Weekly Chemistry and Economic Trends

ACC Economics & Statistics
4 September 2015

Macroeconomic Status

Our running tab of positive indicators for the macroeconomic status was 18 out of 20 this week. Thus, we continue to post a green banner.

Non-Farm Payrolls ▲173,000
Unemployment Rate ▼ to 5.1%
Trade Deficit ▲+$3.3 billion to -$41.9 billion
Light Vehicle Sales ▲ to 17.8 million unit pace
Construction Spending ▲0.7%; ▲13.7% Y/Y
Factory Orders ▲0.4%; ▼4.9% Y/Y
ISM PMI ▼1.6 points to 51.1 (expanding)
ISM NMI ▼1.3 points to 59.0 (expanding)
Texas Manufacturing Survey ▼11.2 points to -15.8
JP Morgan Global PMI ▼0.3 points to 50.7

The economic reports this week were somewhat positive. While job growth came in below expectations, there were upward revisions to data for June and July. In addition, the unemployment rate dipped to 5.1%, a seven-year low. The trade deficit actually improved and the services sectors continued to expand at a strong pace. Furthermore, light vehicle sales rose to their highest pace since 2005. Construction spending eased somewhat but turning to manufacturing, the news was more mixed. Manufacturing continued to contract in Texas and the headline pace of manufacturing activity moderated. There was a second strong gain in orders for nondefense capital goods excluding aircraft, a proxy for business investment. In addition, there was a modest gain for unfilled orders, which are an indicator for future production. This factory orders report was encouraging but we have a way to go for manufacturing to get out of this soft patch.

Overseas, lackluster growth characterized global manufacturing during August. Gains continued in the Euro Area, Japan and India. The main drags to overall growth were China, Brazil, Russia, South Korea and Taiwan.

Business of Chemistry Status

For the business of chemistry, the indicators bring to mind a green banner for basic and specialty chemicals.

Oil ▲$50.44 (Thursday)
Natural Gas ▼ $2.67 (Thursday)
Railcar Loadings ▲336 from a week ago; ▼0.3% Y/Y (13-week moving average)
Chemical Equity Performance ▼6.5%; ▼10.2% YTD

Turning to the business of chemistry, the details in the ISM manufacturing report indicate that the chemical industry was one of the industries that expanded in August. Production expanded as did new orders and the backlog of orders, which is good for future production. Export orders contracted. The ISM report was contradicted by trends in labor inputs.

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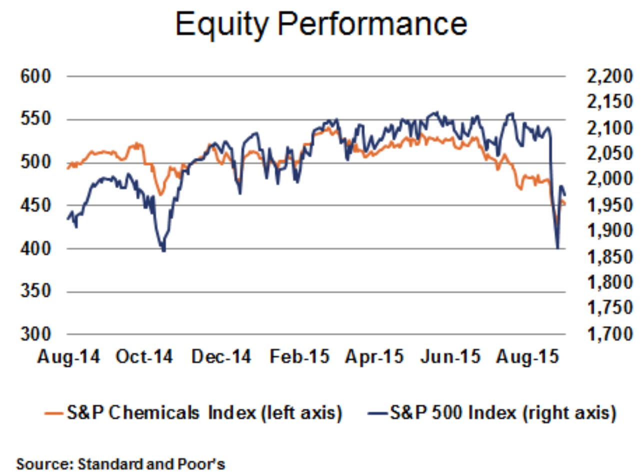
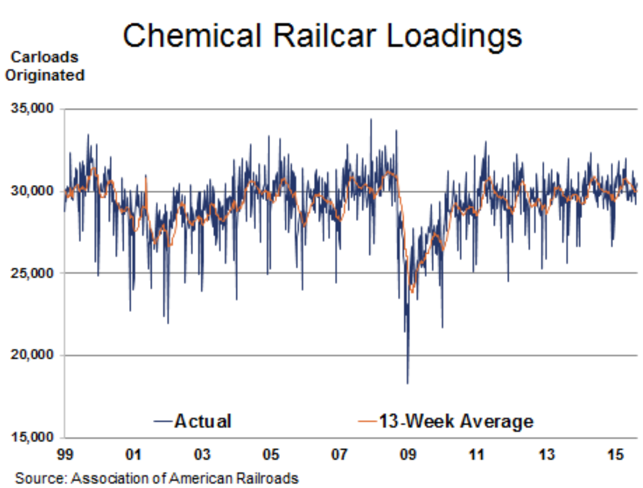
CHEMICAL EQUITY PERFORMANCE

Equity prices are often a good indicator of future activity and represent one component of the leading economic indicators. With concern over the global economy, and especially China, the benchmark S&P 500 index fell by 6.3% in August. The S&P index for chemical companies also fell, by 6.5%. The volatility in markets this year left the S&P chemicals index was off 10.2% from the beginning of the year. By comparison, the S&P 500 index was off 4.2% from the start of the year.



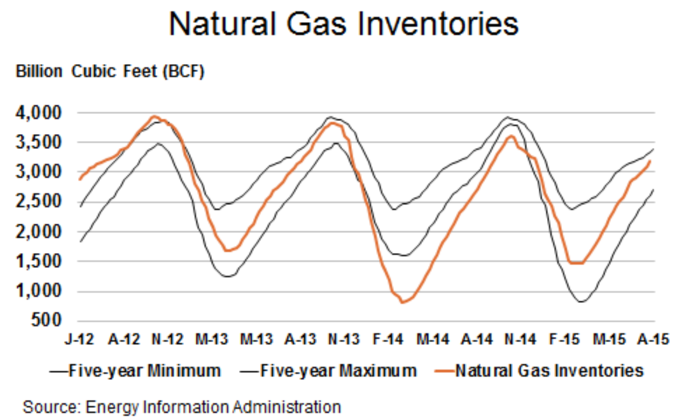
CHEMICAL RAILCAR LOADINGS

According to the Association of American Railroads (AAR), for the week ending 29 August (week 34), railcar loadings of polymers and basic chemicals (blue line) rose by 336 to 30,477 railcars. Compared to the same week last year, loadings were down 1.4% Y/Y and were up 0.3% YTD. Loadings have been on the rise for 8 of the last 13 weeks. The railcar loadings data are the best 'real time' indicator of industry — especially basic chemicals and polymers — activity. Because the data are fairly erratic, we employ a moving average to smooth out seasonal irregularities. The 13-week moving average of railcar loadings is down 0.3% Y/Y.

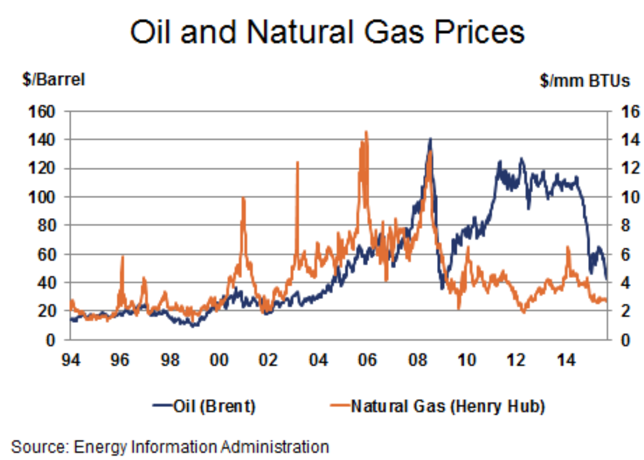


ENERGY

According to the Energy Information Administration (EIA) **natural gas inventories** rose 94 BCF during the week ending 28 August. This was well-above the typical build of 57 BCF for this week and brings inventories to 3,193 BCF, 18.3% (495 BCF) above this time last year and 4.0% (122 BCF) above the five-year average. Inventories are near the upper end of the five-year historical range.



With an easing of fears about China and the global economy, **oil prices** rebounded to $50.44 per barrel yesterday (Thursday). A year ago, oil was $100.88 per barrel. Thus, recent prices represent a 50.0% Y/Y decline. With a strong build in stocks **natural gas prices** (the benchmark Henry Hub), closed at $2.67 per million BTUs on Thursday. A year ago, the price was $3.94 per million BTUs. Thus, recent prices represent a 32.2% Y/Y decline.



At 18.9, the ratio of oil prices to natural gas <u>improved</u> from 16.5 a week ago. One year ago, the ratio was 25.6. As a rough rule of thumb, when the ratio is above 7, the competitiveness of Gulf Coast-based petrochemicals and derivatives vis-à-vis other major producing regions is enhanced. We've been above 7 for several years. In the US, nearly 90% of ethylene, for example, is derived from natural gas liquids while in Western Europe, over

85% is derived from naphtha, gas oil and other light distillate oil-based products. Historically, other factors (co-product prices, exchange rates, capacity utilization, etc.) have played a role in competitiveness as well. The current ratio is favorable for US competitiveness and exports of petrochemicals, plastics and other derivatives.

According to Baker-Hughes, for the week ending 28 August the North American **natural gas rig count** fell by nine to 202 rigs. One year ago the rig count was 338 rigs. During the same week, the **oil rig count** rose by one to 675 rigs. One year ago the rig count was 1,575 rigs.

BEIGE BOOK

The Federal Reserve collects anecdotal reports from each of the 12 District banks about economic conditions in their region. This compendium of reports is assembled and disseminated in the *Beige Book*. The Federal Reserve Board noted that reports from the 12 Federal Reserve Districts indicate economic activity continued expanding across most regions and sectors during the reporting period from July to mid-August. This report was favorable.

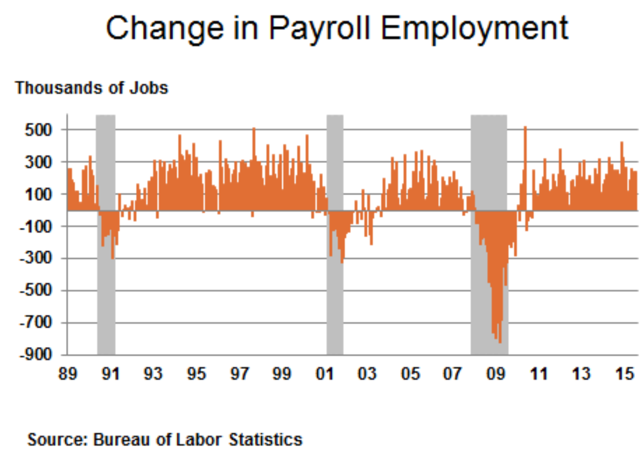
District reports on manufacturing activity were mostly positive. Retail contacts in the majority of Districts reported that their sales and revenues continued to expand. Reports on residential and commercial real estate markets were mostly positive. Existing home sales and residential leasing widely improved, with home prices moving up in most areas. Commercial real estate activity also rose in most Districts. Agricultural conditions were mixed. Most Districts reported modest to moderate growth in labor demand and this tightening of labor markets was said to be pushing wages up slightly in selected industries or occupations.

The Boston District mentioned the Chinese slowdown as a factor leading to reduced demand for chemicals. A manufacturer of bulk chemicals said that they are seeing a much higher number of quits either to go to other firms or for retirement, after many years in which the quit rate was exceptionally low. The Cleveland District reported increases in shipments of chemicals. The Third District (Philadelphia) noted that activity appeared weaker among the makers of chemicals. In the Dallas District, it was noted that domestic sales of PVC have been lackluster this year due to softer demand growth and increased imports (partly due to the strong dollar). The strong dollar also continued to hamper petrochemicals exports. One contact noted that demand from the chemical sector had replaced a lot of the lost demand from the oil and gas sector. In the Kansas City District, manufacturing activity continued to decline primarily due to weakness in plastics.

The *Beige Book* report is of importance to the business of chemistry as it provides insight into trends in key end-use customer industries as well as the industry itself. Searches of the text of the *Beige Book* can easily identify reports on end-use customer industries. (See www.federalreserve.gov for more details.)

INDICATORS IN DETAIL

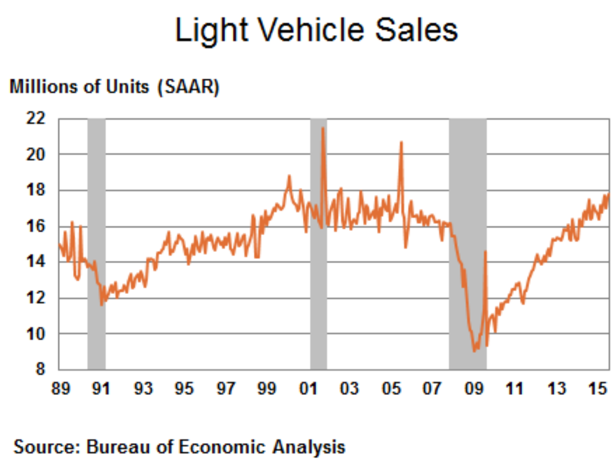
Note that economic statistics tend to be somewhat erratic in nature. Seasonality often plays a role and one must be careful in placing too much emphasis on a single month's figures. Analysts often use a three-month moving average or employ Y/Y comparisons to deal with the volatility.



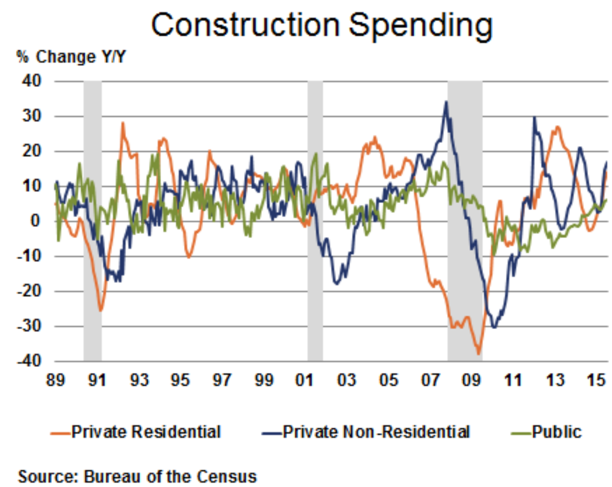
Payroll expansion slowed in August according to the Bureau of Labor Statistics (BLS). **Non-farm payrolls** grew by 173,000 in August, below expectations. There was positive news, however, in the upward revisions to job growth in June and July, which combined, added an additional 44,000 to employment levels. This brings the three-month average to 221,000, ahead of the 189,000 jobs added during the previous three-month period. Average hourly earnings rose 1.9% Y/Y, in line with previous months' gains. According to the separate household survey, the **unemployment rate** dipped to 5.1% (from 5.3% in July), a seven-year low. The decline reflected a large drop in the number of unemployed individuals. The labor force declined slightly. Other measures of unemployment also showed improvement. Overall, the report is being viewed positively as it continues to show improvement in labor market conditions.

In the business of chemistry, overall employment fell by 800 jobs to 812,300 in August. Non-supervisory production workers fell by 200 jobs to 510,200 people while employment among supervisory and non-production workers fell by 600 jobs to 302,100. The average workweek of production workers slipped 0.3 hours to 42.2 hours. Taken together, the overall labor input to the chemical industry fell 0.7% for the month and was up 1.1% Y/Y. After allowing for normal productivity gains the report suggests soft production, which contradicts the *production details in the ISM report. Hourly wages fell by 11 cents to $21.73 per hour but were up 1.5% Y/Y. Overall employment was up 6,200 jobs (or 0.8%) compared to a year ago. The number of production workers was up 2.1% Y/Y, or 10,500 jobs.*

The Census Bureau reported that the **trade balance** in goods and services improved from a deficit of $45.2 billion in June to a deficit of $41.9 billion in July. Exports rose by $0.8 billion to $188.5 billion in July. Gains occurred in foods, feeds and beverages; industrial supplies; capital goods; automotive vehicles; and other with consumer goods exports declining. At the same time, imports fell by $2.5 billion to $230.4 billion. Gains occurred in industrial supplies; capital goods; automotive vehicles; and other with foods, feeds and beverages and consumer goods exports declining. The deficit in petroleum products rose slightly and the trade deficit with China widened. *Turning to chemicals and related products, exports fell from $21.7 billion to $16.7 billion in July. Gains in exports of organic chemicals, inorganic chemicals, and plastic resins were offset by weakness elsewhere. Imports fell from $19.7 billion to $17.7 billion with higher imports of colorants offset by weakness in other segments. As a result, the trade balance in chemicals and related products (on an SITC basis) improved from a deficit of $2.7 billion in June to a deficit of $989 million in July.*



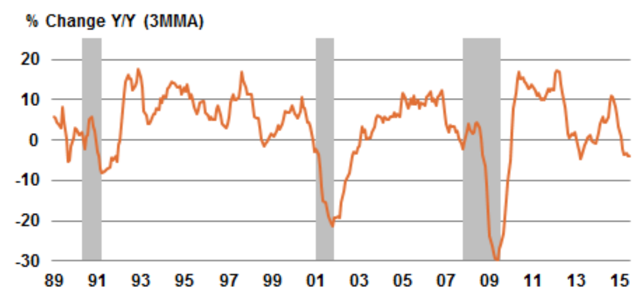
The automobile companies reported that **light vehicle sales** surged to a 17.8 million unit pace in August, a level up 2.8% Y/Y and the highest pace since July 2005. Financing incentives, low gasoline prices, and stronger consumer confidence all played a role. Sales were led by SUVs, cross-overs and light-duty trucks. The share of these vehicles increased to 57%, the highest in 10 years. Compared to a year earlier, sales were up for Ford Motor and Fiat Chrysler but off slightly for General Motors. Sales at Toyota, Honda, and Nissan were also off. *This sector is important to the business of chemistry because a typical vehicle contains $3,490 of chemistry (chemical products and chemical processing). Included, for example, are antifreeze and other fluids, catalysts, plastic dashboards and other components, rubber tires and hoses, upholstery fibers, coatings and adhesives. Virtually every component of a light vehicle, from the front bumper to the rear taillights features some chemistry. The latest data indicate that polymer use is 329 pounds per vehicle. More details are available in our annual Chemistry and Light Vehicle report.*



Reaching a seven-year high, **construction spending** rose at a better-than-expected 0.7% pace in July. Private residential spending rose at a 1.1% pace with spending on new single family homes up 2.1%. Spending on private nonresidential projects rose at a 1.5% rate. Spending on publically funded projects, however, fell at a 1.0% rate. Overall construction spending was up 13.7% Y/Y with private residential spending up 15.6% Y/Y and nonresidential up 18.2% Y/Y. Public construction spending was up 6.0% Y/Y. *This report is of significance to the business of chemistry with more than $8 billion in chemistry products is directly purchased by the construction sector each year. Indirectly, it purchases more than twice that as increasing construction spending generates sales of chemistry products through purchases of supplies such as plastics pipe, architectural coatings, vinyl siding and construction products, carpet, sealants, concrete additives, etc. Among plastic resins, PVC is most tied to building and construction. A useful indicator we use is the Y/Y change in real (i.e., inflation-adjusted) new orders for construction materials and supplies.*

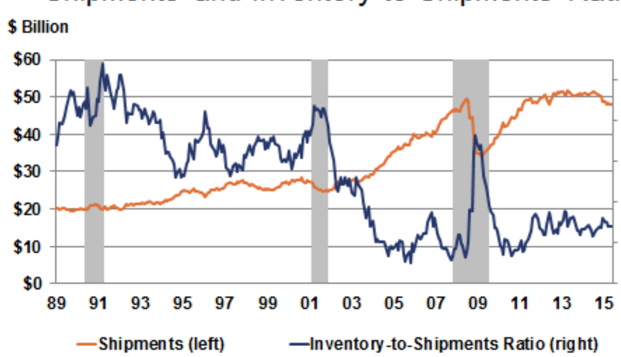
The Census Bureau reported that **factory orders** rose 0.4% in July to $482.0 billion. This followed a 2.2% gain in June and a 1.1% decline in May. The rebound continues. Once again, a large change in aircraft orders figured prominently. When a major airline places an order for new airplanes, it usually purchases a number of them. Most other businesses do the same when they upgrade computer and communications systems, or add industrial capacity. As a result, orders tend to be volatile and choppy. Aircraft orders dropped sharply (by 7.6%) in the month but orders for motor vehicles and parts rose and partially offset the weakness in aircraft. A proxy for business investment, new orders for nondefense capital goods excluding aircraft, rose by 2.1% following a 1.5% gain in June offsetting the 0.8% decline in May. Orders for most machinery types rose as did computers and electronics, furniture and electrical equipment and components. Orders for primary metals, fabricated metal products, and appliances declined. New orders for non-defense capital goods excluding aircraft were off 3.3% Y/Y. Although headline shipments increased during the month they were off 4.9% Y/Y. At the same time, inventories decreased slightly during July and, as a result, the inventory-to-shipments ratio was steady at 1.35. Inventories were up 0.4% Y/Y and year ago, the ratio was 1.29. Unfilled orders represent a pipeline of future production and during July rose 0.2%. Overall, it was a somewhat encouraging report but we have a way to go for manufacturing to get out of this soft patch.

Manufacturers' New Orders of Non-Defense Capital Goods excl. Aircraft



Source: Bureau of the Census

Chemical (excluding Pharmaceuticals) Shipments and Inventory-to-Shipments Ratio

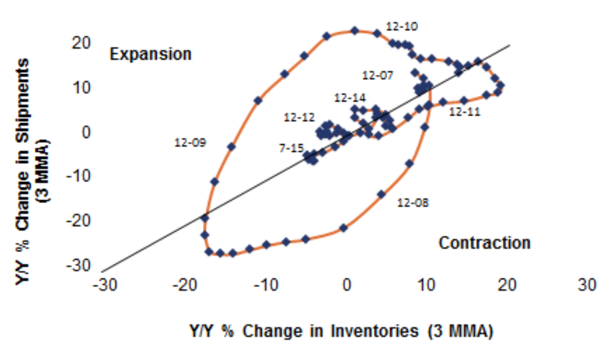


Source: Bureau of the Census

Turning to the business of chemistry, shipments of chemicals rose 0.5% in July following a 0.8% gain in June. Headline shipments were off 2.4% Y/Y. Pharmaceutical shipments rose 3.6% in July and, as a result, shipments of chemicals excluding pharmaceuticals fell 0.6% to $47.83 billion, a level off 7.1% Y/Y. Shipments of coatings and adhesives advanced as did shipments of agricultural chemicals but all other chemicals declined. Inventories of overall chemicals rose 0.6% in July and were off 1.3% Y/Y. Inventories of pharmaceuticals rose 1.1% during July and, as a result, inventories of chemicals excluding pharmaceuticals rose 0.3% to $50.37 billion in July. This left inventories of chemicals excluding pharmaceuticals off 3.8% Y/Y, a lower decline than that for shipments. The inventory-to-shipments ratio for chemicals excluding pharmaceuticals rose slightly to 1.05 in July. This is up from 1.02 a year earlier but still low.

The next chart shows the relationship between shipments and inventories for chemicals, excluding pharmaceuticals, over time. It compares a Y/Y change using a three-month moving average (3MMA) to smooth out volatility. This type of chart is used to illustrate inventory cycles. In this case, it is used to compare the Y/Y growth in shipments and inventories for chemicals (excluding pharmaceuticals) for the December 2007 (start of the recession) through July 2015 period. In a perfect world where inventories and shipments are matched, the shape of the line would be fairly symmetric, a balance of centrifugal and centripetal forces. That is, growth in inventories would parallel that of growth in shipments. This is illustrated by the 45° blue line, which represents a balanced norm. In this perfect world, growth or shrinkage of both would move in tandem, with sufficient inventories to meet rising demand and vice versa. Deviations or volatility represent another name for a mismatch of sales and inventories, with a subsequent and hopefully, very short cycle of correction. This is particularly the case should the line connecting Y/Y growth for both variables shift toward the right. This would indicate a build-up of inventories without the similar gain in shipments.

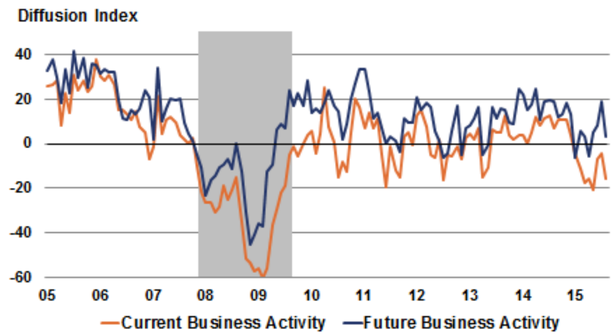
Inventory Cycle for Chemicals (excluding Pharmaceuticals)



Source: Census Bureau, ACC analysis

The chart provides a fairly simple yet good visual aide for evaluating the stages of the inventory cycle. In this particular chart the data are presented on a monthly basis, using a 3MMA. This makes the chart easier to read and using monthly data instead of quarterly allows easier identification of turning points. It can also be adapted to *actual chemical and polymer products. The most recent data indicate that for the industry as a whole (excluding pharmaceuticals) the decline in inventories narrowed to a 3.9% Y/Y decline (from a 4.1% Y/Y decline the prior month) on a 3MMA basis. Inventories lagged shipments (with a 6.6% Y/Y decline on a 3MMA basis) in this comparison. The gap (shipment change over changes in inventories) widened in July, suggesting that the balance is moving away from normal.*

Texas Manufacturing Outlook Survey

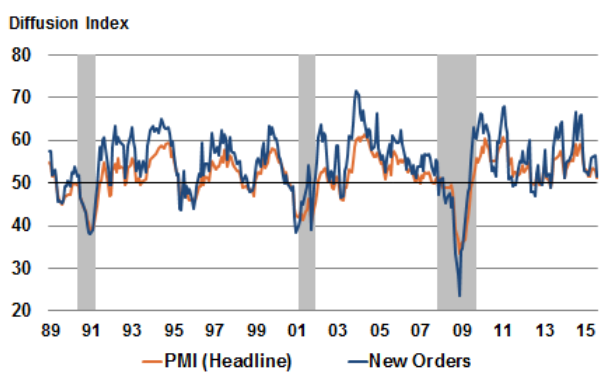


Note: An index of 0 or over indicates that manufacturing is expanding, while an index below 0 indicates that it is declining.

Source: Federal Reserve Bank of Dallas

Business conditions deteriorated and optimism waned in Texas according to the Federal Reserve Bank of Dallas. The **Texas manufacturing survey** index for general business activity continued to fall in August by 11.2 points to -15.8, suggesting contraction at a faster pace. Contraction slowed, however in the key production component. Looking ahead over the next six months, the index for future business activity fell from 18.8 to 3.4, suggesting a slower expansion in the months ahead. *The chemical industry is an important part of the manufacturing base in Texas. With shipments of $165.9 billion, Texas is the largest state chemical industry and would be fifth largest in the world.*

ISM Manufacturing Survey

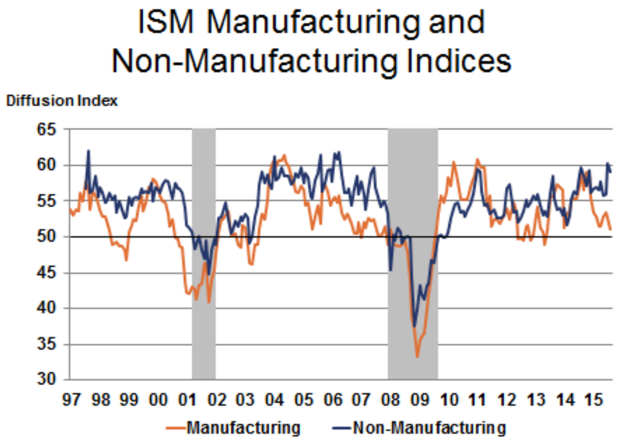


Source: Institute for Supply Management

The Institute for Supply Management (ISM) reported that manufacturing activity expanded in August for the 32nd consecutive month. The headline **ISM purchasing managers index (PMI)** slipped 1.6 points to 51.1 in August, a weaker than expected showing. With this type of diffusion index, a reading above 50 indicates expanding business activity, while a reading below 50 signals contraction. This is the second consecutive decline in the PMI and marks the slowest pace since May 2013. The production index rose 2.0 points to 56.0, a good pace. Important for future production, the new orders index fell 2.4 points to 53.6. The index for inventories retreated by 1.0 points (to 48.5) and suggests that inventories are being drawn down. That said more respondents feel their customers' inventories are too high. The backlog of orders rebounded slightly (by 4.0 points) to a 46.5, a still contracting (and worrisome) trend. The prices paid index fell 5.0 points to 39.0 in August, indicating further contraction of prices. Employment expanded at a slower pace in August, falling 1.5 points to 51.2. Of the 18 manufacturing industries, 10 were reporting growth, six contracted and apparently two were flat. Overall, the report suggests an industrial sector growing at a slower pace. (See www.ism.ws for more details.)

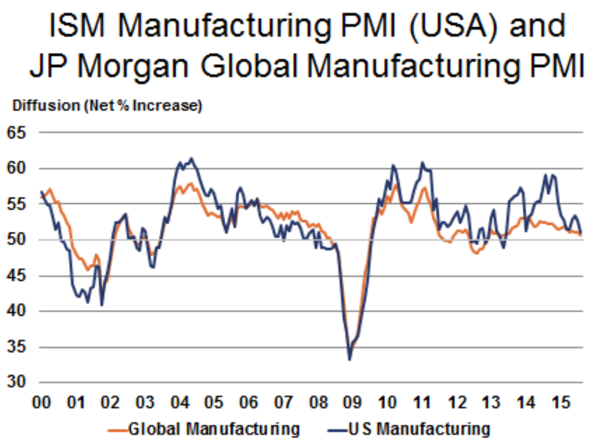
Turning to the business of chemistry, the details in the ISM manufacturing report indicate that the chemical industry was one of the industries that expanded in August. Production expanded as did new orders and the backlog of orders, which is good for future production. Export orders contracted but imports were apparently flat. Inventories contracted during the month and supplier deliveries were noted. Customer inventories were deemed too low. Employment contracted during the month. One chemical industry respondent noted "modest growth slightly ahead of GDP" and that they are "optimistic for the remainder of the year as we have little international exposure". This ISM report is of significance to the business of chemistry because on average, the goods sectors purchase $43 worth of chemistry for every $1,000 worth of output (or revenues). In contrast, the services sectors purchase only $11 for every $1,000 worth of output. As a result, production of basic industrial chemicals and specialties tends to track this PMI fairly well.

The Institute for Supply Management reported that its **Non-Manufacturing PMI** slipped by 1.3 points to 59.0, signaling the non-manufacturing sector (dominated by service industries) expanded at a still good pace in August. It marks the 67th month of expansion. Most encouraging was that order backlogs continued to grow. Export and other new orders and employment also expanded but at a slower rate. The pace of suppliers' deliveries eased in August. According to the ISM, 15 non-manufacturing industries reported growth in August with only one industry (mining – which includes oil and gas) contracting. Respondents' comments continue to be positive about business conditions and the economy. All in all, the report was favorable.



Source: Institute for Supply Management

The **JPMorgan Global Manufacturing PMI** continued to signal lackluster growth in global manufacturing during August, as the global PMI fell by 0.3 point to 50.7 (a reading above 50 indicates expanding business activity, while a reading below 50 signals contraction). Rates of expansion for the US moderated. Gains continued in the Euro Area and Japan and India continued to provide expansion. The main drags were China, Brazil, Russia, South Korea and Taiwan. Manufacturing employment and production increased during the month. The global PMI continues to signal slowly improving global manufacturing activity.



Source: Institute for Supply Management, JP Morgan

NEXT WEEK

Economic reports released next week include consumer credit, import prices and producer prices.

UPCOMING EVENTS OF INTEREST

"Shaping the Future at Chemours"
Mark P. Vergnano, President and CEO
The Chemours Company
9 September 2015
ACS NY Section – Chemical Marketing & Economics
New York, NY
www.cmeacs.org

Platts 5th Annual NGLs Conference and 3rd Annual Petrochemical Seminar
Houston, TX
9-11 September
www.platts.com

8th ICIS World Chemical Purchasing Summit
ICIS
10-11 September 2015
Hyatt Boston Harbor
Boston, MA
www.icisconference.com/worldchemicalpurchasing

"Making Money Investing in Chemicals: a Private Equity Perspective"
Eytan Tigay (Managing Director, Rhône Capital)
Société de Chimie Industrielle Luncheon
16 September 2015
Yale Club of New York
www.societe.org

2nd ICIS Oxo-Alcohols Americas Conference
ICIS
22-23 September 2015
Houston, TX
www.icisconference.com

2015 World Fertilizer Conference
The Fertilizer Institute's (TFI
27-29 September 2015
Westin Copley Place/Fairmont Copley Plaza hotels
Boston, MA
www.tfi.org

57th NABE Annual Meeting
10-13 October 2015
Grand Hyatt Washington
Washington, DC
www.nabe.com

24th Annual FlexPO Conference
"Chemical Industry Game-Changers: What's Next?"
Chemical Market Resources, Inc.
20-22 October 2015
The Woodlands Waterway Marriott
Houston, TX
www.cmrhoutex.com/pages/conferences/flexpo.php

2015 Petrochemical Seminar
Polyolefins Consulting, L.L.C.
6 November 2015
www.polyolefinsconsulting.com

FOR MORE INFORMATION

For ACC members, our section of the members-only extranet, MemberExchange, contains a plethora of data, economic analyses, presentations, outlooks, weekly economic updates, and much more. You can access frequently updated data files (which provide the most recent and historical data for the business of chemistry - including trade data) as well as the economic data that enable you to track worldwide industry trends, follow developments as they unfold and gain insight into the long-term outlook. These include the indicators covered in this weekly report. To request access to the site, go to: https://memberexchange.americanchemistry.com, and select "Economics and Statistics," and complete the registration process.

In addition to this weekly newsletter, ACC offers monthly, semi-annual and annual economic data publications that enable users to track worldwide industry trends, follow developments as they unfold and gain insight into the long-term outlook. These products contain comprehensive statistics and analyses that cover worldwide production, trade, shipments, inventories, price indices, energy, employment, investment, R&D, EH&S, financial performance measures, macroeconomic data, plus MUCH more. To order, call 301-617-7824 or visit ACC online at http://americanchemistry.com/thestore.

CONTRIBUTORS

This weekly economic report is the result of the collective effort of the ACC Economics and Statistics staff. Contributors include:

Dr. Thomas Kevin Swift
Chief Economist & Managing Director
202-249-6180
kevin_swift@americanchemistry.com

Martha Gilchrist Moore
Senior Director- Policy Analysis and Economics
202-249-6182
martha_moore@americanchemistry.com

Heather R. Rose-Glowacki
Director, Chemical & Industry Dynamics
202-249-6184
heather_rose@americanchemistry.com

Emily Sanchez, *Editor*
Director, Surveys & Statistics
202-249-6183
emily_sanchez@americanchemistry.com

Note on the color codes: The banner colors represent observations about the current conditions in the overall economy and the business of chemistry. For the overall economy we keep a running tab of 20 indicators. The banner color for the macroeconomic section is determined as follows:

Green – 13 or more positives
Yellow – between 8 and 12 positives
Red – 7 or fewer positives

For the chemical industry, there are fewer indicators available. As a result we rely upon judgment whether production in the industry (defined as chemicals excluding pharmaceuticals) has increased or decreased three consecutive months).

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