

## S&P/Case-Shiller<sup>1</sup> Home Price Indices and Seasonal Adjustment

Economic data which are affected by the time of the year, or the seasons, are often adjusted to remove these effects to make it easier to identify underlying changes in the economy. Seasonal adjustment increases the unadjusted values in weak months and decreases the unadjusted values in strong months to eliminate regular seasonal patterns while leaving the underlying trend unaffected. For the S&P/Case-Shiller Home Price Indices, S&P reports two data sets – before seasonal adjustment and seasonally-adjusted. In some recent reports the two series have given conflicting signals, with the seasonally-adjusted series rising month-over-month and the unadjusted series declining. After reviewing the data, the S&P/Case-Shiller Home Price Index Committee believes that, for the present, the unadjusted series is a more reliable indicator and, thus, reports should focus on the year-over-year changes where seasonal shifts are not a factor. Additionally, if monthly changes are considered, the unadjusted series should be used. This note explains the committee's reasons.

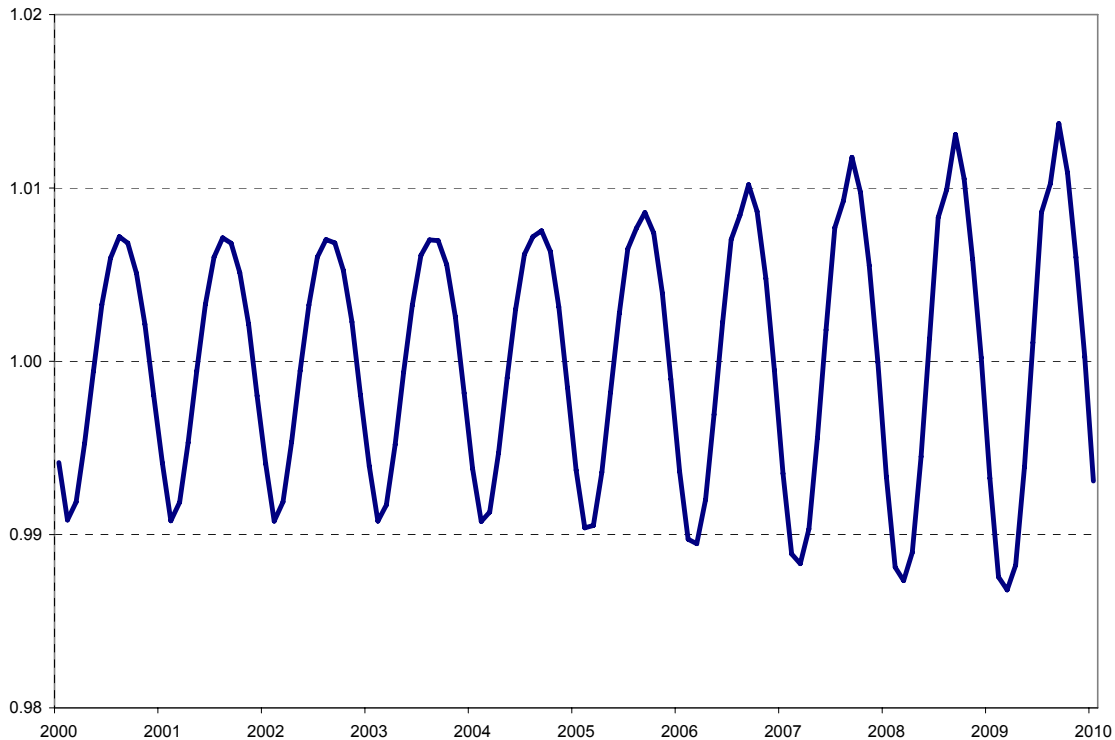
Seasonal adjustment of economic time series is usually done using a computer program, Census X-12 ARIMA, distributed and maintained by the U.S. Bureau of the Census. This program is working as intended, and none of the committee's comments should be interpreted as concerns about this program. Rather, the turmoil in the housing market in the last few years has generated unusual movements that are easily mistaken for shifts in the normal seasonal patterns, resulting in larger seasonal adjustments and misleading results.

Chart 1 shows the seasonal factors – the amount by which the unadjusted data is divided to calculate the adjusted data series – for the S&P/Case-Shiller Home Price 20-City Composite over the last 10 years. The seasonal factors expanded over the last five years, suggesting that the market is either changing or some other factors are affecting home prices.

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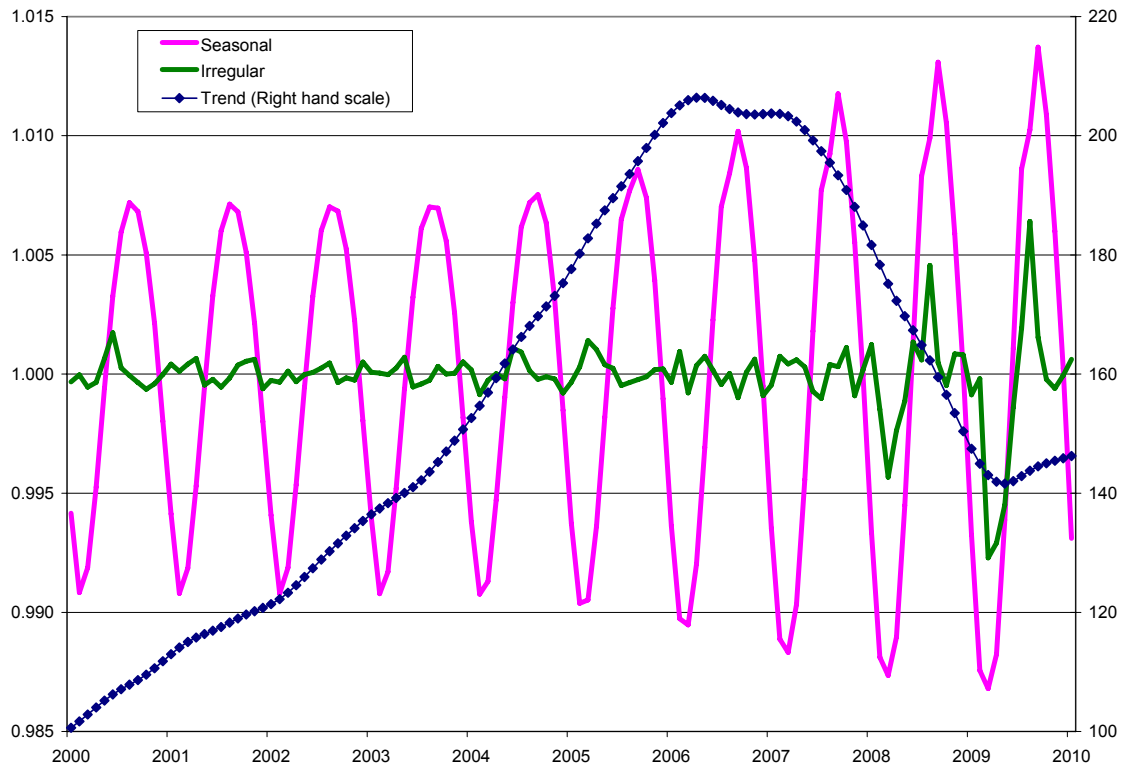
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**Chart 1: Seasonal Factors for the S&P/Case-Shiller Home Price 20-City Composite**



The Census X-12 program breaks down the unadjusted S&P/Case-Shiller Home Price index series into three components: trend, seasonal, and irregular. “Trend” represents the underlying trend in the data, “irregular” consists of changes with no apparent or regular pattern, and “seasonal” are the seasonal factors. Chart 2 shows the three series for the S&P/Case-Shiller Home Price 20-City Composite. The seasonal component shows the same regular pattern as on the first chart, and the trend shows the peak and subsequent drop in home prices. Beginning in January 2008, the irregular component became steadily larger. The increase in the size of the irregular component appears to be the cause of the increase in the seasonal factors shown in the first chart.

**Chart 2: Trend, Seasonal and Irregular Components of the S&P/Case-Shiller Home Price 20-City Composite**



Separate from the seasonal adjustment analysis, the housing market has experienced significant turmoil and the last two-to-three years have seen large increases in foreclosures as well as other market dislocations. Judging from the charts above, these dislocations affected home prices and may have distorted the normal seasonal patterns. Based on the seasonally-adjusted data and on observations of the housing market, we believe that current market conditions are making the seasonally-adjusted data less reliable indicators.

Similar concerns have been raised by others. David Rosenberg, chief economist at Gluskin Sheff in Toronto commented in a recent newsletter:

“On home prices, the seasonally adjusted data did indeed show an increase of 0.4% MoM (using the Case-Shiller Composite-10), but the raw data revealed a 0.2% dip — the fourth decline in a row! Now it would be one thing if January was an unusually weak seasonal month for home prices deserving of an upward skew from the adjustment factors; however, from 1998 through to 2006, they rose in each and every January and by an average of 0.6%. But what happened is that home prices collapsed in each of the past three Januarys — by an average of 1.8%, or a 25% annual rate. And, seasonal factors typically weigh the experience of the prior three years disproportionately so what looks like steady gains

in housing prices may be little more than a statistical mirage". [Breakfast with Dave letter of April 5, 2010, [www.Gluskinsheff.com](http://www.Gluskinsheff.com) page 3]

Seasonally-adjusted and unadjusted data for the S&P/Case-Shiller Home Price Indices can be found at [www.homeprice.standardandpoors.com](http://www.homeprice.standardandpoors.com). Seasonal, trend, and irregular factors are provided by Fiserv, Inc. based on the Census X-12 ARIMA program and the 20-City Composite.

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