

Chemical Activity Barometer

American chemistry is essential to the U.S. economy. Chemistry's early position in the supply chain gives the American Chemistry Council (ACC) the ability to identify emerging trends in the U.S. economy and specific sectors outside of, but closely linked to, the business of chemistry.

The Chemical Activity Barometer (CAB), the ACC's first-of-its kind, leading macroeconomic indicator will highlight the peaks and troughs in the overall U.S. economy and illuminate potential trends in market sectors outside of chemistry. The barometer is a critical tool for evaluating the direction of the U.S. economy.

The index provides a longer lead (performs better) than the National Bureau of Economic Research (NBER). The CAB leads by two to fourteen months, with an average lead of eight months.

How is it created?

The CAB is a composite index which comprises indicators drawn from a range of chemicals and sectors, including chlorine and other alkalis, pigments, plastic resins and other selected basic industrial chemicals. It first originated through a study of the relationship between the business cycles in the production of selected chemicals and cycles in the larger economy during the period from 1947 to 2011. Other specific indicators used include:

- Hours worked in chemicals;
- Chemical company stock data; publicly sourced, chemical price information;
- End-use (or customer) industry sales-to-inventories; and
- Several broader leading economic measures (building permits and ISM PMI new orders).

The CAB is constructed using a five-step procedure similar to that used by the Conference Board to calculate composite indexes:

1. Calculate month-to-month changes in the component indices;
2. Adjust month-to-month changes by multiplying them by the component's weighting;
3. Sum the adjusted month-to-month changes (across the components for each month);
4. Compute preliminary levels of the composite index; and
5. Rebase the composite index to reflect the average lead (in months) of an average 100 in the base year (the year 2007 was used) of a reference time series (the Federal Reserve's Industrial Production index was used).

To update the CAB from month to month, steps 1 through 4 are followed to incorporate the most recent six months of data. The revisions to the base year (step 5) are made when the Federal Reserve changes its base year for the industrial production (IP) index.

The CAB is designed and prepared in compliance with ACC's Antitrust Guidelines and FTC Safe Harbor Guidelines; does not use company-specific price information as input data; and data is aggregated such that company-specific and product-specific data cannot be determined.

The CAB and its relationship to the broader economy

NBER Business Cycle		Chemical Activity Barometer		Timing Relationship (Months)	
Peak	Trough	Peak	Trough	Peak	Trough
November 1948	October 1949	September 1948	July 1949	2	3
July 1953	May 1954	May 1953	January 1954	2	4
August 1957	April 1958	January 1957	March 1958	8	1
April 1960	February 1961	June 1959	October 1960	11	4
December 1969	November 1970	May 1969	April 1970	7	7
November 1973	March 1975	February 1973	February 1975	9	1
January 1980	July 1980	March 1979	June 1980	14	1
July 1981	November 1982	December 1980	August 1982	8	5
July 1990	March 1991	October 1989	January 2001	9	2
March 2001	November 2001	March 2000	October 2001	12	1
December 2007	June 2009	May 2007	March 2009	5	3
Average				8	3

What is a leading indicator?

The CAB is a composite index of chemical industry activity that produces a leading indicator of broader economy-wide activity. To better understand shifts in the business cycle it's important to distinguish between leading, coincident and lagging indicators of the cycle, which essentially reflect the timing of their movements:

- Leading indicators (average weekly hours, new orders, consumer expectations, building permits, stock prices, etc.) are those that consistently turn before the economy does.
- Coincident indicators (employment, industrial production, personal income, business sales, etc.) turn in step with the economy and track the progress of the business cycle.
- Lagging indicators (inventory-to-sales ratios, change in unit labor costs, C&I loans outstanding, etc.) turn after the economy turns, thus playing a confirming role.

The three types of indicators are important in their own right although most attention is played to the role of leading indicators because they tend to shift direction in advance of the business cycle.

Why is it critical?

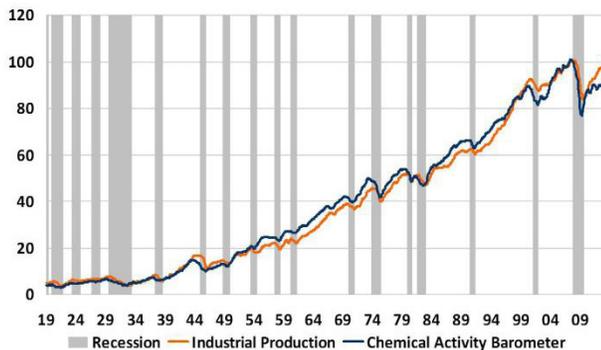
The CAB:

- Provides earlier forecasting
- Determines turning points and likely future trends of the wider U.S. economy
- Identifies shifts in other industries within the U.S. economy
- Highlights the industry's role in driving economic growth

The CAB is not a leading index of chemical industry activity. Rather, it is a leading index (barometer) based on chemical industry data that leads overall industrial production and the overall business cycle. The relationship between the CAB and IP index are presented in Figures 1 and 2. Figure 1 presents the CAB versus the IP index and Figure 2 presents the year-over-year growth rate of the CAB and the IP index. The shaded columns in both charts represent periods of recessions. The data presented in both figures are based on three-month-moving averages to smooth volatility and thus ease comparisons. Analysis of the data indicates a positive correlation of over 0.90 between the industrial production index and the CAB eight months prior.

The CAB vs. Industrial Production Index (A Long and Short-Term View)

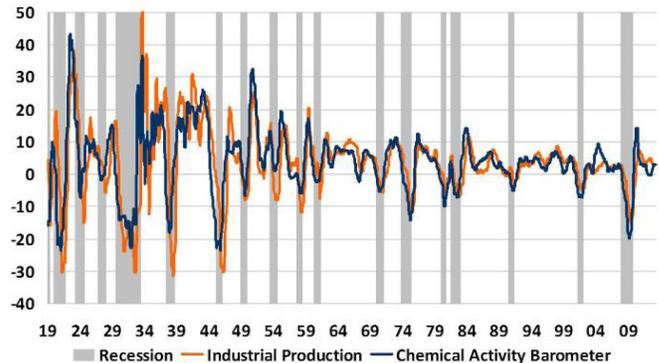
Index where 2007=100 (3MMA) (Figure 1)



Sources: Federal Reserve Board and ACC analysis

March 2013

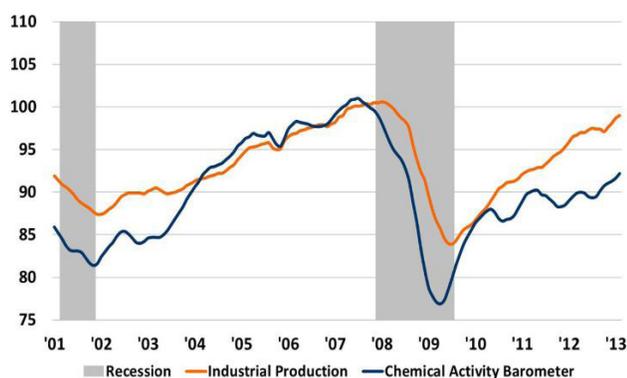
% Change Year-over-Year (3MMA) (Figure 2)



Sources: Federal Reserve Board and ACC analysis

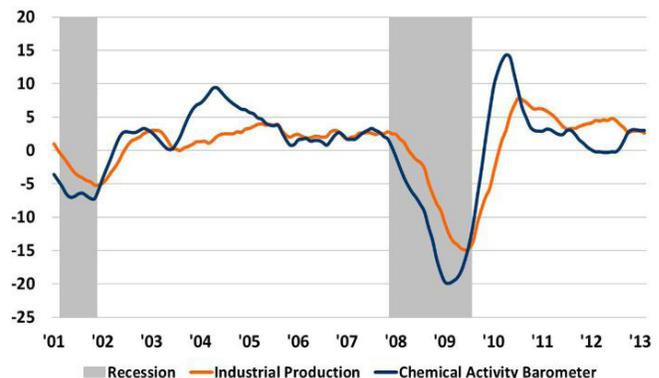
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Index where 2007=100 (3MMA) (Figure 3)



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% Change Year-over-Year (3MMA) (Figure 4)



March 2013