Q: "Why is economic data seasonally adjusted, and what are the advantages of using seasonally adjusted data? When should I use seasonally adjusted data and when should I use unadjusted data?"
by Professor Charles M. North

During the course of any particular year, many economic data series vary in predictable ways due to seasonal factors. For example, in the winter months, production and employment in construction and agriculture decline because of colder weather. The approach of the Christmas holiday leads to higher employment levels in the retail sales industry. When schools let out for summer, the labor force expands with the influx of teenagers seeking summer jobs, and employment in the educational services industry drops as fewer teachers work during the summer months.

Other examples help show just how prevalent seasonal variation is among economic data series. The tendency for people to take vacations in the summer affects a number of statistical series. Output in the travel and tourism sector increases during the prime vacation season. Increased demand among vacationers for gasoline leads refiners to increase output during the summer months. Employment in amusement parks increases in the summer as well.

Seasonal variation even occurs at the local level due to specific events like the Texas State Fair in Dallas, Fiesta in San Antonio, or Wurstfest in New Braunfels. Spring break induces increased sales in the tourism industry on Padre Island in March, while production of the passion play "The Promise" in Glen Rose causes a surge in employment in Somervell County's theatrical industry from June to October of every year. Christmas brings a fourth-quarter increase in production in the bakery industry in Navarro County due to the Collin Street Bakery's fruitcake sales.

Thus, in many types of data series, seasonal fluctuations are expected. However, a person wishing to determine long-term trends in employment levels or sales growth might not know how to interpret a December increase in the retail sector. Was an increase due to seasonal variation, or was it due to some underlying change in the health of the economy? In order to help people answer such questions, data subject to seasonal fluctuation are given "seasonal adjustments."

Most economic data - including series like employment levels and unemployment rates reported in the *Texas Labor Market Review* - are derived from estimates based on samples. In simplest terms, seasonal adjustments are modifications made to these initial estimates in order to account for the impact of the types of seasonal fluctuations described above. In practice, sophisticated statistical models are used to calculate seasonal adjustment factors, which are combined with the unadjusted estimate to obtain the seasonally adjusted estimate. The adjustment factors are based upon historical data, so that the seasonally adjusted estimate will have factored out the typical degree of fluctuation that has been observed in the past.

When is it best to use seasonally adjusted data? Generally, seasonally adjusted data are most useful in identifying unusual changes in economic conditions within time periods of less than a year. (Because seasonal variations are inherently within a single year, the only data that are seasonally adjusted are those series reported for periods of less than a year.) Thus, an increase in seasonally adjusted employment levels in a certain month gives greater certainty that the economy in that sector or region is improving, and that the increase is not just the result of a typical seasonal fluctuation. Indeed, the Business Cycle Dating Committee of the National Bureau of Economic Research uses seasonally adjusted monthly data on national employment in just this manner as part of its determination of peaks and troughs in the business cycle. In addition, when attempting to forecast long run trends or nonseasonal fluctuations with monthly or quarterly data, it might be preferable to use seasonally adjusted data.

For many uses, though, it will be better to use unadjusted data. One reason is that the seasonal adjustment process

only removes the average seasonal fluctuation. If this year's seasonal fluctuation is different in size from the average, then the seasonal adjustment process still will not fully remove the seasonal effect. (Of course, the user might only be interested in how the observed statistic varies from the average seasonal effect, in which case seasonally adjusted data would still be useful.)

In many business forecasting settings, one would like to have the seasonal fluctuation be part of the forecast. For example, a purchaser using a forecast to decide how much inventory to order wants a sales forecast that includes both seasonal and nonseasonal fluctuations, because she wants to know what total sales will be and not just the nonseasonal variation in sales. Similarly, in estimating other economic processes, seasonal fluctuations can be accounted for through other statistical methods; therefore, using the seasonally adjusted data is frequently unnecessary.

In summary, seasonally adjusted data take into account certain predictable seasonal trends in data series like unemployment rates and employment levels. They help to isolate underlying economic trends from seasonal effects when analyzing data for time periods of less than one year. However, for most uses, it remains preferable to use unadjusted data.

Information provided by Charles M. North, Assistant Professor, Department of Economics, Hankamer School of Business, Baylor University, Waco, Texas.

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