

# Housing, Land, and

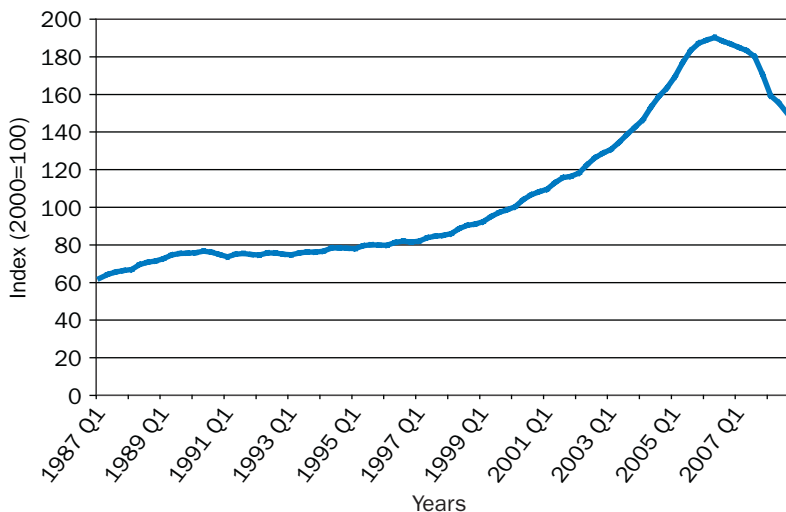
Karl E. Case

At the end of 2009, the United States faced an economic disaster of major proportions, with trillions of dollars of asset value lost, more than 16 million people unemployed, and four consecutive quarters of rapidly falling GDP. These

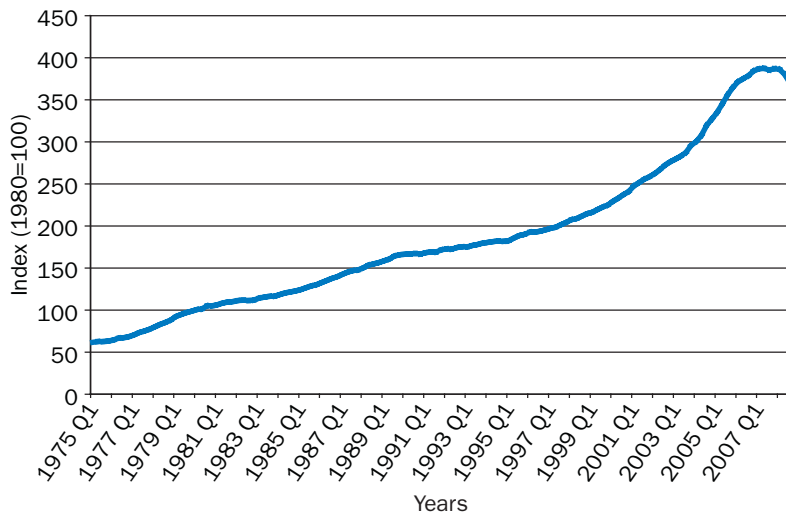
events were the direct and indirect result of extreme volatility in the value of residential property that had served as collateral for the nation's huge stock of home mortgages.

Between 2000 and 2005, the value of residential land and buildings increased from about \$14 trillion to \$24 trillion. About half of this increase reflected new construction, and half was due to rising land values, primarily on the coasts (Case 2007). But in late 2006 prices began to decline, and by mid-2009 they had fallen roughly 30 percent.

**FIGURE 1A**  
**S&P Case-Shiller Home Price National Index, 1987–2008**



**FIGURE 1B**  
**OFHEO House Price Index, 1975–2008**



## Measuring House Price Appreciation and Depreciation

The S&P/Case-Shiller repeat sales home price indexes were developed 25 years ago to track changes in the market value of existing homes. Based on observed values of properties that changed hands more than once, the indexes were proposed as an alternative to the prevailing measure of home price appreciation or depreciation, which was the median price of homes sold in a city or region. A simple median price will move up or down over time with changes in the mix of properties that sell, as well as with changes in the price or value of houses. This can cause the median price to shift even if no appreciation or depreciation occurs, particularly when new, higher-valued properties are part of the sales base.

In the repeat sales methodology, we collect all available data on home sales and then determine if the same house has been sold in the past 20 years or so. Each pair of sales provides information on appreciation or depreciation. We then eliminate sales where the property has been changed significantly, or the sale was not arm's length, such as purchases by a financial institution or sales where the buyer and seller have the same name.

Finally, we reduce the weight assigned to paired sales that are far apart in time, in part because there is a greater chance that those properties have undergone physical changes. We also eliminate paired sales that are less than six months apart, because they may represent purely speculative activity. We publish only results that are supported by strong statistical tests of confidence.

# the Economic Crisis

## Home Prices: 1990–2010

Between 1975 and 2006 no measure of home prices showed a national decline. The S&P/Case-Shiller and OFHEO (Office of Federal Housing Enterprise Oversight) national house price indexes both show a continuous rise, accelerating around the year 2000 and peaking between 2006 and 2007 (figures 1a and 1b). However, Case and Shiller (2003) found that in 43 states the ratio of house prices to income remained low and constant between 1985 and 2002, even as house prices rose, suggesting that it was changes in per capita income that explained the increase in home values.

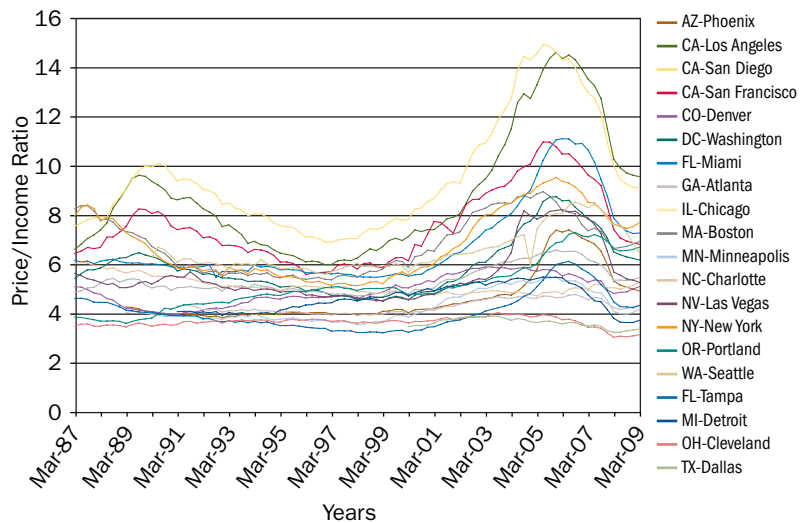
Figure 2 shows the ratio of home price to per capita income for 17 of the more volatile metropolitan areas between the first quarters of 1987 and 2009. After 2000, this ratio began to increase in virtually all of these metropolitan areas, with steep acceleration after 2002. The data suggest four distinct submarkets. The first consists of Las Vegas, Miami, and Phoenix, with a virtually constant price/income ratio until 2000, followed by a rapid increase in 2003 and 2004.

The California submarket was even more explosive. San Diego doubled its ratio from below 8 to above 16, with San Francisco and Los Angeles close behind. New York and Boston, in the third group, experienced accelerating ratios, but they were not as dramatic as those in the first two subgroups. In the Midwestern cities of Chicago, Charlotte, Portland, and Minneapolis, the increases were much lower than those observed on the coasts.

Figure 3 shows the volatility of home prices in the same 17 metropolitan areas based on sales in the lower third tier of sales prices. Home prices tripled in Miami, Los Angeles, Washington, DC, San Diego, and Las Vegas. In September 2005, Boston saw a price drop that later spread to every metropolitan area in the country.

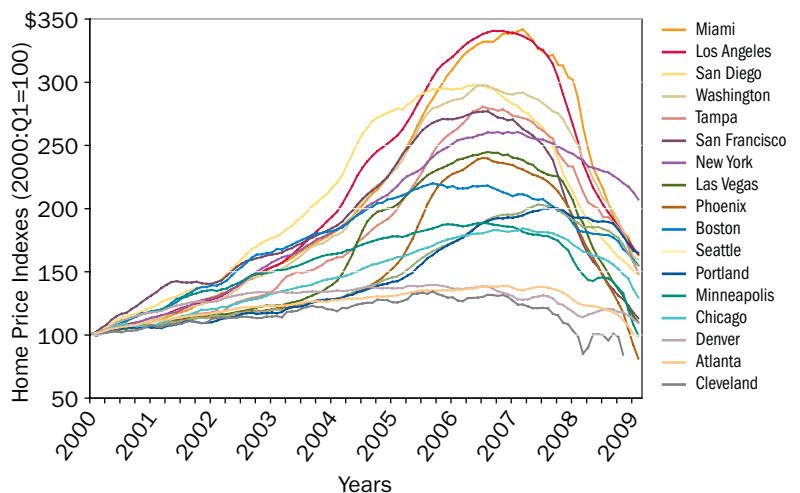
Table 1 shows the S&P/Case-Shiller Index through September 2009, when prices began to stabilize and then rise. The bottom two lines show composite indexes for two sub-samples of the 20 available metropolitan areas. Both have fallen nearly 30 percent since the summer of 2006.

**FIGURE 2**  
Home Sales Price/Per Capita Income Ratios for Selected Metropolitan Areas, Q1 1987–Q1 2009



Data sources: S&P/Case-Shiller Index; Census Bureau; BEA; Moody's Economy.com

**FIGURE 3**  
Low Tier Sales Prices in Seventeen Metropolitan Areas



## How Did It Happen?

The national housing boom had its roots in unprecedented events that unfolded in U.S. financial markets beginning in 2000. The rapid decline of high tech industries, the stock market collapse in 2000 and 2001, the slow level of technology investment resulting from Y2K, and finally, of course, the

**TABLE 1**  
**S&P/Case-Shiller Index Through September 2009**  
**Released November 24, 2009**

Metro Area	Peak	% Δ Since Peak	% Δ Last Year	% Δ from July to August	% Δ from August to Sept.	% Δ 2000 to Sept. 2009
Las Vegas	Aug 2006	-55.4%	-28.5%	-0.3%	-0.9%	4.8%
Phoenix	Jun 2006	-52.0%	-21.8%	1.6%	0.8%	9.3%
Miami	Dec 2006	-46.7%	-16.2%	1.1%	0.5%	49.7%
Detroit	Dec 2005	-42.6%	-19.2%	1.9%	1.8%	-27.1%
Tampa	Jul 2006	-40.1%	-16.7%	0.4%	-0.6%	42.6%
Los Angeles	Sep 2006	-38.7%	-9.0%	1.6%	0.8%	67.9%
San Francisco	May 2006	-38.6%	-7.8%	2.8%	1.3%	34.2%
San Diego	Nov 2005	-38.2%	-5.7%	1.6%	0.9%	54.8%
Washington	May 2006	-28.1%	-5.0%	1.8%	0.5%	80.5%
Minneapolis	Sep 2006	-27.0%	-11.0%	3.1%	1.8%	25.0%
Seattle	Jul 2007	-22.5%	-13.8%	0.1%	-0.4%	48.9%
Chicago	Sep 2006	-21.6%	-10.6%	1.7%	1.2%	32.1%
Portland	Jul 2007	-19.7%	-11.8%	0.3%	-0.5%	49.7%
New York	Jun 2006	-19.2%	-9.1%	0.6%	-0.3%	74.4%
Atlanta	Jul 2007	-18.5%	-9.3%	1.1%	-0.0%	11.3%
Boston	Sep 2005	-14.7%	-3.3%	0.9%	-0.2%	55.6%
Cleveland	Jul 2006	-14.4%	-3.7%	-0.5%	-1.6%	5.8%
Charlotte	Aug 2007	-11.8%	-8.1%	-0.4%	-0.7%	19.8%
Denver	Aug 2006	-7.7%	-1.2%	1.0%	-0.5%	29.4%
Dallas	Jun 2007	-4.7%	-1.2%	0.2%	-0.7%	20.6%
Composite-10	Jun 2006	-29.9%	-8.5%	1.3%	0.4%	58.6%
Composite-20	Jul 2006	-29.1%	-9.4%	1.2%	0.3%	46.5%

events of 9/11 led to a relaxed monetary policy as the Federal Reserve continually reduced interest rates in an attempt to stimulate the economy and prevent recession. In January 2001 the Fed cut the federal funds rate (the interest rate banks charge one another for the use of federal funds) from 6.5 percent to 6 percent, and by the end of 2002 had reduced the rate 11 times, to 1.75 percent.

When the easing of credit began, the 30-year fixed rate for a conventional mortgage was 7.17 percent, down slightly from the 8.3 percent average rate over the first nine months of 2000. By the time the federal funds rate fell to 1.75 percent in the fourth quarter of 2002, the conventional fixed mortgage rate was 6.39 percent. The federal funds rate continued its downward trend until it hit 1 percent in July 2003 and remained there for over a year. By that time, the conventional 30-year fixed-rate mortgage carried an interest rate of 4.6 percent. This easing of credit was the result of a massive injection of liquidity. The dramatic drop in interest rates reduced returns on many investments, placing pressure on yields around the world.

The expansionary monetary policy pursued during this short period reduced the cost of buying a home by almost a third. If its purpose had been to stimulate the mortgage and housing markets, the policy certainly worked, as lower interest rates reduced mortgage costs. Housing production and sales of existing homes boomed. In October 2001 there were about 1.52 million housing starts annually. By the end of 2003 housing starts had increased by a third, to well over 2 million.

Existing home sales were 5.2 million annually at the beginning of 2001 and 6.5 million by the third quarter of 2003. By 2005 they reached 7 million and stayed at about 6 million until 2007. There is little doubt that the housing market kept the economy out of recession through the turbulent early years of the decade.

Figure 4 shows the explosion in home sales and mortgage volume at the end of 2002 and into 2003. Low interest rates stimulated demand for refinancing, and between the fourth quarters of 2002 and 2003, \$5.5 trillion in mortgages were originated, and \$3.7 trillion were paid off. Over five quarters, the total value of new mortgages was about the same as the entire stock of mortgage debt outstanding in 2001. Seventy-five percent of the new mortgages were written for refinancing rather than purchases of new homes.

By bundling large numbers of mortgages into securities, Wall Street could offer an investment vehicle that combined the implicit government guarantees of the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) with a history of very low default rates. As a result, much of the liquidity that drove the economic expansion was channeled directly into mortgages.

In June 2003, mortgage rates began to rise, moving from 4.60 percent to 5.97 percent by August. The third quarter of 2003 saw the highest volume of refinancings, with originations of \$942 billion. The refinancing boom ended with the rise in interest rates, dropping 56 percent in the fourth quarter.

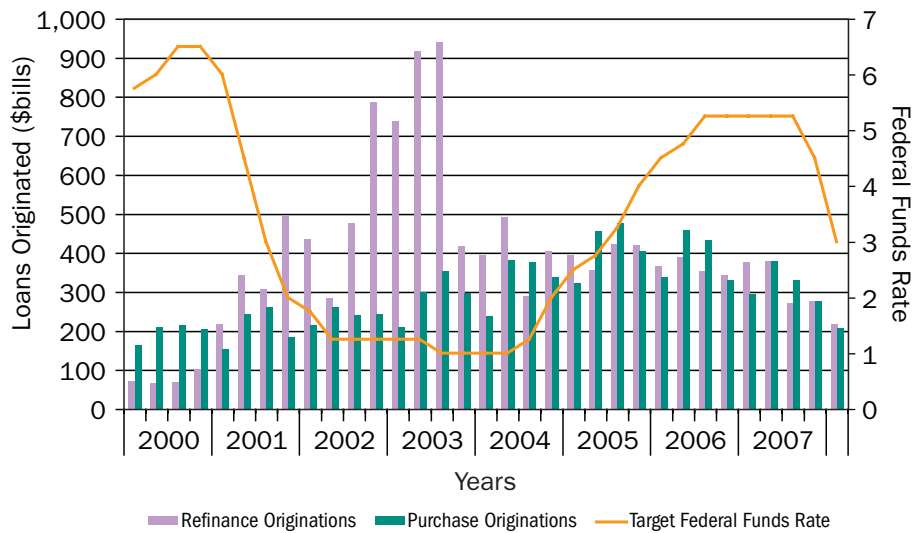
During this expansion of credit, the mortgage industry became highly profitable, collecting fees of about 2.5 percent of the \$4 trillion in total originations in 2003 alone—over \$100 billion. Greenspan and Kennedy (2008) estimate that fees for refinancings and home equity loans in 2004 reached \$200 billion. With default and foreclosure rates low and housing prices high, lenders competed for the business of homebuyers.

The total value of mortgages originated per quarter for the purchase of one- to four-family homes doubled from \$239 billion in 2004:Q1 to \$478 billion in 2005:Q3. Much of this business was directed at low-income neighborhoods and sub-prime borrowers. Between 2002 and 2006, the market originated \$14.4 trillion in mortgages, retired \$10.3 trillion in debt, and increased the stock of outstanding mortgage debt by \$4.1 trillion.

Needless to say, a credit expansion of this magnitude had a major impact on the housing market. As noted earlier, between 2000 and 2006 prices in the bottom tier of the market increased the most—by 241 percent in Miami, 249 percent in Los Angeles, and 200 percent in Washington, DC, Las Vegas, and San Diego. The S&P/Case-Shiller composite indexes more than doubled, and the national index increased by nearly 90 percent.

At the end of 2005 and into 2006, the housing market began to soften. Interest rates rose, and the 30-year mortgage interest rate was back to 6.6 percent by the last half of 2006. Gluts of speculative building slowed markets in Florida, Arizona, and Nevada. Homes in California and in the Northeast had become very expensive relative to incomes,

**FIGURE 4**  
**United States Total Quarterly Originations, 2000–2008**



Data sources: Greenspan and Kennedy; Federal Reserve Board of Governors; S&P/Case-Shiller.

and the manufacturing base of the Midwest fell into recession. As expectations turned gloomy in 2006, 16 of the 20 S&P/Case-Shiller metropolitan areas showed price declines, and by 2007 all were declining. This had never happened before.

Then inventories of houses for sale began to increase. In the past, when markets rose too quickly, prices were slow to change and adjustment was orderly. With house prices falling nationally, and with the bulk of the newly written mortgage debt carrying high loan-to-value ratios, mortgage default rates rose sharply.

Underwriting standards changed over this period as well. Statistical models of default and foreclosure seemed to “explain” defaults as a function of borrower and loan characteristics. These models were used by all market participants, sometimes even without their knowledge. The most widely known underwriting tools were Loan Prospector and Desktop Underwriter, developed by Fannie Mae and Freddie Mac respectively. Their low cost and ease of operation made them the industry standard. As these models spread throughout the market, mortgage lenders and insurers that did not accept their results garnered little new business. The rating agencies also fell victim to the same statistical methods, which suggested a very low likelihood of rapidly rising defaults.

The stated goal of the new model of underwriting was to transform a patchwork risk-allocation

process into a more efficient and accurate pricing system. But this proved to be not only difficult, but ultimately impossible. Analysts seeking to predict the likelihood of default had little choice but to look to the past: at what rate did mortgages with the same characteristics fail in the past?

But past experience dealt with a 30-year period of rising prices in which the collateral was in most cases sufficient to cover claims. Thus, outside of a few regional downturns, no experience provided data that could accurately measure the impact of falling house prices on delinquency, default, and foreclosure. The historic housing boom of 2000–2005, together with the change in underwriting standards and credit market operations, made the period of 2000–2008 one of the truly important economic episodes of the last century. Its legacy is a flood of bad mortgages with millions of homes headed for foreclosure.

### The Government Has Played a Big Role

One additional factor clearly played a role in all of this: the federal government's strong efforts to promote home ownership for rich and poor alike. In 1977 Congress passed the Community Reinvestment Act (CRA) and the Home Mortgage Disclosure Act (HMDA), designed to increase bank lending to low-income and minority households. Even today, banks have a CRA exam every year to determine whether they are meeting the credit needs of their entire CRA area, which in almost all cases includes low-income neighborhoods that in previous years might have been rejected ("red-lined") for loans or insurance.

These programs reflect a belief that the nation has an interest in promoting home ownership as the American Dream, which is thought by many to lead to meritorious behavior. A homeowner is considered likely to be a better citizen, and more involved in local affairs. Home ownership was also thought to be a way of building wealth for low-income households, part of the social safety net (Case and Marynchenko 2002).

Home ownership was encouraged in a variety of ways. The federal subsidy in the income tax treatment of home ownership (the mortgage interest deduction, the capital gains exclusion, the property tax deduction, and the nontaxation of imputed rent on owner-occupied housing) amounts to about \$140 billion annually. The Government Sponsored Enterprises (GSEs) including Fannie

Mae, Freddie Mac, the Government National Mortgage Association (Ginny Mae), and the Federal Housing Administration (FHA) were all set up to channel capital into home mortgages.

This not-so-subtle pressure from the Congress was clearly accepted by Fannie Mae and Freddie Mac as the price they needed to pay to maintain the implicit guarantee of their debt, which they enjoyed as a result of their government franchises. There can be no precise division of responsibility between the GSEs and the private sector in expanding the housing bubble.

Several factors played a role in the ultimate collapse: the competitive battle for market share waged by Wall Street investment banks, the private securities markets, and some highly leveraged specialty firms; the high credit ratings that were distributed by the rating agencies; and the fact that default and foreclosure rates remained low. In the end, it was a combination of unfettered private-sector competition, some irrational exuberance, and what turned out to be poor regulatory oversight that led to the disaster.

### Where Do We Go From Here?

By late 2009, housing markets seemed to be approaching a bottom with prices stabilizing, but many forecasts anticipate declines extending well into 2010. If that were to happen, numerous mortgages written in 2008 and 2009 would not be fully secured and could turn unprofitable.

A prolonged period of falling prices would prevent a significant increase in housing construction. Despite record low interest rates, housing starts have been in uncharted territory for more than a year, having fallen below levels seen in prior downturns. The last four recessions began with large declines in housing starts. At the end of 2008, starts were down from a peak of 2.27 million in 2006 to around 500,000, where they stayed for more than a year, well below the typical bottom of one million starts per year. Currently, starts are running at a seasonally adjusted rate of 574,000, which is 28 percent below the lowest level recorded. Since 1959, only in the month of January 1991 did starts go below 800,000, to 798,000. Starts bounced back in February 1991 to 968,000.

Two market-clearing processes are currently underway in the housing market, operating side by side, often neighborhood by neighborhood, within metropolitan areas. First, there is the traditional

search for a new equilibrium. Inventories remain high as risk-averse sellers seek to avoid sharp price reductions. Sellers without access to liquid capital can be among the most reluctant to sell, because they cannot afford to incur high transactions costs. Homeowners do not like to sell at a loss, and may postpone sales in hope of a rising market. This type of market-clearing process is slow and usually results in a long and costly period of quantity adjustment with relatively little change in sale prices.

Second, banks, loan servicers, and other market participants are left holding properties because of defaults and foreclosures. These houses are typically sold at auction, often at very low prices. In every past regional decline these two processes worked together to clear the market. The final result will be the product of a battle between them.

At the end of 2009, homes were selling at a rate of about 6 million per year, 5.5 million existing and 500,000 new homes, including between 1 and 1.5 million sales at foreclosure auctions. The bad news is that new properties are entering the foreclosure process faster than older cases are being resolved, suggesting that the portion of all sales through the auction process is likely to grow.

But a number of facts suggest that the current bottom could hold and eventually turn upward. First, prices have fallen substantially. In Boston, they have been falling for some time, and in California they are down over 50 percent. Eventually, when prices get low enough, people will start buying again. Furthermore, interest rates are remaining at all-time low levels, with the conventional 30-year fixed-mortgage rate below 5 percent.

In short, all housing market indicators are improving. Pending home sales, existing home sales, new home sales, and housing starts were all up during 2009; and prices actually stopped falling. The OFHEO price index and the S&P/Case-Shiller indexes for 18 of the 20 cities analyzed were up for several months in a row. New home inventories fell to 251,000 (7.4 months of inventory) in September, after having fallen for 13 consecutive prior months.

California represents about 25 percent of all the land value in the United States, and events there have major implications for the rest of the country. The good news is that for the last three months, the indexes for San Francisco, San Diego, and Los Angeles have led the nation in price appreciation. The California Association of Realtors

reports substantial increases in home sales volumes except in the Central Valley.

It is important to remember that it takes only a relatively small number of buyers to move the market. Our measures of home values are based on observed sales, but only 5 to 7 percent of the total housing stock changes hands annually. Even with an unemployment rate near 10 percent, homebuyers continue to be very optimistic, and now there may be enough of them to change the market's direction.

But, we are by no means out of the woods. Unemployment remains very high and jobs are still being lost. In addition, the foreclosure pipeline is moving very slowly, and foreclosures are spreading from the sub-prime market to the presumably more secure A-, Alt A, and prime loans. If the jobs picture does not brighten, and the market does not speed up the process of resolving foreclosures, the housing market could face a long period of stagnation and even a return to falling prices. **L**

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