

Understanding the New TRE-GS Weekly Chain Store Sales Index

Abstract

This paper provides background on the methodology and concepts underlying *The Retail Economist-Goldman Sachs Weekly Chain-Store Sales Index*. Empirical relationships are discussed that also can help to better utilize the new index.

Background Information

Understanding the New TRE-GS Weekly Chain Store Sales Index

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THE VALUE OF WEEKLY SALES TRACKING

Timely measures of economic activity can be vital to policymakers, investors, and business planners. Alan Greenspan—the former chairman of the Federal Reserve Board—once described the value of weekly data to him when he held another government position as the chairman of the Council of Economic Advisers. Greenspan wrote that “as 1974 drew to a close, retail sales and home building were soft, and much of what we consider final demand was slipping as was inventory investment. By Christmas 1974, the question of whether we were facing a sharp, but temporary decline, or whether something far more profound was confronting us, was an upfront issue for the president...We don’t have, as you well know, even a monthly GNP series, but I submit that, starting in December 1974, we had what amounted to a weekly GNP. It may not have passed the rigid statistical standards of the Bureau of Economic Analysis, but it was more than adequate—in fact quite instrumental—in answering the question of whether we had an inventory recession, or a final demand recession, or both... While the Department of Commerce has since abandoned its presumably poor weekly retail sales series, it nonetheless did yeoman service during that period in indicating that personal consumption expenditures were not undergoing a downward plunge.”¹

Today’s appetite for faster and faster economic data is even bigger than it was 40 years ago when Alan Greenspan was advising President Ford. Without question, the financial markets, government policy makers, and businesses—retail and non-retail—also can benefit from quickly recognizing a changing consumer-spending trend.

HISTORY OF WEEKLY SALES TRACKING

The U.S. Commerce Department began publishing statistics on weekly retail sales in 1962, beginning with data for the week of May 18. With that first weekly sales report, the Commerce Department issued historical data back to the beginning of 1962. Those weekly retail sales data were available *seasonally adjusted* for the major categories that the Commerce Department still largely publishes on a monthly basis, such as building materials, auto dealers, furniture, general merchandise, food, gasoline, apparel, eating and drinking places, and drug stores. That weekly report continued until 1978 when it was discontinued due to concern about the reporting burden for retailers, the quality of the data collected and, in part, user complaints that the data were subject to too much revision.

But still, if the U.S. Commerce Department’s Retail Indicators Branch statistical team was to reinstitute weekly sales data collection, it would find that the burden for companies to report those data would be far less than it was more than 40 years ago because of the widespread use of computer technology, while the financial market’s interest in those data would be incredibly high. One thing that has not have changed, though, is that the retail industry itself still does not want to see high-frequency reporting return and most retailers even have abandoned their monthly sales reporting. Regardless of the relative ease in collecting weekly data today than 30 to 40 years ago, Commerce Department officials indicate that they have no plans or interest in resurrecting the weekly retail sales report. Nonetheless, the value of such information should not be understated.

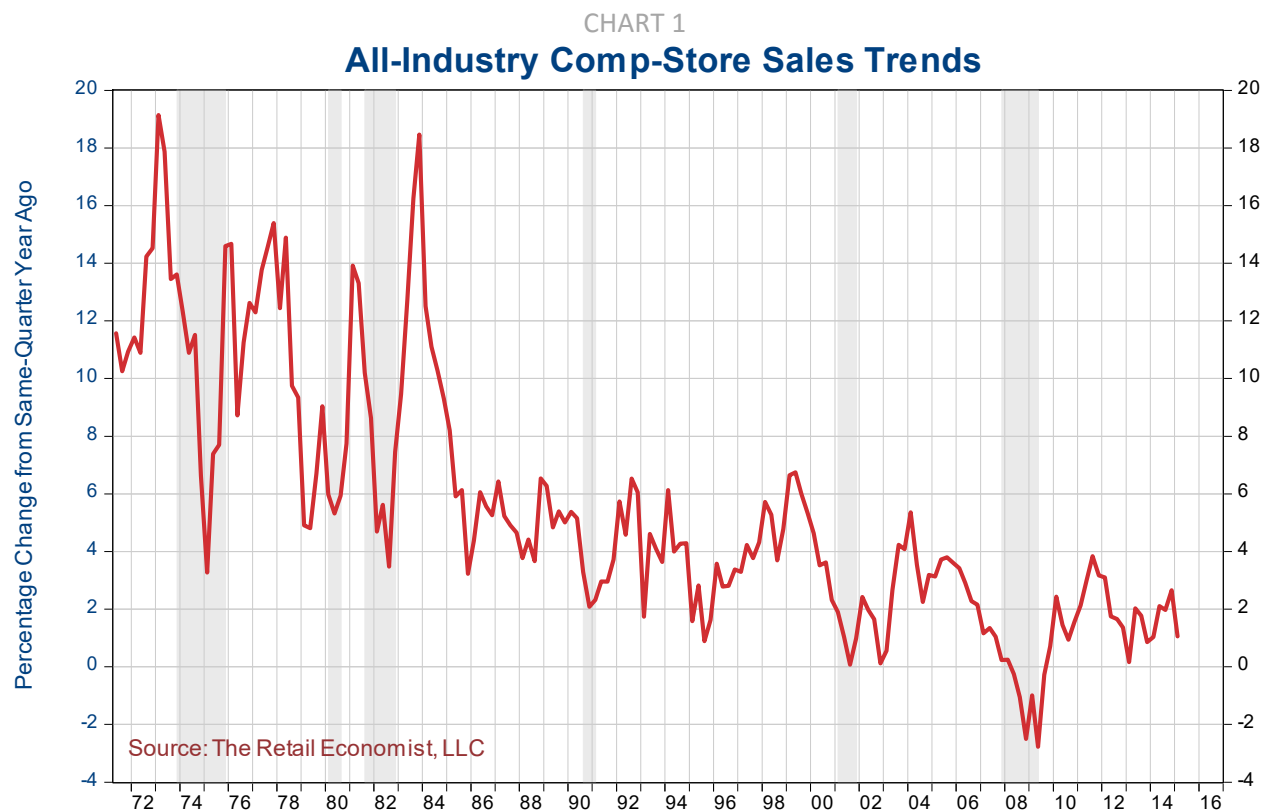
To help fill in that data gap, Michael Niemira created a weekly retail tracking metric in the early 1990s which initially was released jointly by Mitsubishi Bank and Wertheim Schroder. A version of that weekly, which is based on the same methodology used to create it, continued as The Retail Economist-Goldman Sachs (TRE-GS) weekly chain store sales report.

¹ Alan Greenspan, “Weekly GNP,” in *The U.S. National Income and Product Accounts: Selected Topics* (National Bureau of Economic Research Series, No. 47), Murray F. Foss, ed., The University of Chicago Press, 1983, pp. 317–319.

DEVELOPING THE WEEKLY SALES METRIC

The methodology used to compile the previous version of the weekly sales measure needed updating to account for changes in retail-sector reporting and changes in the composition of the industry. With the retail industry increasingly abandoning monthly sales (which formed the data set used to benchmark the previous weekly), it was important that the new weekly sales metric be benchmarked to a more representative quarterly measure of industry performance that covers all major segments, such as department, apparel, drug, dollar, wholesale clubs, discounters, electronics, home supply, home furnishings, automotive supply, office, sporting goods, and grocery.

TRE, working with Goldman Sachs, updated the methodology used to derive the historical weekly sales metric, which is benchmarked to a broad-based industry quarterly aggregate of comparable-store sales for over 100 retail chains, as shown in Chart 1. The weekly sales measure continues to be a statistical product. The quarterly-to-weekly interpolation is based on a two-step process of converting the fiscal quarterly data to a monthly series and then the monthly series is converted to a weekly series using the weekly information collected since 1990. A year-over-year growth rate comparison between the broad-industry aggregate and the quarterly average of the new weekly sales index is shown in Chart 2



The new weekly index continues to be seasonally adjusted to provide a window on sequential weekly change. Chart 3 provides a comparison of the weekly seasonally adjusted index and its unadjusted metric. The current seasonal adjustment is more traditional than the previous “outlier adjustment” method and uses an X-13 Census monthly adjustment and allocation by week, consistent with the Piser method.²

² LeRoy M. Piser, “A Method of Calculating Weekly Seasonal Indexes,” *Journal of the American Statistical Association*, Vol. XXXVII (September 1932), pp. 307–309.

Historically, the public reporting of these weekly sales data only has been on a seasonally adjusted or outlier-adjusted basis—which will continue.

CHART 2
A Comparison of the Weekly Chain-Store Sales Index and Quarterly Industry Sales

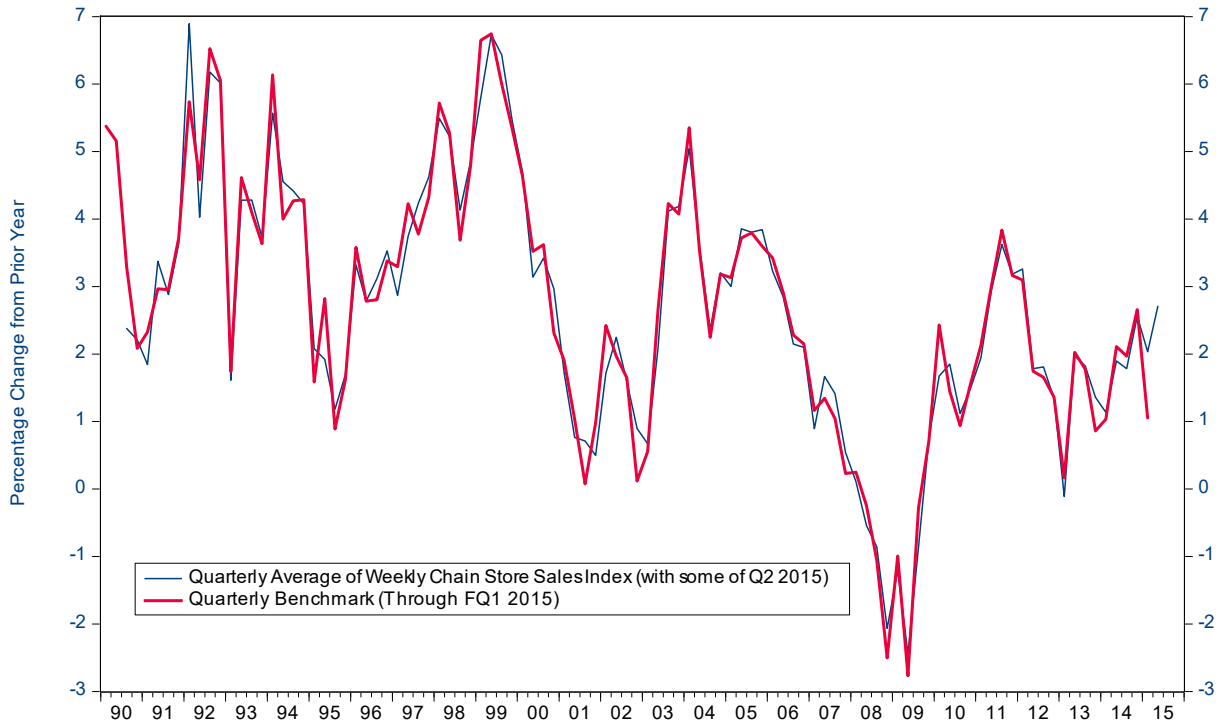
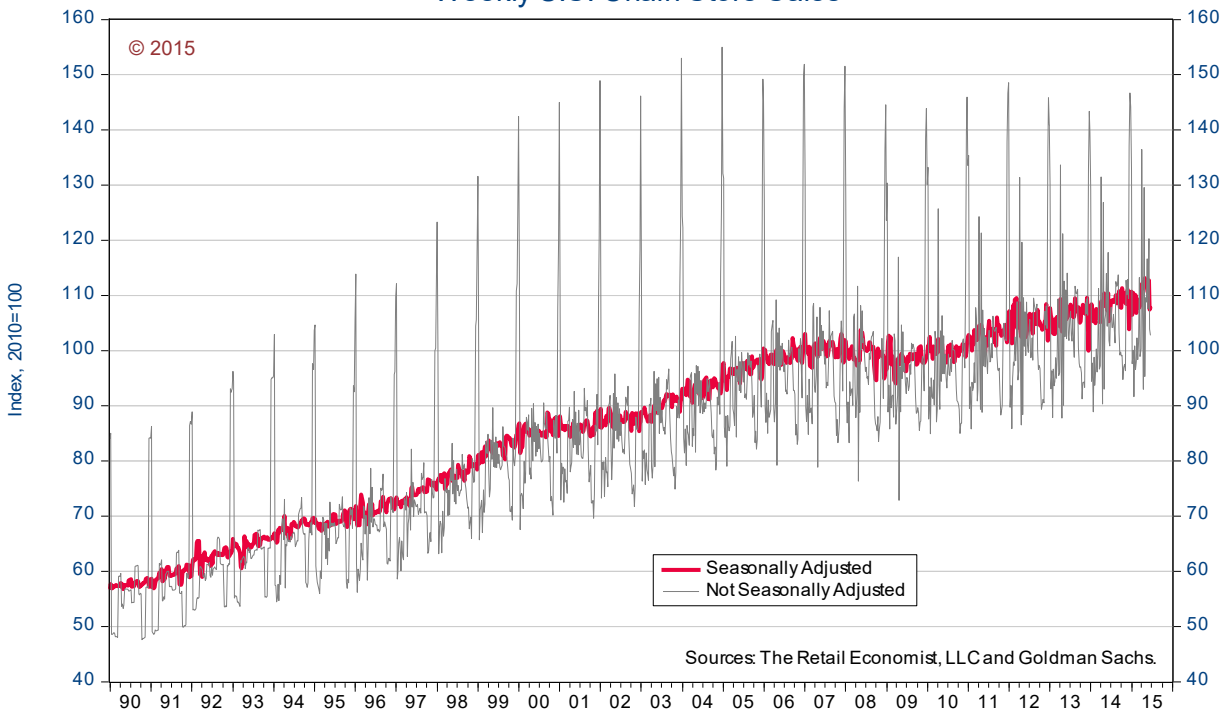


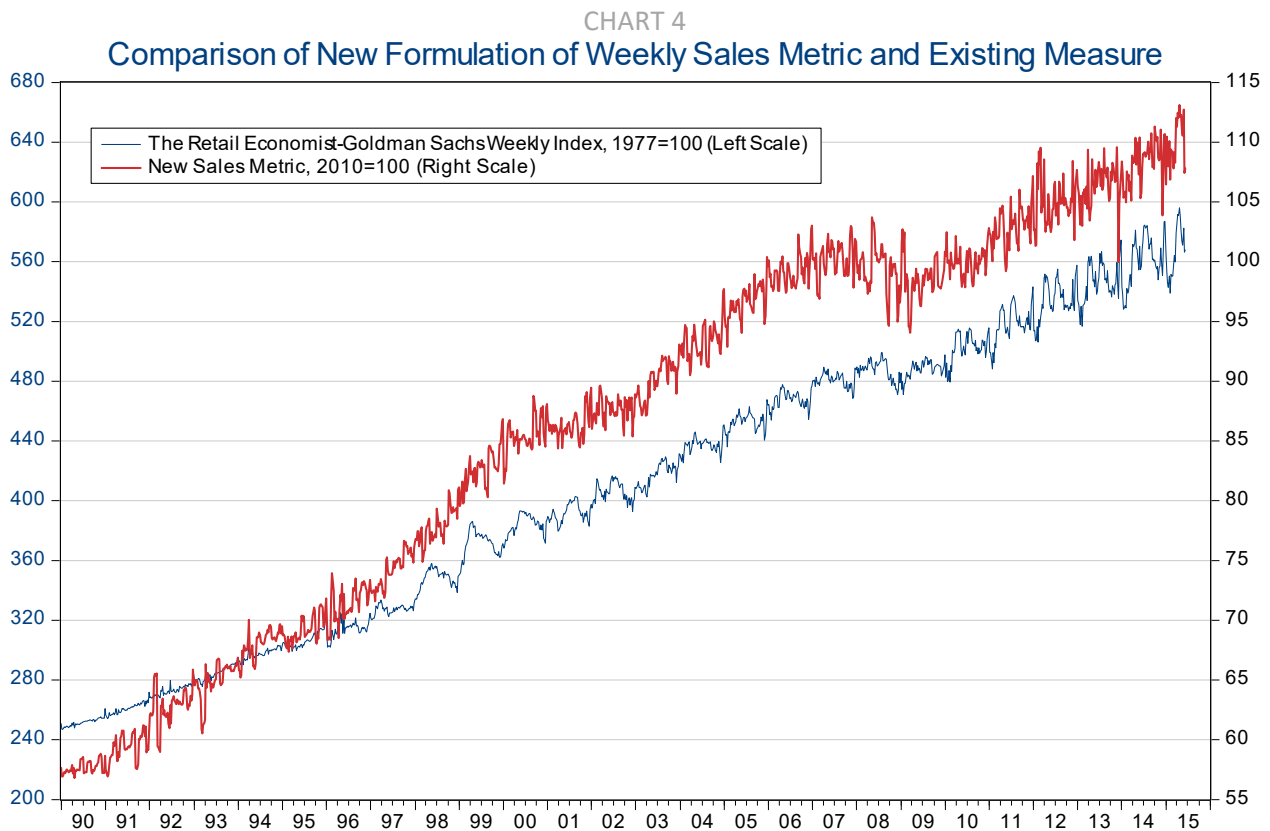
CHART 3
Weekly U.S. Chain Store Sales



Sources: The Retail Economist, LLC and Goldman Sachs.

COMPARISON OF THE NEW AND OLD METRIC

The new benchmarking process better captured the 2007-2009 contraction in spending, though the long-run trends between both the new and old measures are similar, as shown in Chart 4. However, the new seasonally-adjusted formulation is more volatile on a week-over-week basis than the old methodology, which had a stronger seasonal/outlier dampening filter. Unfortunately, that dampening filter removed too much of the cyclical profile, which is the main reason to use the more traditional seasonal-adjustment methodology.



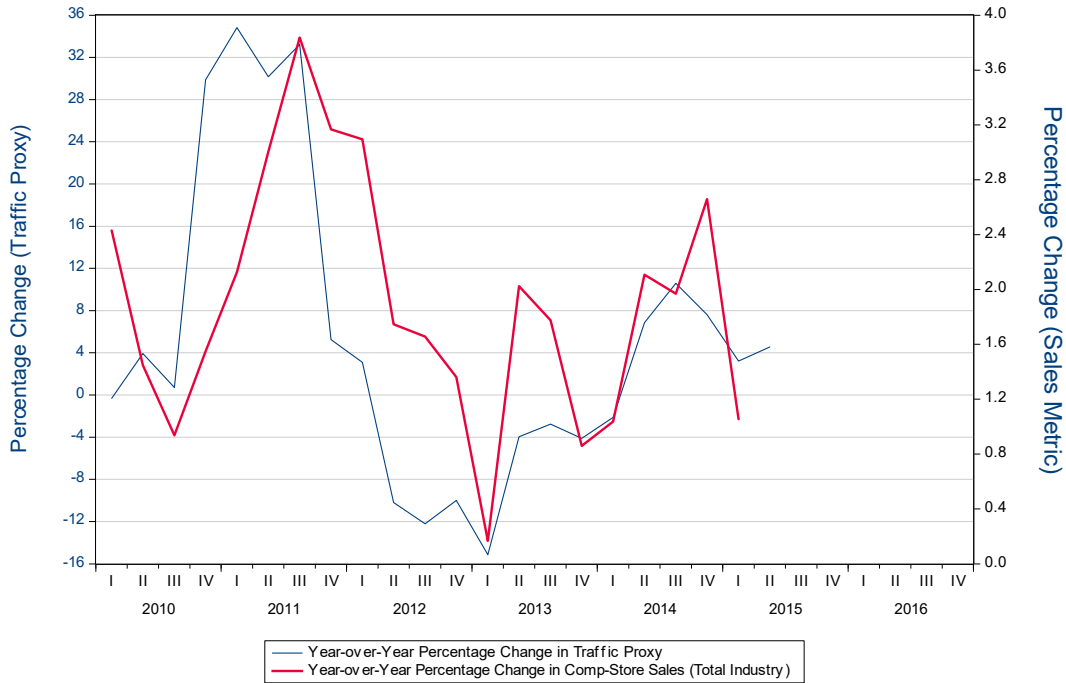
INTRODUCING A NEW CUSTOMER TRAFFIC METRIC

As part of the weekly tracking project, The Retail Economist and Goldman Sachs conduct a weekly consumer tracking survey that helps provide more granular information on which types of retail segments consumers shop. Although those weekly data are inherently noisy, a statistical derivation is used to produce a traffic proxy.³ The resulting year-over-year percentage change in the quarterly average of the traffic proxy is highly correlated with year-over-year percentage change in industry comparable-store sales, as shown in Chart 5.⁴

³ Principal component analysis is used to derive this traffic metric. The technique is a statistical procedure that transforms the data components, which are correlated with each other, into a set of values of linearly uncorrelated variables. The first principal component is assumed here to be a traffic metric.

⁴ The correlation is 0.56. Customer traffic rarely explains the full dimension of spending, but is an important element. This TRE-GS measure captures both in-store and online shopping, since most stores include online/mail-order sales into their estimates of comparable-store sales growth.

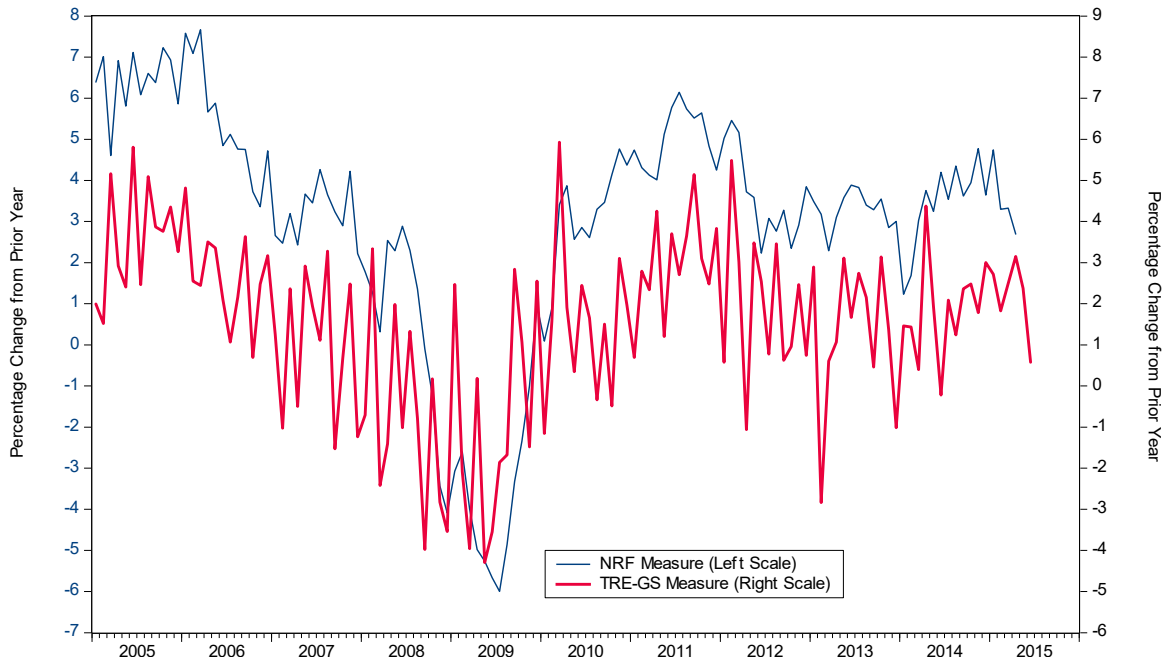
CHART 5
Comp-Store Sales vs. Traffic Proxy



ADDITIONAL USE OF THE WEEKLY SALES MEASURE

The TRE-GS weekly chain-store sales index also is a timely barometer of monthly U.S. Census Bureau retail sales. Although there are plenty of conceptual differences between the TRE-GS aggregate of comparable-store chain-store sales and the Census Bureau’s estimate of retail sales, the basic growth-rate trends are similar, as shown in Chart 6.

CHART 6
National Retail Federation Sales Measure and TRE-GS Sales Index



SUMMARY OF IMPROVEMENTS

The new formulation of the weekly sales metric is superior to the previous formulation in many ways, including:

- **MORE COMPREHENSIVE COVERAGE:** The new TRE-GS weekly chain-store sales index has been re-benchmarked to a broader quarterly measure of retail chain comparable-store sales performance covering a universe of approximately 100 companies spanning apparel, building supply, department, discount, dollar, drug, electronics, grocery, home furnishing, jewelry, office supply, shoe, sporting goods, and wholesale club retailers. Previously, the weekly index was benchmarked to a monthly sales benchmark, but today fewer retailers are reporting monthly sales.
- **STRONG CORRELATION WITH QUARTERLY RETAIL SALES TREND:** The new weekly is designed to track quarterly sales, however, not every retailer's sales are highly statistically correlated with overall industry trends. Components driving the weekly sales metric were selected based on their statistical relationship with industry trends and currently include wholesale, discount, apparel, drug, building-supply, and office-supply companies. The growth rate correlation measured between 2005 and 2014 for the input aggregate and industry sales growth was a very high 0.918. The weekly index continues to be an industry sales measure, which is statistically designed, and not just a sum of selected retailers. Consequently, the individual segment information will not be released.
- **SEASONALLY-ADJUSTED REPORTING:** The new sales metric will continue to be reported only on a seasonally-adjusted basis. The original methodology used a proprietary outlier adjustment method to seasonally-adjust the weekly data set. However, that also adjusted data for shifting promotions, adverse weather, and a host of other special factors. The new methodology links weekly fluctuations to a quarterly pattern that is seasonally adjusted using the Census X-13 seasonal adjustment program. The result is a more volatile seasonally-adjusted trend from week to week since the methodology does not remove "outliers."
- **MORE THAN AN INDUSTRY METRIC, BUT ALSO AN ECONOMIC INDICATOR:** The new weekly moves with the U.S. Census Bureau's monthly growth rates and has a correlation coefficient of 0.66 as measured between 2005 and early 2015. The weekly index can serve as a timely proxy for monthly and quarterly retail sales trends.