

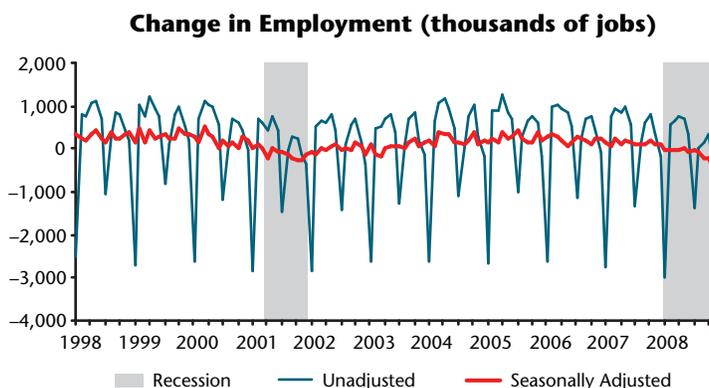


Season's Greetings and Seasonal Adjustments

January 2009

Holiday purchases comprise a large percentage of the entire year's sales for many of the nation's retailers. When the Census Bureau reports December sales data in late January, the data are "seasonally adjusted." That is, accounting for the *seasonal* component of December's sales (Christmas, Hanukkah, and other traditions) creates a more accurate, overall picture of the increase or decrease in sales.

Employment is also seasonal: Retail stores hire temporary workers for the holiday rush, and schools close in late spring, pushing students from the classrooms into summer jobs. According to the Bureau of Labor Statistics ([BLS](#)), seasonal variation may account for as much as 95 percent of the month-to-month change in employment. In fact, between September and October 2008, the economy created a total of 303,000 jobs; after accounting for seasonal factors, the economy actually lost 240,000 jobs (see chart).



Most economic data series can be thought of as consisting of a trend component, a seasonal component, and a business cycle component.¹ The trend component tends to be easy to identify; it is the long-run movement in the data, either upward or downward. Many economists remove the trend and seasonal components from data; this is called seasonally adjusting the data. As the chart shows, employment data that are not seasonally adjusted are quite volatile. It is difficult to tell if one month's change is due to seasonal factors (such as post-holiday layoffs) or the business cycle. A policymaker who uses only non-seasonally adjusted data runs the risk of making a mistake when trying to determine the direction of the economy.

Although *monthly* seasonal patterns are typically the most significant in economic data, other subtle seasonal factors are also important. For example, the dates of Hanukkah (and the Super Bowl for that matter) do not occur in the same month every year. Other seasonal factors may not even occur every year (e.g., a leap year). To remove these seasonal patterns, the Census Bureau has created a statistical procedure called [X-12-ARIMA](#), which can be thought of as a "black box" with information on monthly effects, as well as information on when, and if, these other types of events will occur.

Seasonal adjustment, then, is a statistical method of trying to adjust for predictable events. Of course, by adjusting for these types of occurrences, the seasonally adjusted numbers are not "real." Rather, they are artificial numbers generated by a statistical method. These generated series, nevertheless, are considered by many to be superior economic indicators and influence financial markets and policymakers.

By Charles S. Gascon, Senior Research Associate, Federal Reserve Bank of St. Louis

¹ Not all data series contain a seasonal component (e.g., interest rates). Economic data also contain a "noise" component that results from unanticipated events such as natural disasters.

Recent Articles and Further Reading on Seasonal Adjustments

[“Gas Prices Up? All in Your Head, Data Says”](#) by Emily Kaiser, Reuters.com, May 14, 2008.

The May 2008 CPI report showed gas prices had fallen when they had actually risen more than 5 percent. What’s going on? It has to do with how the Bureau of Labor Statistics compares current price trends with the norm—or seasonal adjustment.

[“Seasonally Adjusting Data”](#) by Federal Reserve Bank of Dallas, Research Department, Economic Data, *DataBasics*.

This report explains how seasonally adjusting data helps researchers conduct economic analysis and which seasonal adjustment method is preferred by most economists.

[“FAQs on Season Adjustment”](#) by the U.S. Census Bureau, “Manufacturing, Mining, and Construction Statistics” section of the website; last revised February 5, 2008.

Free Data Sources and Reports

Data: Total Nonfarm Payrolls: All Employees (seasonally adjusted and non-seasonally adjusted)
Description: Establishment Survey series; the last two entries in the list offer a graph and data
Published by: U.S. Department of Labor, Bureau of Labor Statistics
Location: <http://research.stlouisfed.org/fred2/categories/11>

Data: Retail Sales and Food Services, Seasonally Adjusted and Non-Seasonally Adjusted
Description: Graph and data included
Published by: U.S. Department of Commerce, Census Bureau
Location: <http://tinyurl.com/5z4w7d>

Data: “Effects of Hurricane Katrina on BLS Employment and Unemployment Data Collection and Estimation”
Description: Questions and answers to help users understand the issues created by the storm, the steps BLS took to address those issues, and how the data might be useful in understanding ongoing developments
Published by: U.S. Department of Labor, Bureau of Labor Statistics
Location: <http://www.bls.gov/katrina/cpscesquestions.htm>

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