

FREQUENTLY ASKED QUESTIONS ABOUT THE ROLE OF HOUSING IN RECESSIONS AND RECOVERIES



Joint Center for Housing Studies
of Harvard University

FIVE DECADES OF HOUSING RESEARCH
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- **HOW LARGE A PART OF THE ECONOMY IS HOUSING?**

Housing is a large and important part of the economy, but its contribution depends on the stage of the housing cycle.

Spending on new home construction and remodeling (residential fixed investment) has averaged about 4.8 percent of U.S. gross domestic product (GDP) since quarterly data collection began in 1947. Over the same period, housing has averaged about 21 percent of GDP when rents, furnishings and other housing-related costs are included along with residential fixed investment.¹

During this downturn, residential fixed investment (RFI) peaked at 6.3 percent of GDP in the fourth quarter of 2005—the highest level since 1951—and then plummeted to a record low of just 2.4 percent in the second quarter of 2009. The previous low, on records dating back to 1947, was 3.2 percent set in the third quarter of 1982. From high to low points in housing cycles since 1947, the swing in housing's contribution to GDP has averaged 1.9 percentage points.

- **HOW IMPORTANT A FACTOR HAS CHANGE IN RESIDENTIAL FIXED INVESTMENT BEEN TO RECESSIONS AND RECOVERIES?**

Historically, changes in residential fixed investment (RFI) have contributed significantly to both pushing the economy into recession and lifting it out.

Housing has been a leading indicator of economic cycles. Since 1947, drops in RFI have shaved off an average of one-quarter of a percentage point from the percentage change in real GDP in the two quarters leading up to contractions and one percentage point from the percentage change in real GDP in the first quarter of contractions. (Personal consumption expenditures and non-residential investment were still positive contributors to GDP growth on average until the second quarter into recessions).²

Housing turnarounds usually start before recessions end. For all but two of the recessions since 1947, the first quarter in which the change in residential fixed investment turned positive was within two quarters of a sustained turnaround in GDP. Only the recession of 1969-70 had a false single-quarter mid-recession turnaround in RFI not followed by a turnaround in GDP within two quarters. The double-dip recession, however, also saw two quarters of positive RFI growth followed by two quarters of GDP growth before the second dip sunk housing and the economy back into recession.

¹ Estimates of rents, furnishings and other housing-related costs date back to 1947. Unrevised National Income and Product Accounts data through the first quarter of 2009 are used here. A comprehensive revision was released in the second quarter of 2009 but detailed pre-1995 data not yet released.

² This analysis considers the double-dip recession as a single downturn spanning the two contractions as defined by the National Bureau of Economic Research, in total from the first quarter of 1980 to the fourth quarter of 1982.

In the 6 out of the 9 recessions since 1947 in which RFI grew during or before the final quarter of the recession, growth in RFI contributed an average of 1.1 percentage points to the percentage change in real GDP in the final quarter of recession.

RFI was increasing in the first quarter after each of the past 9 recessions. During these periods, growth in RFI contributed on average over one full percentage point (1.1) of the percentage growth in real GDP. With total real GDP growth in first quarters of recoveries averaging an annualized 7.2 percentage points, RFI growth alone constituted an average of 16 percent of real GDP growth.

During the first two quarters of each recovery since 1947, RFI growth contributed an average of 1.3 percentage points of the percentage growth in GDP. With total GDP growth averaging 6.9 percentage points, RFI growth alone constituted an average of 19 percent of GDP growth in these periods.

These impacts represent only the direct contributions of changes in RFI to GDP growth. Indirect multiplier effects created by spending income earned from RFI magnify its impacts going into and coming out of recessions. In addition, when home prices turnaround, pressure on bank balance sheets eases and the depressing impact of falling prices on consumer spending turns positive.

- **WHAT ROLE HAS THE COLLAPSE IN HOME PRICES PLAYED IN THIS RECESSION?**

The collapse of home prices is a major reason why mortgage loan performance has been so abysmal and losses at financial institutions have been so steep. As long as house prices continue to fall, many banks will continue to face difficulties raising capital but be under pressure to do so.

As long as nominal house prices are rising, homeowners and investors who get into trouble can refinance or sell their way out of a jam, even if they have ill-advised risky loans and are riskier subprime borrowers. When prices fall enough so that the outstanding mortgage balance plus the costs of selling exceeds the proceeds from a sale, borrowers in trouble cannot sell their way out of it. As prices fall further and more homeowners cannot sell their way out of trouble, lender losses become greater because larger shares of loans default and the amounts lenders can recoup after foreclosing on a property and selling it become smaller.

Heavy losses to date and concern over future losses caused the value of bank assets tied to residential real estate to plummet as lenders were forced to mark the value of their mortgage assets to market prices in an illiquid market. While estimates of total losses to date incurred on residential mortgages since prices started to fall nationally in 2006 vary, charge-off rates for residential loans at commercial banks hit 1.8 percent in the first quarter of 2009—more than ten times the average rate of 0.15 percent from 1991-2007.³

In April 2009, the International Monetary Fund (IMF) estimated that writedowns of U.S. residential mortgages by the end of this cycle could total \$1.4 trillion, of which \$810 billion would affect banks. In total, the IMF projected banks would incur roughly \$2.8 trillion in credit-

³ This includes real estate loans secured by 1-4 family properties, including home equity lines of credit.

related writedowns in 2007-10, of which about one-third had already occurred and nearly 30 percent of which would be from U.S. originated residential mortgages.⁴

- **WHAT IMPACT HAS THE FALL IN HOME PRICES HAD ON CONSUMER SPENDING?**

The collapse in home prices has choked off home equity borrowing and caused households to cut back on consumer spending. A return to house price appreciation would likely help spark a rebound in consumer spending.

The pool of home equity has been badly eroded. According to the Federal Reserve, aggregate homeowner equity in real estate dropped \$6 trillion, or 45 percent, in real terms from its peak of \$13.4 trillion in the fourth quarter of 2005 to \$7.4 trillion in the first quarter of 2009.

As a result, home equity cashed out through refinances has fallen. According to Freddie Mac, home equity cashed out through refinances was \$25.3 billion in the second quarter of 2009, down 35 percent from the second quarter of 2008 and 65 percent from the second quarter of 2007.

Home equity debt outstanding has also fallen. After falling \$15 billion in 2008, home equity loans outstanding dropped another \$17 billion in the first quarter of 2009 alone—a seasonally adjusted annual rate of decline of \$67.7 billion.

Consumers, whose personal consumption accounts for approximately 70 percent of GDP, have reined in spending sharply since the beginning of the recession. As the household sector switched from net borrowing to net saving, real personal consumption expenditures declined 2 percent from the fourth quarter of 2007 to the second quarter of 2009, shaving off an average of 0.9 percentage points from GDP per quarter during this time.

- **HOW MUCH HAS THE HOUSING DOWNTURN REDUCED ECONOMIC GROWTH?**

The housing downturn has had a dramatic effect on economic growth—directly through the collapse of construction and home sales and indirectly through reduced consumer spending in response to falling home values and the multiplier effects of reduced construction and sales.

The direct contribution of the decline in residential construction, remodeling, and fees associated with home sales and mortgage originations shaved nearly half a percentage point from GDP growth in 2006, a full percentage point in 2007, another full percentage point in 2008, and 0.6 and 0.8 percentage points annualized in the first and second quarters of 2009 respectively.

Moody's Economy.com estimates that reduced housing investment and negative wealth effects from falling home values⁵ taken together shaved 1.2 percentage points off GDP growth in 2007, 1.8 percentage points in 2008, and will shave an additional 1.4 percentage points in 2009.

⁴ "Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systemic Risks," April 2009. International Monetary Fund. Washington DC, pp31 and table 1.3.

⁵ Moody's economy.com estimates negative housing wealth effects from lower home values shaved -0.2 percentage points off GDP growth in 2007 and -0.9 percentage points in 2008.

The multiplier effects of lost income from the contraction in residential fixed investment (homebuilding, remodeling, and fees associated with buying and selling homes) are also significant. Karl E. Case and John Quigley estimate a multiplier of 1.4, meaning that for every dollar of reduced residential fixed investment there are 1.4 dollars of total loss to national income.⁶ Using this multiplier, the indirect impacts from reduced residential investment were responsible for an additional negative 0.4 percentage point contribution to the percentage change in real GDP in 2008 and additional negative 0.2 and 0.3 percentage point contributions in the first and second quarters of 2009 respectively.

- **WITH SIGNS THAT HOUSING STARTS AND SALES MAY HAVE BOTTOMED, WHAT FACTORS MAY IMPEDE A HOUSING RECOVERY?**

Despite stimulus measures aimed both at housing and the broader economy, there are several strong headwinds facing the industry (some recent improvement in new construction and home sales notwithstanding).

Home price declines appear to have slowed over the last few months in many markets, and prices have even started to increase in a few metropolitan areas. In many markets, however, home prices are still falling, and it is too soon to tell whether price declines will reaccelerate in some areas as a result of ongoing job losses, the potential for mortgage interest rates to increase, or the possibility that credit standards will tighten further. In May, the S&P/ Case-Shiller house price index logged the first monthly increase for the U.S. since 2006, but still declined on a seasonally-adjusted basis.

Large numbers of homeowners are now underwater, which increases the likelihood that those unable to make their mortgage payments will default. In addition, the trade-up market has stalled because so many homeowners cannot breakeven or profit when they sell. Moody's Economy.com estimates that in the first quarter of 2009 fully 14.8 million of 78.2 million owners of single-family homes (19 percent) owed more than their homes were worth.⁷ Zillow.com estimates that 20.4 million homeowners (21.9 percent) had homes worth less than the original mortgage amounts in the first quarter of 2009, while First American Corelogic recently reported that more than 15.2 million U.S. mortgages or 32.2 percent of all mortgaged properties were in negative equity position as of June 30, 2009.

As a result, foreclosure rates are high and could continue at or near current peak levels for several more quarters. In the first quarter of 2009 alone, the Mortgage Bankers Association reported that more than 600,000 homes had entered foreclosure. At that pace, foreclosures for the year would reach 2.4 million, up from 1.9 million in 2008, 1.3 million in 2007, and 800,000 in 2006. Despite concerted efforts by the federal government to encourage modifications that significantly lower monthly payments, most observers expect foreclosures to remain at elevated levels, as the negative impacts of home prices and still continuing job losses work their way into the behavior of subprime and, increasingly, prime borrowers. Indeed, growth in the number of prime loans 90+ days delinquent or in foreclosure accelerated in the first quarter of 2009 relative to the last quarter of 2008, while growth in the number of seriously delinquent subprime loans

⁶Case, Karl E. and John M. Quigley 2007. "How housing booms unwind: Income effects, wealth effects, and feedbacks through financial markets," Fisher Center for Real Estate and Urban Economics. Working Paper No. W07-001.

⁷ Wall street Journal May 6, 2009 <http://online.wsj.com/article/SB124156804522089735.html>

slowed. By the first quarter of 2009, the number of prime loans 90+ days delinquent or in foreclosure (1.6 million) exceeded that of subprime loans (1.3 million). These delinquencies add pressure to home prices in many of the hardest hit markets.

Although employment is a lagging indicator of recoveries, the sheer magnitude of job losses and the time it takes for them to work their way through house price declines and foreclosures in housing markets makes employment loss a threat to a housing recovery. Total employment dropped by 6.7 million from December 2007 through July 2009. While the loss rate appears to have peaked in the first quarter of 2009, significant losses continued through the second quarter and into the third, where the 247,000 drop in July marked the 19th consecutive month of declining employment.

Meanwhile, mortgage investments continue to post losses. In July 2009, deteriorating conditions led S&P to raise its February 2009 loss projections from 25 percent to 32 percent for subprime loans issued in 2006 and from 31 percent to 40 percent for subprime loans issued in 2007.⁸ Moody's Economy.com estimates that combined losses on all subprime, Alt-A, and jumbo loans from the housing boom will easily top \$1 trillion.⁹

Tightened credit standards for residential lending are also inhibiting demand. Underwriting standards have swung from being exceptionally lax to exceptionally strict. On the downpayment side, according to the Federal Housing Finance Agency, in June 2009 only 8 percent of all loans originated had a loan-to-price ratio exceeding 90 percent, compared to 21 percent in June 2008 and 31 percent in June 2007—equaling the lowest monthly share of loans with low downpayments since the series began in 1995. Subprime and non-prime “affordability loans” (interest-only/payment option loans) have all but disappeared, falling from a peak of 20 percent of originations in 2005 to less than 2 percent in 2008.

While mortgage interest rates in the conforming market have been in the 4.75 to 5.5 percent range in 2009, non-conforming jumbo rates have remained stubbornly high. According to MonitorBankRates.com, the average rate on a jumbo 30-year fixed rate mortgage for the week ending August 10 was 6.31 percent, while the average rate for a conforming 30-year fixed rate mortgage was 5.51 percent, amounting to a spread of 0.80 percentage point. According to Bankx.com, the percentage point spread between jumbo and conforming 30-year fixed rate mortgages expanded from 0.16 in late July 2007 to a peak of 1.90 in late March 2008 and has narrowed considerably since then.¹⁰

Meanwhile, multifamily loan performance and valuations are under increasing pressure. According to testimony before Congress from an analyst with Deutsche Bank, the performance of Commercial Mortgage Backed Securities (CMBS) is in serious trouble.¹¹ Banks have an estimated exposure to about \$150 billion of multifamily loans. Using Property and Portfolio Research projections of maximum declines in multifamily net operating incomes of between 8.9 and 15.0

⁸ Reuters July 6, 2009 (<http://www.reuters.com/article/marketsNews/idUSN0627123920090706>)

⁹ Moody's economy.com. July 7, 2009 (http://www.economy.com/dismal/article_free.asp?cid=116400)

¹⁰ Reuters June 18, 2008 (<http://www.reuters.com/article/pressRelease/idUS101844+18-Jun-2008+PRN20080618>)

¹¹ Richard Parkus Testimony, July 9, 2009. (accessed online at: http://jec.senate.gov/index.cfm?FuseAction=Files.View&FileStore_id=ea4916df-1cfe-43b3-8ae8-922df9a743ad)

percent over the next five years, Deutsche Bank estimates that 51 percent of outstanding multifamily loans will default, leading to total multifamily loan losses of 15.1 percent.

Acquisition, development, and construction (ADC) loans also remain a huge burden on bank balance sheets. In aggregate, banks have exposure to about \$550 billion in construction loans. Total losses on construction loans are likely to be in excess of 25 percent, possibly well in excess, which would imply losses of at least \$140 billion—largely borne by local and regional banks.¹²

- **WITH SUCH SHARP DROPS IN RESIDENTIAL CONSTRUCTION, WHY IS THE SHARE OF HOMES VACANT AND FOR-SALE, FOR-RENT, OR HELD OFF THE MARKET SO FAR ABOVE HISTORICAL AVERAGES?**

Demand for new construction has been driven well below normal levels by the gravity of the economic downturn. As a result, sharp cutbacks in production have not translated into similar declines in vacancy rates. While the inventory of new homes for sale has been trimmed way back, the number of existing homes that are vacant and for sale remains high. It is likely, however, that the underlying long-run supply and demand are now close to balance. When demand returns to more normal levels, housing markets could quickly tighten.

Although it is difficult to assess the amount by which housing is over or undersupplied nationally in a long-run sense, it appears that the severe pullback in construction has already significantly reduced the oversupply in housing markets (which likely started in the 1.0-1.5 million range) to near parity with long-run demand (-100,000 to +500,000 entering 2009).¹³

This return to balance in a long-run sense is obscured by a parallel cyclical decline in actual demand for new housing units relative to long-term demand for them. Assuming immigration snaps back to the path expected by the Census Bureau (rising from 1.1 million people in 2005 to 1.5 million people by 2020), household growth is projected by the Joint Center for Housing Studies to run at about 1.48 million per year from 2010-20. Even if these immigration assumptions are halved, household growth is projected to run at about 1.25 million per year. Meanwhile, actual household growth levels declined from an average of 1.37 million per year from 2000-5 to just 1.06 million per year on average from 2005-8.¹⁴ Second quarter Census data for 2009 suggest that, in total, actual household growth from 2005-9 was 700,000 to 976,000 below the Center's long-term projections. The cyclical decline has also affected other components of demand such as that for second homes and new units built to replace teardowns. For this reason, even though the number of new homes for sale has decreased from 572,000 to 281,000, vacancy rates of housing for sale, for-rent, and held off the market remain well over their averages since 1980.

The longer the current housing downturn lasts the harder it will be for the housing sector to respond to demand for new construction when it does move back towards normal levels.

¹² Ibid.

¹³ McCue, Daniel. June 2009. "Addendum to W07-7: Using Long-Term Demand Projections to Estimate Short-Term Market Imbalances." Joint Center for Housing Studies of Harvard University Research Note N09-1.

¹⁴ Joint Center for Housing Studies of Harvard University. *State of the Nation's Housing 2009*. Cambridge, MA: Harvard University; and Masnick, George and Eric Belsky. July 2009. "Household Projections in Retrospect and Prospect: Lessons Learned and Applied to New 2005-2025 Projections." Joint Center for Housing Studies of Harvard University Working Paper W-09-5.

Table 1: Major Contractions in Residential Fixed Investment as a Share of GDP

	[A]	[B]	[B] – [A]	([B] – [A])/[A]
Contractions in Residential Fixed Investment Shares (Contraction Period)	Peak RFI Share of GDP (Percent)	Trough RFI Share of GDP (Percent)	Percentage Point Reduction in RFI Share of GDP (Percentage Point)	Percent Reduction in RFI Share of GDP (Percent)
Late 1940s (1948Q2 - 1949Q2)	6.1%	5.1%	-1.0	-16%
Early 1950s (1950Q3- 1951Q3)	7.4%	5.0%	-2.4	-32%
Mid 1950s (1955Q2-1958Q2)	6.2%	4.6%	-1.6	-26%
Late 1950s (1959Q2-1961Q2)	5.7%	4.7%	-0.9	-16%
Mid 1960s (1964Q1-1967Q1)	5.4%	3.5%	-2.0	-36%
Late 1960s/Early 1970s (1969Q1-1970Q2)	4.5%	3.8%	-0.7	-15%
Mid 1970s (1973Q1-1975Q1)	5.8%	3.7%	-2.2	-37%
Late 1970s/ Early 1980s (1978Q3-1982Q3)	5.8%	3.2%	-2.7	-46%
Late 1980s/Early 1990s (1986Q4-1991Q1)	5.0%	3.3%	-1.7	-34%
Late 2000s (2005Q4-2009Q2)	6.3%	2.4%	-3.9	-62%

Notes: Late 1970s / Early 1980s double-dip recession considered a single contraction. Late 2000s contraction as of most recent data.

Source: N.I.P.A. Table 1.1.5 quantity Indexes (2005=100) through Q2 2009.

Table 2: Declines in GDP and Residential Fixed Investment During Economic Contractions

Recession (Recession Period)	Percent Peak to Trough Decline in Real GDP	Percent Peak to Trough Decline in Real Residential Fixed Investment
Late 1940s (1948Q4- 1949Q4)	-1.7%	-18.5%
Early 1950s (1953Q2-1954Q2)	-2.7%	-4.6%
Late 1950s (1957Q3-1958Q2)	-3.7%	-20.4%
Early 1960s (1960Q2-1961Q1)	-1.6%	-12.9%
Late 1960s/Early 1970s (1969Q4-1970Q4)	-1.1%	-14.9%
Mid 1970s (1973Q4-1975Q1)	-3.2%	-39.6%
Late 1970s/ Early 1980s (1980Q1-1982Q4)	-2.5%	-45.4%
Early 1990s (1990Q3-1991Q1)	-1.3%	-24.4%
Early 2000s (2001Q1-2001Q4)	-0.3%	-2.4%
Late 2000s (2007Q4-2009Q2)	-3.9%	-56.9%

Notes: Total declines in RFI are measured with quarterly data across time periods of their individual peaks and troughs, which are close to, but do not necessarily match, the time periods of the recessions. The early 1950s experienced a 27% downturn in RFI and the mid 1960s also saw a downturn in RFI of 28.0%, both without recessions largely due to spending on the Korean and Vietnam Wars, respectively. The late 1970s / Early 1980s double-dip recession considered a single contraction.

Sources: N.I.P.A. Table 1.5.3 quantity Indexes (2005=100) through Q2 2009, via Moody's Economy.com. NBER.

Table 3: Residential Fixed Investment Contributions to Economic Recoveries

Recession (Recession Period)	Housing's Share of Economic Growth in the First Year of Recovery (Percent)
Late 1940s (1948Q4- 1949Q4)	11.5%
Early 1950s (1953Q2-1954Q2)	16.0%
Late 1950s (1957Q3-1958Q2)	17.4%
Early 1960s (1960Q2-1961Q1)	7.0%
Late 1960s/Early 1970s (1969Q4-1970Q4)	25.0%
Mid 1970s (1973Q4-1975Q1)	15.0%
Late 1970s/ Early 1980s (1980Q1-1982Q4*)	21.3%
Early 1990s (1990Q3-1991Q1)	18.0%
Early 2000s (2001Q1-2001Q4)	16.6%
Late 2000s (2007Q4-2009Q2)	n/a

Notes: Housing share of economic growth calculated as the percentage point contribution to percent change in real GDP of Residential Fixed Investment divided by the percent change in GDP averaged for the four quarters immediately following each recession. The late 1970s / Early 1980s double-dip recession considered a single contraction.

Sources: N.I.P.A. Table 1.5.3 quantity Indexes (2005=100) through Q2 2009, via Moody's Economy.com; NBER.

Table 4: Peak to Trough Declines in U.S. Total Annual Housing Starts

Years	Peak	Trough	Decline in Annual Housing Starts (%)
1925-1933	937	93	-90.1
1941-1944	706	142	-79.9
1950-1953	1,952	1,438	-26.3
1955-1957	1,646	1,224	-25.6
1959-1960	1,517	1,252	-17.5
1963-1966	1,603	1,165	-27.3
1968-1970	1,508	1,434	-4.9
1972-1975	2,357	1,160	-50.8
1978-1982	2,020	1,062	-47.4
1986-1991	1,805	1,014	-43.8
2005-2008	2,068	906	-56.2

Notes: On a seasonally adjusted annual basis, the total decline in starts from the first half of 2005 through the first half of 2009 is 74 percent. Also, there was no drop in starts on an annual basis in the late 1940s (from 1948-49) even though RFI declined from the second quarter of 1948 to the second quarter of 1949.

Sources: U.S. Census Construction Statistics; U.S. Census, *Historical Statistics of the United States: Colonial Times to 1970*.

Table 5a: U.S. House Price Declines, Conventional Mortgage HPI 1970-2009

REAL			NOMINAL		
Peak	Trough	Decline (%)	Peak	Trough	Decline (%)
1973Q2	1975Q4	-6.3	1975Q2	1975Q3	-1.6
1979Q2	1984Q4	-14.8	1982Q2	1982Q3	-1.2
1989Q3	1993Q1	-7.4	1992Q4	1993Q1	-0.3
2006Q2	2009Q1	-16.3	2007Q2	2009Q1	-13.8

Note: Real prices are adjusted for inflation by the CPI-U for All Items.

Source: Freddie Mac, purchase-transactions only series CMHPI

Table 5b: U.S. House Price Declines, Case-Shiller National HPI (1987-2009)

REAL			NOMINAL		
Peak	Trough	Decline (%)	Peak	Trough	Decline (%)
1989Q3	1996Q4	-15.2	1990Q2	1991Q1	-3.9
2006Q1	2009Q1	-35.9	2006Q2	2009Q1	-32.2

Note: Real prices are adjusted for inflation by the CPI-U for All Items.

Source: S&P/Case-Shiller National House Price Index

Table 6: Comparison of Recent Metropolitan Area House Price Changes (Percent)

Metropolitan Statistical Area	CMHPI (NSA)			S&P/Case-Shiller (NSA)			S&P/Case-Shiller (SA)		
	vs. Last Quarter	vs. Same Quarter Last Year (Q1)	Total Peak to Q1 2009	vs. Last Month	vs. Last May	Total Peak to May 09	vs. Last Month (Annualized)	vs. Last May	Total Peak to May 09
Atlanta-Sandy Springs-Marietta, GA	2.8	-1.2	-1.2	0.3	-15.0	-22.6	-4.8	-15.0	-21.8
Boston-Cambridge-Quincy, MA-NH	-0.1	-3.8	-7.7	1.6	-7.2	-18.5	4.0	-7.2	-18.0
Charlotte-Gastonia-Concord, NC-SC	-0.3	0.8	-0.3	0.9	-10.0	-11.8	-1.4	-10.1	-10.9
Chicago-Naperville-Joliet, IL-IN-WI	-0.8	-4.6	-4.9	1.1	-17.5	-26.6	6.2	-17.5	-26.4
Cleveland-Elyria-Mentor, OH	2.9	-0.8	-2.9	4.1	-6.2	-17.3	33.3	-6.2	-17.1
Dallas-Fort Worth-Arlington, TX	0.9	3.2	0.0	1.9	-4.1	-7.9	13.6	-4.2	-7.4
Denver-Aurora-Broomfield, CO	1.6	0.6	0.0	1.3	-4.6	-11.8	3.7	-4.6	-10.8
Detroit-Warren-Livonia, MI	1.5	-9.7	-20.2	0.2	-24.5	-44.9	-6.5	-24.5	-44.6
Las Vegas-Paradise, NV	-2.5	-30.9	-40.3	-2.6	-32.0	-53.4	-37.0	-32.0	-53.3
Los Angeles-Long Beach-Santa Ana, CA	-0.2	-17.4	-26.6	-0.1	-19.8	-41.9	-10.5	-19.8	-41.4
Miami-Fort Lauderdale-Pompano-Homestead, FL	-5.0	-25.3	-32.1	-0.8	-25.2	-48.5	-13.4	-25.1	-48.3
Minneapolis-St. Paul-Bloomington, MN-WI	1.0	-5.0	-7.2	1.2	-21.7	-35.9	4.6	-21.7	-35.5
New York-Northern NJ-Long Island, NY-NJ-PA	-0.8	-5.7	-7.3	0.0	-12.2	-21.0	-0.9	-12.2	-20.9
Phoenix-Mesa-Scottsdale, AZ	-1.0	-18.0	-24.7	-0.9	-34.2	-54.5	-20.7	-34.2	-54.3
Portland-Vancouver-Beaverton, OR-WA	-1.1	-5.5	-5.8	0.1	-16.3	-21.2	-10.6	-16.3	-20.7
San Diego-Carlsbad-San Marcos, CA	1.9	-14.1	-26.3	0.4	-18.5	-42.1	-3.2	-18.5	-42.3
San Francisco-Oakland-Fremont, CA	1.3	-12.7	-22.8	1.4	-26.1	-45.0	8.3	-26.1	-45.1
Seattle-Tacoma-Bellevue, WA	-2.1	-6.8	-7.3	-0.3	-16.6	-22.5	-9.9	-16.6	-22.0
Tampa-St. Petersburg-Clearwater, FL	2.4	-14.2	-22.5	0.0	-20.8	-41.1	-5.9	-20.8	-41.0
Washington-Arlington-Alexandria, DC-VA-MD-WV	-0.3	-9.7	-16.0	1.3	-14.9	-32.5	8.0	-14.9	-32.8
Composite-10				0.4	-16.8	-33.3	-2.6	-16.8	-33.2
Composite-20				0.5	-17.1	-32.3	-1.9	-17.1	-32.0

Sources: Freddie Mac CMHPI through Q1 2009; S&P/Case-Shiller Monthly HPI through May 2009.