

Economic Outlook

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A New Dawn for U.S. Housing

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Data from the Carlyle portfolio and external sources suggest that housing construction and renovation activity could be a much larger source of economic growth in 2012 than is commonly assumed.¹ The potential boost from residential investment – which has fallen by 57% since 2006 – could help to cushion the blow from recession in Europe or a moderation in manufacturing and consumption growth. The prices of many assets linked to housing have outperformed the overall market since the end of September, but still have significant room to appreciate.

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2011: The End of the Housing Depression

Nearly 10% of U.S. economic growth in the fourth quarter of 2011 was attributable to fixed residential investment – outlays associated with housing construction and renovations. While this contribution may seem modest, consider that in the five years ending June 30, 2011 residential investment *subtracted* 0.7% from GDP, on average. Absent the drag from housing, average economic growth over this period would have been twice

as high, 1.3% instead of 0.6%.² Moreover, this calculation excludes the housing bust's impact on consumption, which was likely depressed significantly as a result of the 28% decline in construction-related employment from 2006 to 2010.³

Over the past five years, housing endured what could be described as a depression. This label is appropriate not only because of the slump's depth and duration, but also because it seems to have been triggered by a shift in the relative prices of new versus old output. When a business wants to expand its production, it generally can choose between making investments in new productive capacity or acquiring existing capacity from a competitor or related business. When the price of existing capacity exceeds replacement cost, firms generally choose to invest in new capacity, resulting in an investment boom. Conversely, when the price of existing capacity falls below replacement cost, firms generally chose to add capacity through acquisitions on the secondary market and investment stagnates.⁴

¹ The Carlyle portfolio references both Corporate Private Equity as well as Real Assets. External sources include economic and asset price data discussed below.

² Bureau of Economic Analysis. Table 1.1.2: Contributions to Percent Change in Real Gross Domestic Product.

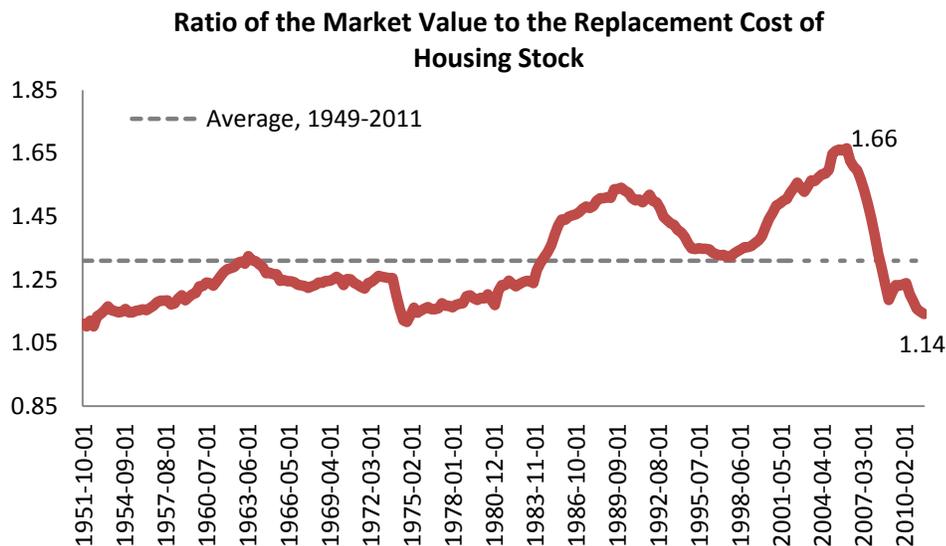
³ Bureau of Labor Statistics. CES Database: seasonally-adjusted national construction employment.

⁴ This basic argument is derived from the "q theory" of investment, James Tobin, "A general equilibrium approach to monetary theory." *Journal of Money Credit and Banking*, 1969.

This stagnation in new investment is precisely what occurred during the Great Depression. Between 1929 and 1933, the cost of producing new equipment fell by 33%, but the capitalization of the stock market fell by 85%, over 2.5-times as much. Since the stock market measures the market value of corporate assets, like property, plant, and equipment, this shift in relative prices made new orders for capital equipment prohibitively expensive. In 1933, a business manager could choose between spending \$0.67 for new equipment or just \$0.15 to buy the same capacity in the secondhand market (both measured in 1929 dollars). Business investment in the U.S. predictably collapsed.⁵

Roughly the same thing occurred in U.S. housing markets since 2006. Between 2006 and 2011, the market price of residential real estate declined by 33% relative to replacement cost. As shown in Figure 1, at the 2006 peak, the market value of the housing stock was equal to 1.66-times its replacement cost. As of September 30, 2011, it had fallen to 1.14-times. Although still priced at a 14% premium to replacement cost, a market value this low essentially leaves no room for the price of land.⁶ The replacement cost of a housing structure on Park Avenue, for example, is a small fraction of its market value, which stems chiefly from its location. Given the geographic dispersion in land prices, a *national* ratio of just 1.14 implies that some properties in virtually all metropolitan areas are currently priced below replacement cost, with housing structures in entire sections of other metro areas priced well below what it would cost to reconstruct them.

Figure 1:



Source: Federal Reserve Board of Governors

Could the ratio fall further? Possibly, but a sustained decline would seem to be highly unlikely. The market value-to-replacement cost ratio eventually reverts to its mean because the price variation induces changes in economic behavior that eventually restore equilibrium. A high ratio makes more residential investment attractive, which leads to overproduction, a supply glut, and an eventual decline in house prices; a low ratio reduces investment, which leads to underproduction relative to household formation rates that eventually drives up the price of the existing housing stock and draws in additional buyers.⁷

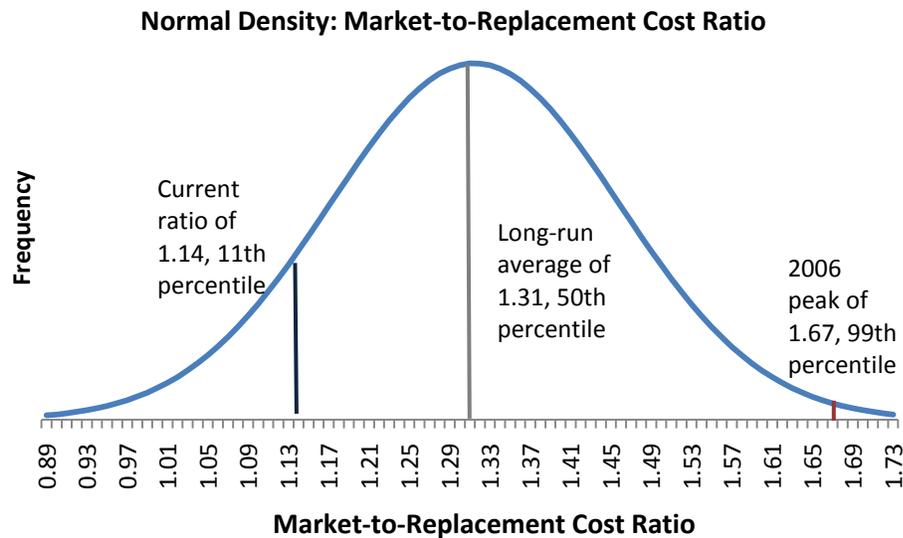
⁵ Hyman Minsky, "Finance and Stability: The Limits of Capitalism," Working Paper No. 93, Jerome Levy Economics Institute of Bard College, May 1993.

⁶ The Fed estimated that land account for about half of the total market value of housing in 2004. See Morris A. Davis and Michael G. Palumbo, "The Price of Residential Land in Large U.S. Cities," Working Paper 2006-25.

⁷ For evidence of the effect of momentum traders on house prices, see: "Momentum Traders in the Housing Market: Survey Evidence and a Search Model," American Economic Review: Papers & Proceedings 2009.

Figure 2 plots the market price-to-replacement cost ratio's fitted normal density, or bell curve, using historical data. A ratio of 1.14 falls in the 11th percentile. In other words, since 1949 the market-to-replacement cost ratio has exceeded current levels 89% of the time. Since 2006, market prices have adjusted well beyond levels necessary to restore equilibrium and the next sustained move in the ratio is likely upward.

Figure 2:

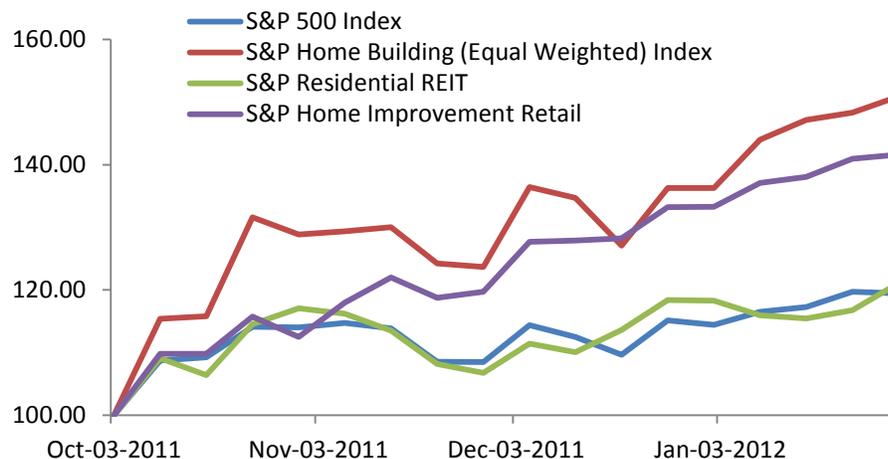


Source: Author's parameterization of Fed data

2012: The Start of a Housing Boom?

As shown in Figure 3, since the end of the third quarter of 2011, housing-related stocks have outperformed the S&P 500, in some cases by wide margins. The S&P Homebuilding Index has outperformed the S&P 500 by 31 percentage points, while the S&P Home Improvement Retail Index has delivered an additional 22 percentage points above the S&P return. The only real laggard has been apartment REITs, whose index has increased by 21% but only outpaced the S&P 500 by about 2 percentage points since the end of the third quarter of 2011 (on a total return basis).

Figure 3:

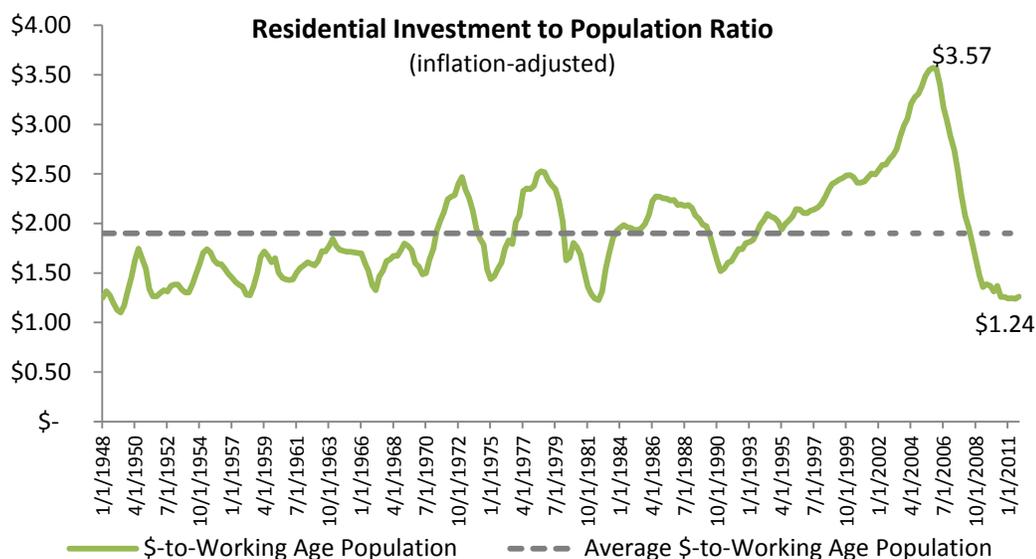


Source: Capital IQ Accessed February 22, 2012

The increase in housing-linked asset prices has made many investors wonder whether they have missed the housing rally. While subsequent price gains are difficult to forecast, it is unlikely that current market prices fully capitalize the trending rebound in residential investment.

Again, it may be useful to place the current situation in its historical context. Figure 4 plots the evolution of the ratio between residential fixed investment (adjusted for inflation) and the total working-age population from 1948 to 2011.⁸ Over this 60-year period, average annual investment in housing construction and renovation has equaled \$1.90 for every person over 16 years of age. This ratio increased from 1948 to 1968, and then largely oscillated around the average until 1997, at which point it shot upward to a peak of \$3.57 in 2006. As with the price ratio series, the subsequent decline has been well beyond levels necessary to restore equilibrium. Today's \$1.24 of residential investment for every person of working age is roughly equivalent to 1982's ratio (\$1.22) and only slightly above the all-time low of \$1.10 in 1949. A 56% increase in real residential investment would be required to return to the long-run average (after adjusting for inflation and population growth).

Figure 4:



Source: BEA (investment) and BLS (CPI deflator and working age population)

Some may argue that residential investment could remain more depressed for longer because of a potential secular shift from owning towards renting. Since 2005, the homeownership rate has fallen by three percentage points to 66%.⁹ Further declines in the share of homeowners could mean less investment in single family home construction would be necessary to meet prospective housing demand. However, the decline in housing investment has not been limited to single-family homes. In fact, the decline in multifamily housing starts has been even greater, relative to historic averages.

Table 1 quantifies the decline in housing starts as of year-end 2011 (December data at a seasonally-adjusted annualized rate). At the end of 2011, single-family housing starts were running at a 513,000 annualized rate, down 52% from the post-1972 average of 1.088 million and down 51% from the average over the entire data series (dating from 1949). Multifamily starts (i.e., all starts net of single-family) were down even more sharply: by 56% relative to the post-1972 average and by 59% relative to the post-1949 average.

⁸ The working age population consists of individuals over 16 years old who are not institutionalized.

⁹ Census Bureau.

Are these declines driven by changes in demographics, like slowing population growth? Not likely. The second portion of Table 1 measures the relationship between housing starts and annual population growth. Between 1949 and 2011, about 0.42 single-family housing units were started, on average, for every one person added to the population (i.e. an average of 1.056 million new homes measured relative to an average population growth of 2.5 million people per year). At the end of 2011, this ratio fell to 0.24, down 42%. Again, the multi-family decline was even greater: the ratio fell to 0.08 in December 2011, down 53% from the historical average of 0.18. These data make clear that the decline in residential investment cannot be explained away solely by demographic factors or changes in housing preferences.

Table 1: Quantifying Collapse in Housing Starts

Annualized Housing Starts (thousands)

	Single Family	Multi-Family
1972-2011 average	1,088	397
1949-2011 average	1,056	424
Year-end 2011	513	176
Decline from post-72 Average	-53%	-56%
Decline from 1949-2011 Average	-51%	-59%

Housing Starts to U.S. Population Growth (annualized)

	Single Family	Multi-Family
1972-2011 average	0.43	0.17
1949-2011 average	0.42	0.18
Year-end 2011	0.24	0.08
Decline from post-72 Average	-43%	-50%
Decline from 1949-2011 Average	-42%	-53%

Source: Census Bureau

Conclusion

Based on a statistical analysis of historical ratios, house prices would need to increase by at least 14%, real residential investment would need to increase by at least 50%, and housing starts would need to grow by at least 80% from current levels to restore long-run equilibrium. While the strong mean-reversion property of these series make such gains probable in the long-run, it is virtually impossible to predict the speed of adjustment. Data from the Carlyle portfolio and official sources suggest that this process has now begun. Even if growth is modest relative to historic averages, residential fixed investment could make a meaningful contribution to GDP growth in 2012 and lift the prices of assets linked to housing.

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