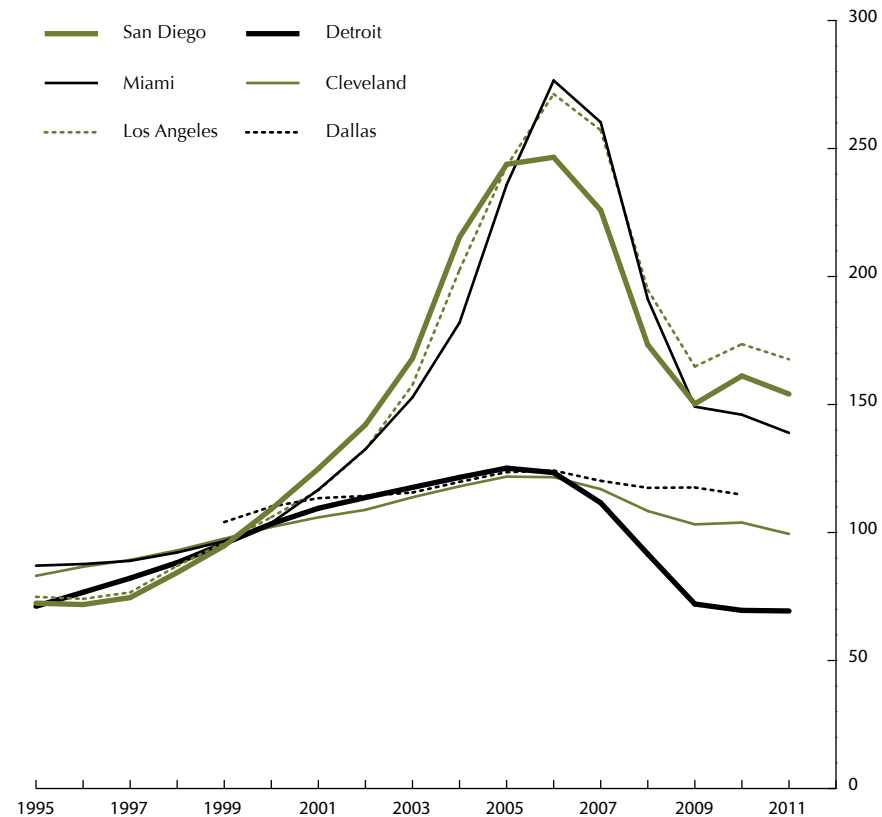


Chart 2: Case-Shiller House Price Index for Selected Metropolitan Areas (1982-84=100)



Source: S&P Case-Shiller home price indices

calculate the average cumulative return across time.

Chart 3 at top right shows the cumulative returns with the holding periods ranging from 2 to 9 years. The chart shows that those who purchased houses in the winner or loser markets both received positive average annual returns for 6 or 7 years after the purchase. Then the cumulative returns started to decrease (i.e. the average annual return became negative). While the returns in the winner markets originally exceeds that of the loser markets, it goes below that of the loser markets in less than 7 years.

This implies a trading strategy for houses, something that is contrary to market efficiency. It shows that it may make sense to buy a house and sell it every 5-7 years, before the cumulative returns start to decline. Note that the transaction cost, inflation rate and capital gains tax will erode returns. Transaction costs can be substantial—normally including brokers' commissions when selling the house, which is traditionally 6% of the sale price; the search cost when buying the house; and moving costs.

Moreover, a high inflation rate will reduce the real return. The capital gains tax will lower the after-tax return as well. But an individual can exclude up to \$250,000 (\$500,000 for a married couple filing jointly) of capital gains on the sale of real property if the owner uses it as primary residence for two of the five years before the date of sale.

Importantly, this is only an average over time. And critical for profitability trading is timing your purchase. For example, in Chart 4 at bottom right, we plot the 5-year (future) cumulative return when purchasing a house at different points of time in the winner and the loser markets. People who bought houses around 2001 earned the highest cumulative returns in 5 years. But if you bought houses in

Chart 3: Cumulative return with different holding periods in winner and loser markets

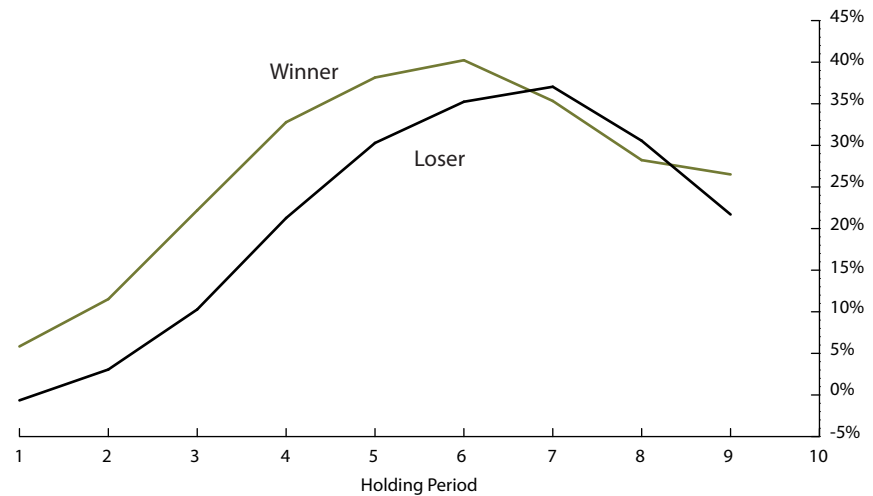
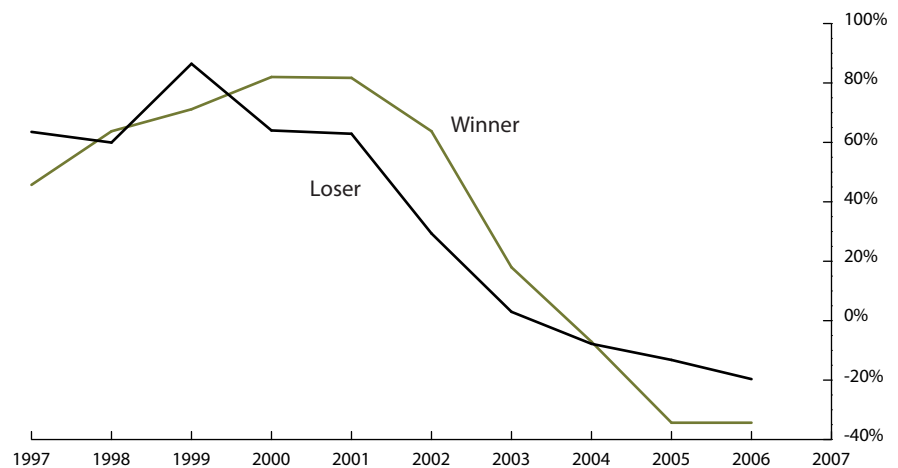


Chart 4: Five-year cumulative return at different purchasing time



Source: S&P Case-Shiller home price indices

2004 or 2005, you had a certain loss in 5 years.

In positive feedback markets, an upward-trending market is not a guarantee of future returns. It could indicate a high divergence of the market price from fundamentals, which sets the stage for a market crash.

These analyses offer supportive evidence that the housing market is not efficient, and that tradeable trends exist in the market. The positive feedback mechanism that is suggested here implies a potentially volatile market—not a market you would want as a cornerstone for economic growth and stability. We

should expect more booms and busts in the housing market.

For the same reason, you also would not want your home as the core of your investment portfolio. Americans often speak of home ownership as an investment, and indeed, home equity is by far the largest source of wealth for Americans. Most Americans do not have enough resources to own a house and hold enough other assets to give them a well-diversified portfolio. Lack of diversification leaves their economic lives vulnerable to housing market swings. But it is a risk you don't have to take.

Joblessness, House Prices Closely Linked

Our new research shows that the housing market is not likely to recover until the unemployment rate improves.

by Shelly X. Liang, PhD, Research Fellow

In our study of 20 metropolitan areas for the years 1990-2009, we found that the linkage between the unemployment rate and housing market is more substantial than expected. Our analysis of the data shows that, on average, a decrease of 1 percentage point in the unemployment rate results in an increase of 3.7 percent in house prices. This suggests that the sluggishness of the housing market recovery is directly related to the slow improvement in unemployment.

No doubt the linkage works both ways. High unemployment deters home buying, and construction employment is affected by a weak housing market. Right now, unemployment is also high in many regions that are less dependent on construction employment. And it appears that the direction of causality runs stronger from jobs to housing. So look to improvements in unemployment as an early indicator of improvement in the housing market.

We uncovered a number of other factors that have an effect on future house prices and may affect prices differently in different regions. By statistical measures, our model did a remarkable job, explaining 97 percent of the variation in house prices, as measured by the Case-Shiller Indices. Our findings are statistically significant at the 95 percent confidence level.

The price of a house last year was an important predictor of this year's price. This indi-

cates that the housing price has trends—and positive feedback appears likely. On average, a 1 percent increase in price one year will be followed by a 0.8 percent increase the price the next year. This effect is larger than that reported by Case and Shiller in their 1989 study. They found that a change in price observed over one year tends to predict a change in the price of the following year in the same direction by only 0.25-0.50, and their results are not statistically significant. Our new finding suggests that the market

High unemployment deters home buying, and construction employment is affected by a weak housing market.

has changed, and momentum, or feedback trading, may have become more prominent in recent years.

The closer relationship of past-year and current-year prices provides additional empirical support to the notion that buying houses on trends can, on average, be successful. Rising prices lead to more rising prices. It also means that declining prices lead to more declining prices.

According to our calculations, real per capita income, a measure of general economic well-being, and population size both have a positive effect on house prices. More money in buyers' hands' and more buyers both add up to increased demand for houses. As real per capita income or the population increase by 1 percent, house prices will increase by 0.56

and 0.20 percent, respectively.

Among other variables we tested, the homeowner vacancy rate and the new home starts help to capture the supply side situation. We would expect a higher vacancy rate to be indicative of an excess supply of houses, and it therefore should cause house prices to fall. Our data supports this. A 1 percentage point decrease in the vacancy rate rates, on average, results in a 0.7 percent increase in house prices.

The national homeowner vacancy rate has been declining since the fourth quarter of 2010. For the last quarter of 2011, the homeowner vacancy rate was 2.3, which is below the level of the third quarter of 2006.

All the supply side changes are putting upward pressure on house prices.

We might expect that new housing starts would mean an increase in the supply of housing, and therefore put a damper on house prices. Yet the data tells us that for every 1 percent increase in new home starts, house prices rise by 2.5 percent. This result likely reflects an increase in building in response to better market conditions. Basically, new home starts are the result of higher demand and higher prices.

Similarly, a higher cost of renting tends to raise house prices by making home-buying more financially worthwhile. But recently, the popularity of renting has led to higher rents and lower home prices.