Economics

What is Seasonal Adjustment?

By Brendon Ogmundson, BCREA Economist

"BC Multiple Listing Service® (MLS®) home sales fell 27 per cent in December!... BC home sales rose 49 per cent in March!"

Both of these statements are true, but are they meaningful? Not really. The type of variation we see in some monthly data is produced by a normal and predictable seasonal pattern. Which is why whenever the media reports economic statistics such as how many jobs were created or houses sold each month, it is very likely that the statistics they are reporting have been "seasonally adjusted." But what exactly does that mean?

Before we get into how and why seasonal adjustment is done, it will be useful to define a few terms:

Time Series: a time series is a set of data points of some economic (or other) variable observed through time. For example MLS® home sales from January 1980 to December 2011.

Seasonality: a time series displays seasonality if there is, within the calendar year, repetitive and predictable movement around an economic variable's trend.

Trend: the trend is the long-term movement in a time series after other components, such as cyclical fluctuations, have been accounted for.

Cycle: the cycle component of a time series is the fluctuation around the long-term trend that occurs at a period of longer than one year.

Irregular: a time series may also have what is called an irregular component consisting of whatever variation remains once trend, cycle and seasonality have been accounted for. It can be the result of one-time events like extreme weather conditions or other unpredictable events.

Many economic data are influenced by recurring seasonal factors. Whether from weather, holidays or other recurring calendar events, these seasonal factors often obscure the underlying movement of an economic variable and make data analysis more challenging. Consider the increase in retail sales during the Christmas shopping season or home sales in the spring and summer months when the sun is shining and flowers are blooming. If one were to look at the raw data for these series, you would observe spikes in the level of the data that could mask a meaningful underlying trend.

The challenge for economists and other users of data is to isolate movements in a time series that are due solely to seasonality and not to other important economic factors that might be impacting trends in the data. To accomplish this, various statistical methods have been developed to decompose a time series into its trend, cycle, irregular and seasonal components. The time series decomposition of MLS® home sales is shown in the accompanying graph.

Most of the monthly fluctuation in sales are due to the long-term trend and medium-term cyclical economic factors. However, there is a pronounced seasonal factor as well. Once the seasonal factor has been removed, it is much easier to see smaller movement in the underlying data that were previously masked by seasonal fluctuations.

As we have seen, seasonal adjustment is an invaluable tool for data analysis that

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Time Series Decomposition of MLS® Home Sales
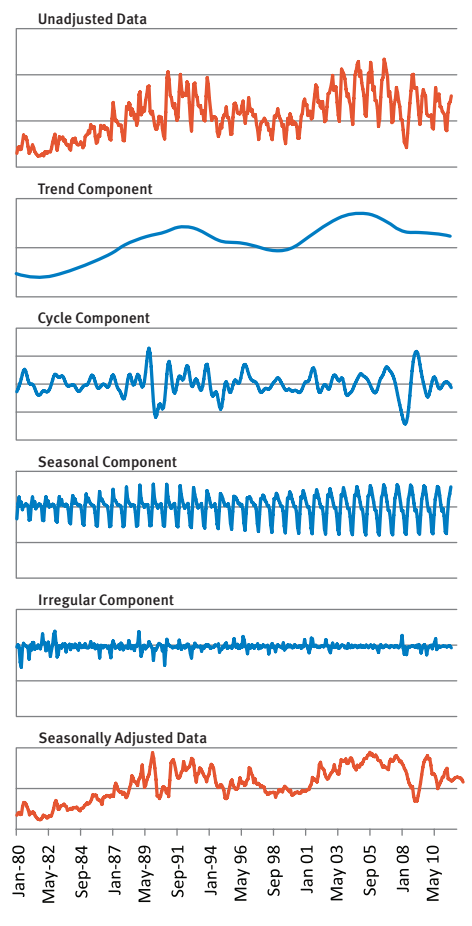
can significantly enhance understanding and communication of the month to month changes in the housing market.