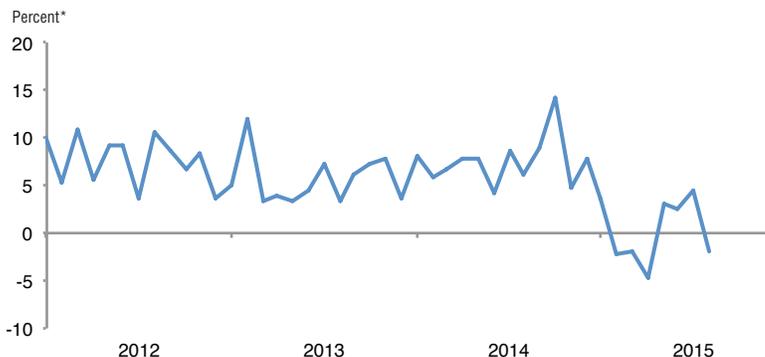


Houston Economic Indicators

DALLAS FED

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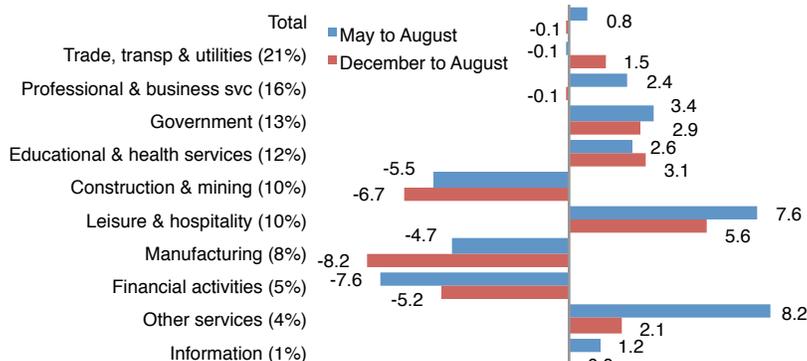
Houston Business-Cycle Index



*Annualized month-over-month growth rate rate in overall economic activity.

► The Houston Business-Cycle Index declined at an annual rate of 1.9 percent in August. July's growth rate was revised down from 5.9 percent to 4.4 percent. Upstream energy (oilfield-related employment and manufacturing) weakness continues to be at least partially offset by strength in downstream energy (refining and petrochemicals). Leisure and hospitality and health care, two sectors driven in part by Houston's robust population growth, also continue to log solid gains. On whole, the outlook for Houston is for job growth to remain flat.

Employment Growth

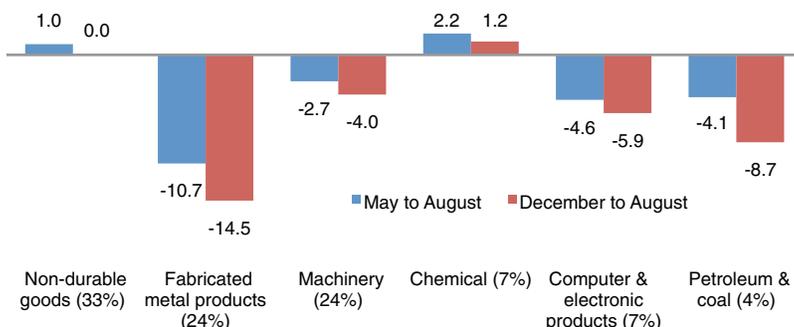


NOTES: Data show seasonally adjusted and annualized percentage growth by industry supersector. Numbers in parentheses represent shares of total employment and may not sum to 100 due to rounding.

► Houston jobs increased at a slight 0.8 percent annual rate from May to August. Other services (auto mechanics, pet grooming, dry cleaning) and leisure and hospitality (restaurants, hotels, arts) were the fastest growing industries over the summer. The sectors that contracted the fastest were financial activities (credit and banking particularly) and construction and mining (mostly in construction). The top two contributors to year-to-date growth have remained leisure and hospitality and health care, adding a combined 18,100 jobs this year, while losses in construction and mining and manufacturing have totaled 29,100 jobs.

► The Houston-area unemployment rate held at 4.2 percent in August despite an increase in the labor force of 3,100 people. August unemployment rates for the U.S. and Texas dropped slightly to 5.1 percent and 4.1 percent, respectively.

Manufacturing Employment

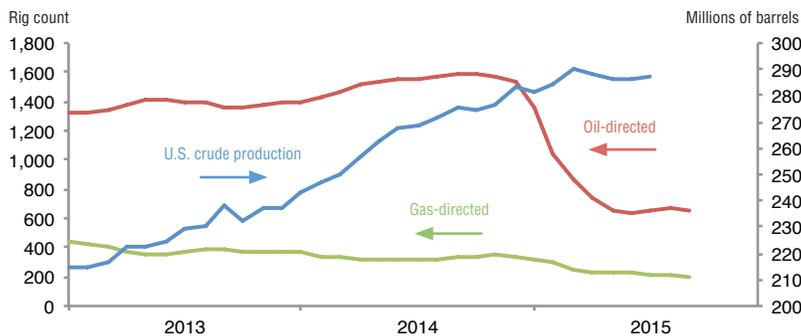


NOTES: Growth rates are seasonally adjusted and annualized. Number in parentheses are percent shares of manufacturing employment.

► Manufacturing lost over 14,000 jobs from December to August. The fabricated metals industry was hit hardest when drilling activity declined by nearly 60 percent in the first half of 2015. Machinery, computer and electronic products, and petroleum and coal industries have also contracted this year. These sectors have been negatively impacted by less drilling activity, lower than expected export growth (due in part to a slowing global economy and strong dollar) and lower expectations for domestic crude production. These negative factors have offset the positive impacts of improvements in the U.S. economy and the boom in chemical production and plant construction.

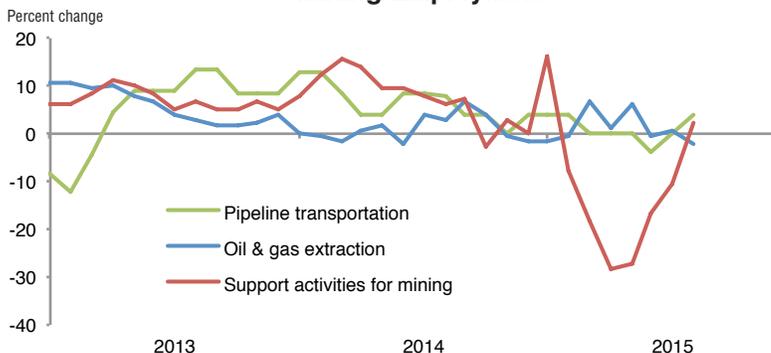
Upstream Energy

Rig Counts and Production



NOTE: Crude production, seasonally adjusted.

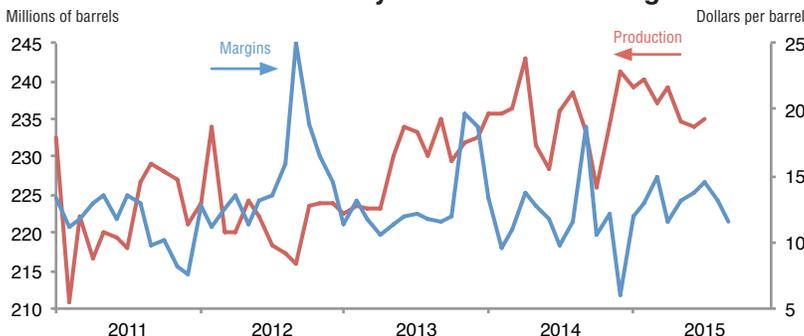
Mining Employment



NOTE: Three-month growth rate, seasonally adjusted and annualized.

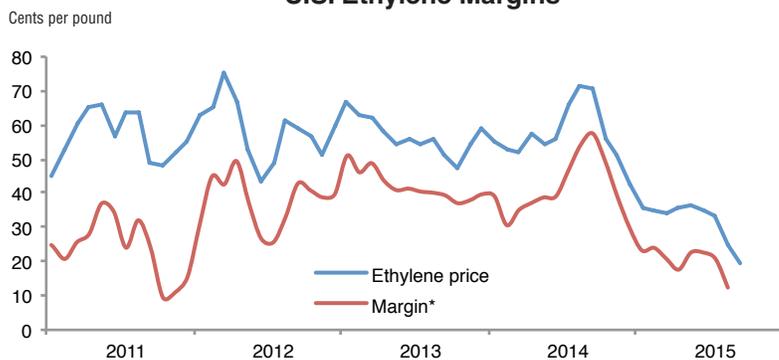
Refining and Petrochemicals

Gulf Coast Refinery Production and Margins



NOTE: Seasonally adjusted.

U.S. Ethylene Margins



*Based on Gulf Coast ethane feedstock prices.

► The monthly U.S. rig count dropped in September after a modest rise in oil-directed rigs in August. There were 650 rigs drilling for oil in September and 198 rigs drilling for gas. U.S. crude production, which peaked in March, plateaued in June and July (the most recent data available) on a seasonally adjusted basis. With robust supplies and concerns about global demand growth, Dallas Beige Book contacts have been broadly indicating that oil prices and drilling will likely be “lower for longer” since midsummer, and access to credit is becoming more difficult for many firms. Thus, another round of industrywide layoffs, as occurred in the second quarter, is likely underway.

► Year to date, declines in Houston energy industry employment have come entirely from support activities for mining (contract and fee-based oilfield services and related—down 5,100 jobs). In contrast, oil and gas extraction and pipeline transportation employment in Houston has increased slightly since December.

► The September average price for West Texas Intermediate crude was \$45.48 and \$2.65 for Henry Hub natural gas.

► Seasonally adjusted refinery production on the Gulf Coast has been falling since December but remains historically high. The price of West Texas Intermediate crude remains cheaper than foreign crudes like Brent, which means that domestic refiners still have a cost advantage relative to foreign competitors. Gulf Coast export volumes of gasoline are healthy, and distillate exports hit record highs in July at nearly 37 million barrels. Margins for refiners are comfortably above historical averages by several measures. The September retail price of regular gasoline was \$2.02 and diesel was \$2.32 per gallon on the Gulf Coast.

► Petrochemicals continue to see erosion in price and margin. Much of the world’s petrochemical prices are impacted by the global price of oil, while U.S. petrochemicals are more closely tied to domestic natural gas. The ratio of the price of oil to natural gas has fallen by over one-third since last summer, eroding some of the cost advantage that domestic producers enjoy when oil prices are high. The strong U.S. dollar has also eaten away at the domestic cost advantage. August ethylene margins at \$0.12 per pound are at their lowest point since November 2011. The September price of ethylene was \$0.20 per pound—the lowest price since 2008. The average price since 2001 is \$0.40. However, the production of basic petrochemicals continues to grow year to year and export volumes through July are up.

SOURCES: **Business-cycle index:** Federal Reserve Bank of Dallas; **employment:** Bureau of Labor Statistics (BLS) and Dallas Fed; **manufacturing employment:** Dallas Fed and BLS; **upstream energy:** Baker Hughes, Dallas Fed and BLS; **refining and petrochemicals:** Energy Information Administration, *Wall Street Journal*, Pace Consulting, *Polymerupdate*, and Muse, Stancil and Co.

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