

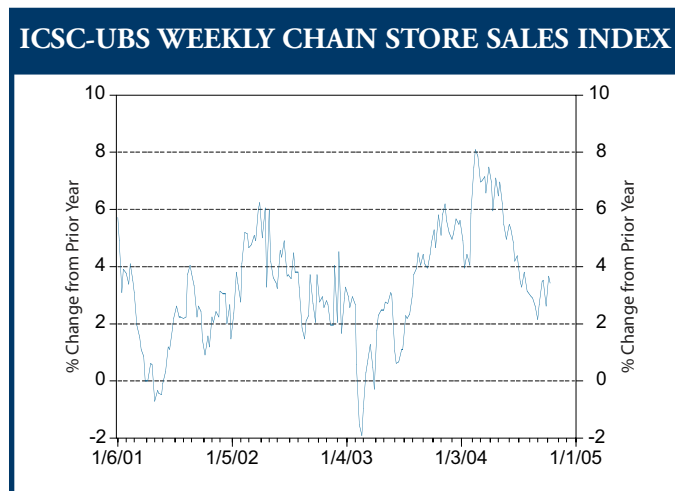
ICSC-UBS Weekly Chain Store Sales Index: History, Methodology and Use

Tracking Industry Sales Performance

BASIC UNDERSTANDING OF THE ICSC-UBS WEEKLY STATISTIC

The ICSC-UBS weekly series is a “comparable” store sales measure and a timely “running picture” of U.S. retail industry sales performance. The weekly measure (as shown in Chart 1-1) is compiled jointly by the International Council of Shopping Centers (ICSC) and the investment bank UBS.

Chart 1-1



Source: ICSC Research.

HISTORY OF WEEKLY SALES TRACKING

Few people may remember or realize that 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 largely still 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 con-

cern 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 some 30 or more years ago because of the widespread use of computers, while the financial market’s interest in those data would be incredibly high. One thing that may not have changed, though, is that the industry itself may still not want to see high-frequency reporting return.

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.

WEEKLY SALES DATA PUT TO THE TEST

Timely measures of economic activity can be vital to policy makers and business planners — let alone to the financial markets. The Chairman of the Federal Reserve Board, Alan Greenspan, 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 up front 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 30 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.

FILLING THE VOID FOR TIMELY SALES TRACKING

To fill the gap in our economic intelligence, ICSC and UBS began to jointly compile and report a weekly nominal comparable-store or same-store chain store sales index (which is long on history) in December 2003.² The ICSC-UBS weekly chain store sales Index is based on a sample of major retailers' weekly sales and is benchmarked to a monthly industry aggregate of chain store performance, which currently includes approximately 75 to 80 retailers. However, the weekly series is not a sum of selected sample stores, but a statistically-derived *industry* comparable-store sales benchmark.

The weekly sales barometer is indexed to 100 for the year 1977 (which is an arbitrary base point). This index also is adjusted for seasonality and other statistical noise

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.

² The original work on this weekly sales measure was done solely by Michael Niemira in the early 1990s. The sales index became available on a real-time basis starting with the week of January 31, 1994. It was re-launched as a joint venture between Mitsubishi Bank (New York) and the investment firm Schroder Wertheim on March 22, 1994.

³ Mary Petty, "Weather and Consumer Sales," *Bulletin of the American Meteorological Society*, Vol. 44, No. 2, (February 1963), p. 68.

⁴ *ibid.*

(such as promotional shifts, abnormal weather, etc.) using a proprietary outlier-adjustment methodology, which allows for meaningful week-over-week interpretation of the sales trend.

Although the weekly series is benchmarked to the monthly sales tally, there are some key differences in the compilation of the weekly statistic compared with that of the ICSC's monthly sales measure. One of those differences is in accounting periods for the fiscal month. Although most stores use the traditional 4-5-4 calendar, some are true-calendar month reporters and some have other unique accounting periods, which we blend together into the ICSC monthly chain store sales index without adjustment. However, the weekly series puts the information on a comparable Sunday – Saturday week for all the retailers, regardless of the store's monthly calendar used for its reporting purposes. These differences in the reporting periods would introduce a small discrepancy between a strict average of the weekly data and the monthly aggregate. Moreover, during the year, some weeks are more important for the monthly performance, which is not strictly accounted for in the weekly series but clearly is incorporated into the monthly data. Finally, the seasonal adjustment of the data is done differently for the monthly and the weekly series.

BUILDING ON PREVIOUS RESEARCH

Prior to the Commerce Department's effort to produce weekly retail sales, measured in dollars, the Federal Reserve compiled a department store sales growth-rate statistic. Hence, reports such as "a spokesman for the Federal Reserve Board announced today that sales figures for the week ended January 20 were 11% higher than in the comparable week last year"³ were a common event. And it was just as common to see stories at the time saying that a Federal Reserve spokesman "warned that a heavy snow storm over a wide area of the Atlantic and Midwest regions in the year-ago week contributed to that week's poor showing."⁴ So, at one time, the Federal Reserve, too, was in the game of producing retail sales statistics. Indeed, the Commerce Department's own tally of the weekly



department store data prior to February 8, 1964, was “derived by relating data supplied by the Federal Reserve Board to the monthly department store dollar sales volume estimated by the Census Bureau.”⁵ Consequently, the ICSC and UBS undertaking is long on history and even some of our methods share a common heritage with what the Federal Reserve did many years ago.

Technically, the ICSC-UBS sales index is a statistically derived estimate of industry sales that is weighted by sales volume. Hence, Wal-Mart will have a larger sales impact on the index than Target, for example, purely due to their respective sales volumes. The ICSC-UBS measure is compiled as a geometric growth rate formulation,⁶ which insures consistency over time (similar to a stock price index, for example) and is unaffected by compositional changes.

The weekly index is then adjusted for consistency with the monthly series (benchmarking) and for implicit seasonal patterns.

BENCHMARK ADJUSTMENT

Given that the weekly sales index is based on a sample of monthly store sales, there is an ongoing statistical adjustment made to force a concordance between a rolling six-month performance of the monthly and weekly series. This keeps the weekly statistic tracking the monthly sales trend over time.

IMPLICIT SEASONAL ADJUSTMENT

The weekly series is seasonally adjusted using a propriety outlier-adjustment methodology. Outlier adjustment

is a dynamic state-of-the-art method of adjusting a time series for its volatility, which may be a result of typical seasonal variation and irregular factors such as strikes and other weather disruptions. Although the concept for this adjustment is identical to that of the Census Bureau’s X-11 and its successor, the X-12 seasonal-adjustment routine, the process is quite distinct. The Census method and other variants used around the world harness a “ratio-to-moving average” to determine the seasonal pattern after first substituting outliers in the time series. The kernel of this traditional adjustment method was first described by Warren Persons in the 1920s. However, the outlier adjustment uses standard deviations to determine the degree of adjustment.

Weekly seasonal adjustment is at best difficult for chain store sales, given that retailers can and often do shift promotions to counter typical shifts in the calendar. Nonetheless, the ICSC-UBS approach to weekly seasonal adjustment follows from the Piser Method⁷ — which was advocated in the early 1930s and became the standard for weekly adjustment through the present.⁸ In essence, Piser advocated collapsing the weekly data into a monthly series, seasonally adjusting the monthly data and interpolating to get a weekly (or even daily) seasonal pattern. The Piser method even allowed for other adjustments such as the shifting of Easter and other holiday impacts. Another variant for weekly seasonal adjustment was used by the Mortgage Bankers Association (MBA) in which they inferred a weekly seasonal pattern based on monthly seasonally adjusted data for related data. Newer weekly seasonal adjustment methodologies have been developed, which echo the X-11 seasonal adjustment method on a weekly basis without the added steps suggested by Piser, but the jury is still out as to the “best” way to account for weekly seasonality—especially when there is intervention (not the statistical type, but real shifts) by retailers. ICSC and UBS continue to review these methodologies.

The ICSC-UBS seasonal adjustment method currently employed is similar in concept to the Piser and MBA methods, and is applied as follows:

⁵ *Weekly Retail Sales*, U.S. Department of Commerce, Bureau of the Census, May 1978, p. 25. A special thanks to Irving True, who has since retired from the Commerce Department, for providing the historical perspective.

⁶ The underlying unadjusted weekly sales index (not published), before adjustments (benchmark and seasonal), is calculated as $\text{Index}_t = \text{Index}_{t-52} \times (1 + (g_t/100))$, where g_t represents a sales-weighted year-over-year growth rate in comparable-store or total-store sales for time period “t.”

⁷ LeRoy M. Piser, “A Method of Calculating Weekly Seasonal Indexes,” *Journal of the American Statistical Association*, Vol. XXXVII (September 1932), pp. 307–309.

⁸ Louis Zeller, “Weekly Seasonal Adjustment Program for the IBM S/360 Computer,” manuscript, Board of Governors of the Federal Reserve System, February 15, 1972.



Step 1: Collapse the weekly growth rates into a monthly average growth rate, and statistically relate that monthly series of weekly sales growth — not seasonally adjusted, to the monthly sales growth rate (based on the more comprehensive monthly seasonally adjusted index, which has a base year of 1977 equals 100 and dates back to 1969).

Step 2: Select a common — though arbitrary — starting point for the weekly index (which was mid-November 1989), which was based on the more comprehensive monthly seasonally adjusted index. Increase the weekly index based on the statistically determined relationship (that is, regression results) between the two series.⁹

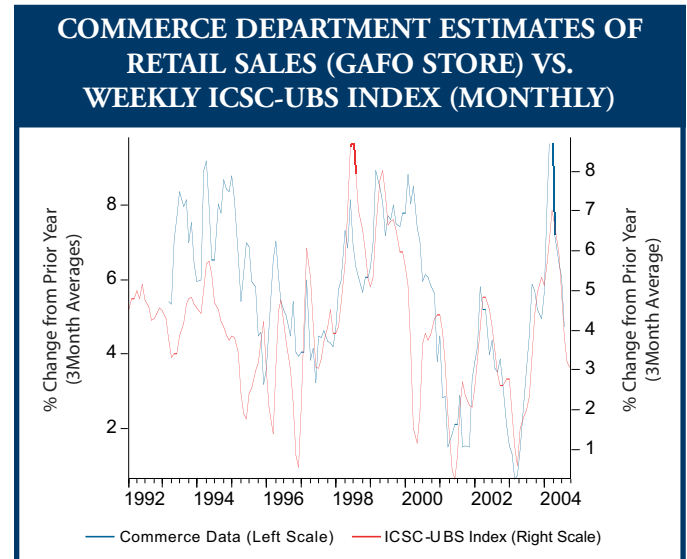
Step 3: To ensure a concordance between the weekly and monthly data at its starting point, a second regression related the two monthly indexes. The final seasonally adjusted weekly change is determined based on the adjusted weekly index. In an independent evaluation of our method by the Federal Reserve Board, they found that the weekly chain store sales series was essentially devoid of any lingering seasonality — which suggested that our method was successful.

COMPARISON WITH COMMERCE DATA

Although the intent of the weekly sales index is to monitor the ongoing performance of the major chain stores, it is appropriate to ask: *How does the ICSC-UBS weekly index compare with the Commerce Department's general merchandise, apparel, furniture and other (GAFO) store sales?* Chart 1-2 shows GAFO store sales trends alongside the weekly ICSC-UBS index (averaged monthly). It is clear that the patterns are similar—but there are some periodic gaps. One explanation for those gaps is due to an accelerating pace of store sales from expansion at times. The Commerce Department measures total sales — which

includes store expansion — and some stores saw tremendous additions to their store counts at times, while the weekly index (as well as the monthly index that it is benchmarked to) captures only comparable-store sales. Sales at stores open for at least one year (which is what commonly constitutes the comparable-store tally) generally grow more slowly than new stores.

Chart 1-2



Sources: U.S. Department of Commerce and ICSC Research.

Separately, ICSC compiles a *total* chain store sales index, which captures store expansion and contraction. However, statistical work suggests that the correlation between the Commerce Department series and total store sales was lower than with the comparable-store sales measure.

COMPARISON WITH SHOPPERTRAK'S NRSE

There are two distinct weekly sources of data that can be used to track retail industry sales. One measure is the ICSC-UBS weekly chain store sales index and the other distinct measure is a newcomer to the scene: the ShopperTrak's National Retail Sales Estimate (NRSE).

The NRSE is a weekly sales estimate of the Commerce Department's GAFO sales measure, which accounts for almost 26% of total retail sales and often is viewed as the primary sales benchmark for mall and non-mall based retailers since it excludes automotive, food service, gasoline service station sales and building supply stores. The

⁹ This is based on the relationship between week-over-week and year-over-year percentage change that can be expressed as: $PCHW(CHAIN_t) = (100 \times (((PCHYA(CHAIN_t) / 100) / 100) + 1) \times CHAIN_{t-52}) / CHAIN_{t-1} - 100$, where PCHW is the week-to-week percentage change; PCHYA is the year-over-year percentage change, and "t" denotes the current time period.



acronym GAFO comes from general merchandise, apparel, furniture and other stores, and is officially defined as: “GAFO represents sales at stores that sell merchandise normally sold in department stores. GAFO includes the following kinds of retail businesses: General merchandise stores (NAICS 452), Clothing and clothing accessories stores (NAICS 448), Furniture and home furnishings stores (NAICS 442), Electronics and appliance stores (NAICS 443), Sporting goods, hobby, book, and music stores (NAICS 451), Office supplies, stationery, and gift stores (NAICS 4532).”

The NRSE is benchmarked to the monthly GAFO sales data compiled by the Commerce Department, and is subject to all revisions affecting those sales data (whereas the weekly sales index is not revised by design, unless we update the seasonal adjustment methodology). The NRSE is reported in *dollar terms* expressed at monthly rates. This means that the weekly data should be averaged to the monthly data — not summed.

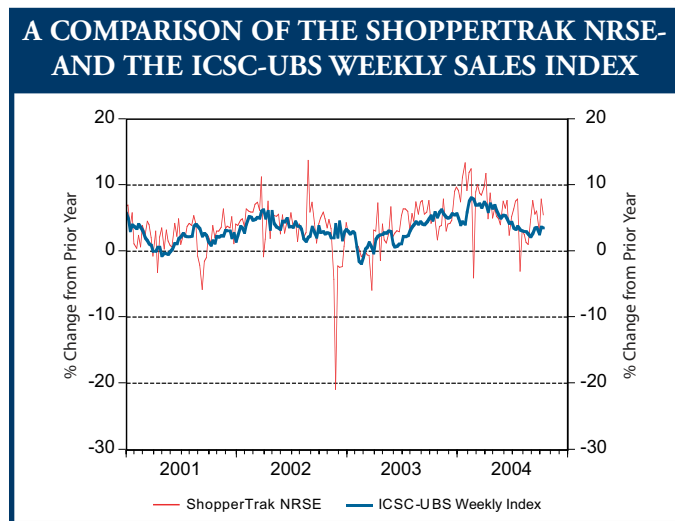
As shown in Chart 1-3, the basic growth rate trends are similar between the ICSC-UBS weekly sales index and the NRSE measure, with the NRSE more volatile from week to week — given that it is not seasonally adjusted while the ICSC-UBS series is. Also, the Commerce Department’s GAFO sales measure, which the NRSE

is benchmarked to, tends to grow faster than comp-store sales over the long haul, which adds to the difference between the two measures.

COMPARISON WITH REDBOOK’S AVERAGE

A related measure to the ICSC-UBS weekly index is a sales tally that was originally compiled by Edward F. Johnson, who was a retail equity analyst, and reported as part of his Johnson Redbook Service. Johnson began tracking weekly store sales — similar to the exercise that ICSC-UBS is currently doing — however, he used that information to estimate the Commerce Department’s total store sales based on his running month-to-date store sales tracking (irrespective of the differences between the retailer and true-month calendars). Since Johnson’s death some years ago, the Redbook weekly tracking has been altered numerous times and today is compiled by Redbook Research. The Redbook “index” is an average sales-weighted growth rate and not truly an index as its name implies. Moreover, the Redbook measure remains a month-to-date update rather than a true week-over-week change (as the ICSC-UBS series is). Nonetheless, the broad trends are similar between the ICSC-UBS measure and the Redbook series, as shown in Chart 1-4.

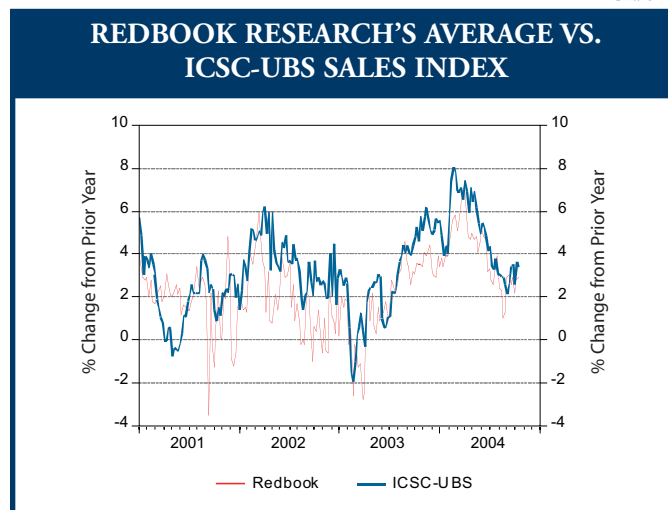
Chart 1-3



Source: ShopperTrak and ICSC Research.

¹⁰ Ethan S. Harris and Clara Vega. “What Do Chain Store Sales Tell Us About Consumer Spending?” *Federal Reserve Bank of New York Economic Policy Review*. October 1996, pp. 15–35.

Chart 1-4



Sources: Redbook Research and ICSC Research.

EVALUATING WEEKLY CHAIN STORE SALES

In 1996, New York Federal Reserve Bank economists reviewed the performance of the ICSC-UBS weekly chain store sales.¹⁰ The Fed set out to evaluate chain store sales



data as predictors of monthly consumer spending. The study concluded that: “(1) both individual store data and the weekly indexes are of very limited value as macroeconomic indicators; (2) users should also beware of the effect of changing seasonals and price discounting on chain store sales; (3) chain store indexes can be quite volatile; and (4) a number of other indicators are useful for forecasting retail sales, including payroll employment, gasoline prices, unit sales of motor vehicle sales.”

As previously noted, the purpose of our weekly sales monitor is not to mirror overall consumer spending, since the broader measure includes service spending, nor is it compiled to track overall retail sales, which include motor vehicle sales. It is, however, first and foremost, a monitor of the retail chain store industry, which as a bonus also mirrors the trends of GAFO store sales and non-auto retail sales. But care must be exercised in making this statistical comparison.

Although the NY Fed economists started by evaluating weekly chain store sales measures — including our weekly measure — they quickly turned their attention to monthly total and comparable-store tallies from various sources. We believe that their analysis and conclusions were biased in not controlling for: (1) Accounting period differences between the Commerce Department data, which are tabulated on a calendar-month basis and retail industry accounting periods, which may fall between two calendar months; (2) The Fed study results also blurred the differences between total and comparable-store sales; and (3) The statistical techniques that they employed may have

been less appropriate for the evaluation. Moreover, we had some fundamental disagreement with the Fed’s conclusion regarding the role of changing seasonals and price discounting on chain store sales. The researchers felt that those changes in the retail industry caused difference between the chain store data and the Commerce Department data. Quite the contrary, we believe that the Commerce Department data also were affected by those same structural changes within the industry.

However, to their credit, the Fed economists took a serious look at the “forecasting” properties of the weekly and monthly chain store data for broader measures of consumption. Indeed, one of their findings was consistent with our own long-held view that non-auto retail sales revisions tend to be in the direction of the previously reported chain store data. Although we never statistically tested that hypothesis, we were glad to see that our intuition was borne out by their work.

CONCLUSION

To get a leg up on retail spending trends, keep an eye on the ICSC-UBS weekly chain store sales report. Although the ICSC-UBS weekly sales statistic is not representative of the entire consumer sector, it is a timely and important piece of the economic puzzle, and is representative of *industry performance*.

This article was written by Michael Niemira, Chief Economist and Director of Research, International Council of Shopping Centers. For further information, contact him at ICSC: mniemira@icsc.org.