Drilling Rig Activity Nears Twenty-Year High

Price and Technology Remain Key Drivers of Oil and Gas Drilling Activity

Headwaters Economics

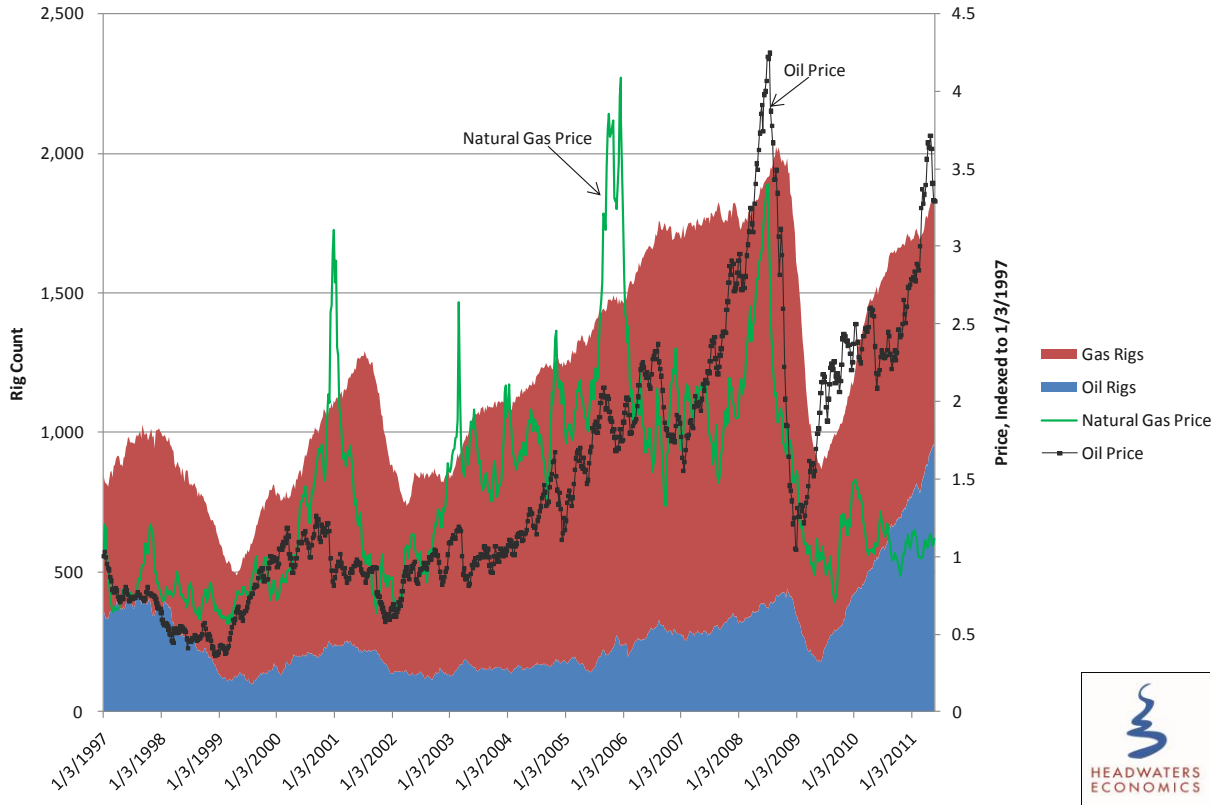
June 20, 2011

National drilling rig counts are an important measure of trends in domestic fossil fuel energy development activity. Because a majority of oil and gas industry jobs are associated with the drilling phase, drilling activity (as measured by rig counts) serves as a good proxy for employment trends. After a mid-recession slump, drilling activity in the United States recovered to levels that were, as of the last week of May, 91 percent of a twenty-year high last reached in 2008.

The following charts illustrate three principles key to understanding what drives oil and gas employment.

1. Oil and Gas Drilling Activity Tracks Fuel Prices

Chart 1: U.S. Rig Count by Target and Natural Gas and Oil Prices
(Weekly, 1/3/1997 through 5/27/2011, includes land and offshore rigs)



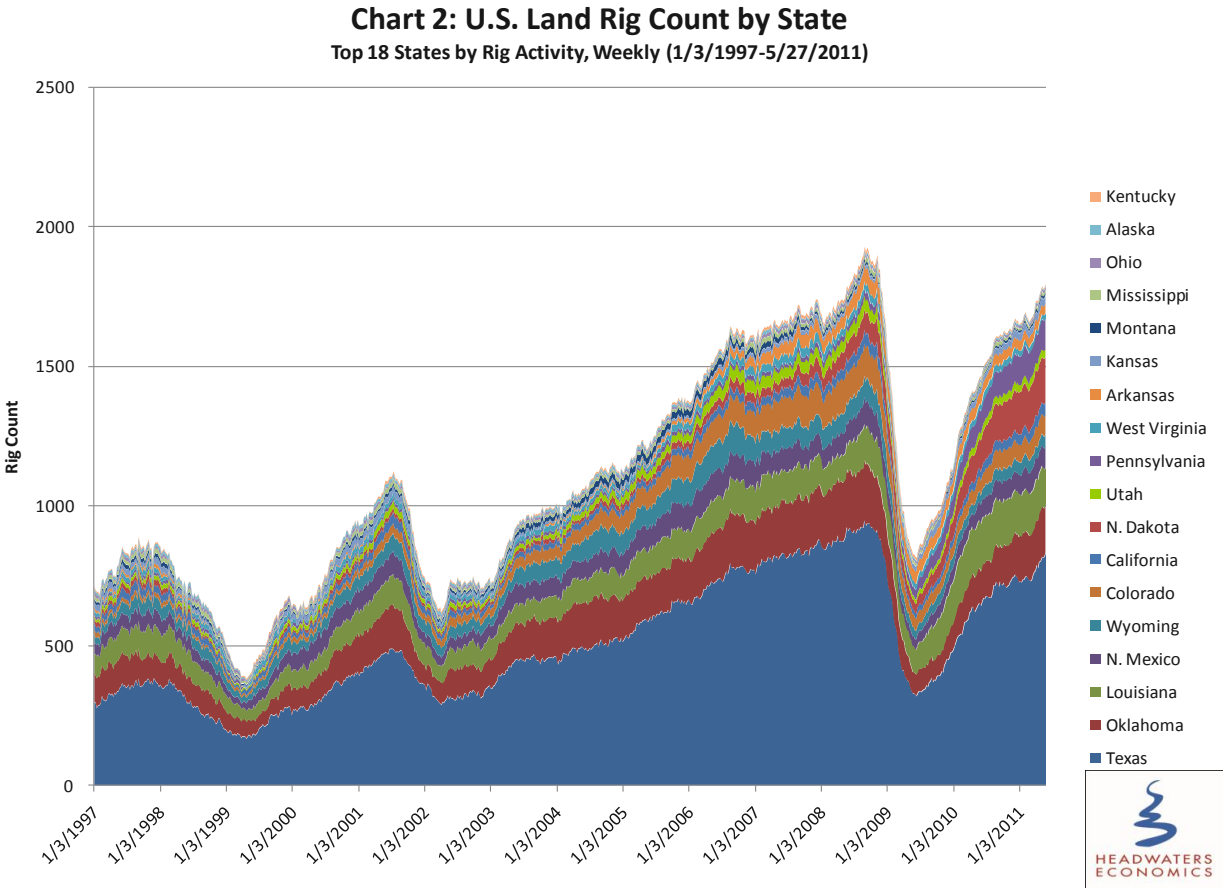
Source: Rig Counts: Baker Hughes, Price data: EIA, Oil: Weekly United States Spot Price FOB Weighted by Estimated Import Volume (Dollars per Barrel)—Adjusted and Indexed to 1/1997; Natural Gas: Weekly Natural Gas Futures Contract 1 (Dollars/Mil. BTUs)—Adjusted and Indexed to 1/1997.

Having averaged about 600 during the 1990s, the number of rotary drilling rigs in operation in the U.S. tripled between 2002 and 2008, reaching a high of 2,031 active rigs in September, 2008. Rig activity plunged in late 2008 in response to the global economic downturn on energy prices. The national rig count has steadily recovered from its June 2009 low (875 total rigs). As of the week of May 27, 2011, the number of active drillings rigs was 1,847.

The recovery has been driven by oil drilling. While only about 15 percent of all active rigs from 2004 and 2008 were drilling for oil, the share of all active rigs drilling for oil has climbed steadily since late 2009 from 30 to more than 50 percent. This corresponds with a tripling in the price of oil between early 2009 and May 2011 (as compared to natural gas price, which has not recovered since the recession).

2. Development Occurs Where and When Resources are Prime

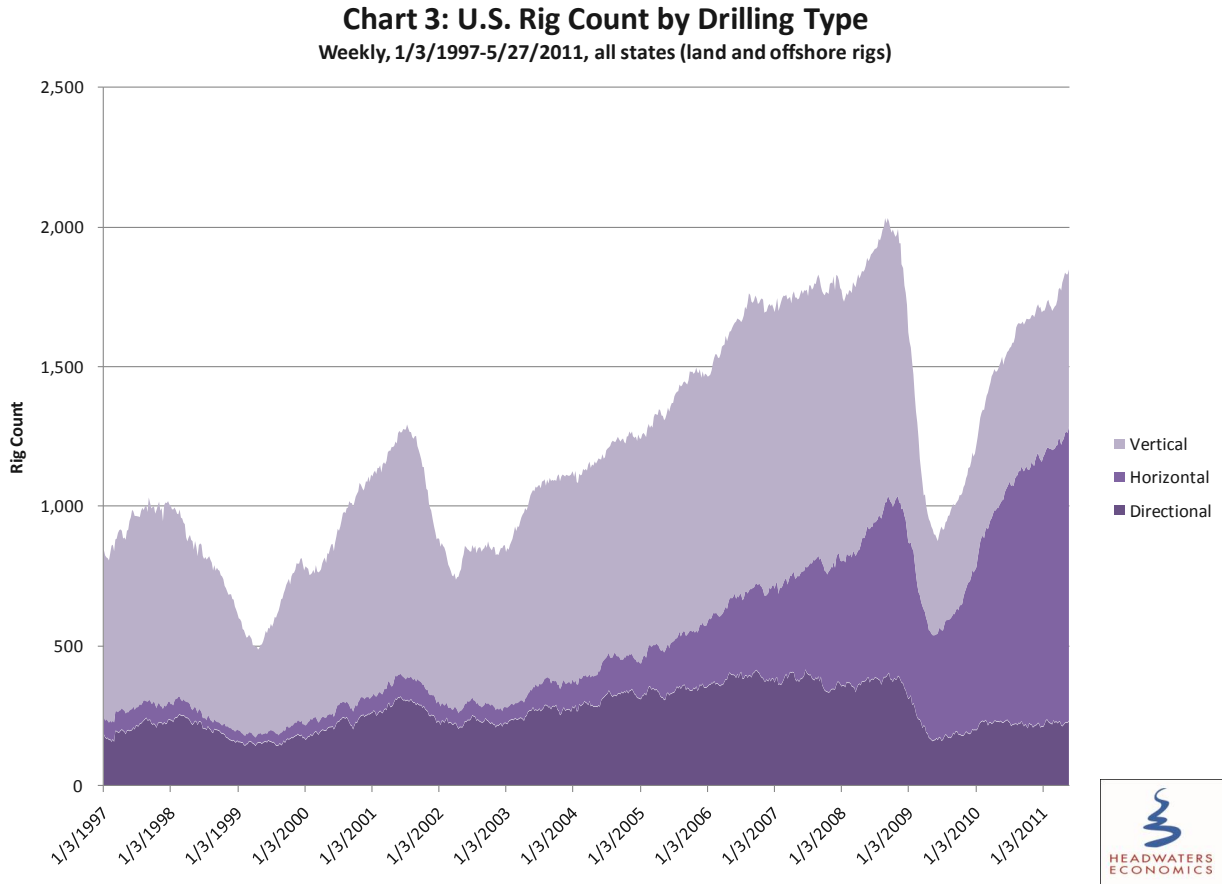
Chart 2 tracks the location of land-based drilling by state from January 1997. This chart demonstrates the continued dominance of Texas, Oklahoma, and Louisiana in fossil fuel production in the United States. As of May 27, 2011, 63 percent of all land-based drilling activity in the U.S. was occurring in these three states.



Source: Rig Counts: Baker Hughes. The 18 states shown here were selected based on having an average weekly drilling rate greater than 5 for the period 1/3/1997 to 5/27/2011. They are displayed on the chart in order, with Texas having the greatest average weekly drilling rate and Kentucky the lowest for the period noted.

Another striking trend is the expansion of rig activity in North Dakota and Pennsylvania, trends that underlie the strength of price in driving the location of drilling activity. While both states are undergoing a boom, the rig count in North Dakota—where the target is oil—has quadrupled since mid-2009. In Pennsylvania—where the target is shale gas—the rig count has doubled since mid-2009. As of May 27, 2011, North Dakota claimed nine percent of all land-based rig activity in the U.S., Pennsylvania six percent.

The location of drilling activity corresponds to opportunities created by price and the applicability of available technologies to specific geological resources. Since 2000, the industry's growing experience with unconventional resource plays and tools like horizontal drilling and hydraulic fracking has encouraged the expansion of oil and gas development in many regions of the U.S. West. Chart 3 shows the growing importance of horizontal drilling—a key tool in recovering oil and gas from unconventional plays—to the industry.

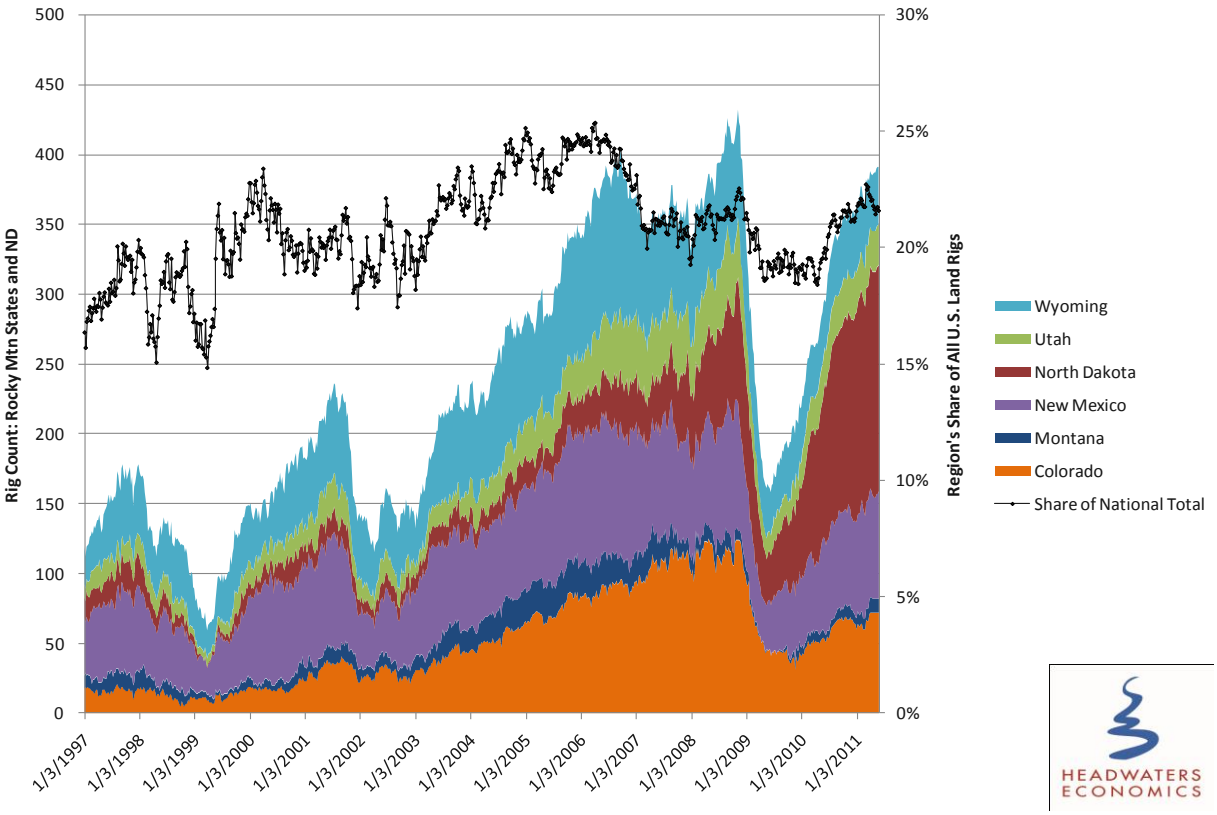


Source: Rig Counts: Baker Hughes.

3. Rockies' Share of Drilling Has Not Changed, but Depends Now on Unconventional Oil

Rig activity in the Rocky Mountain West and North Dakota mirrors national trends. Rig numbers doubled between 2002 and 2008 in Wyoming, Utah, New Mexico, Montana, Colorado, and North Dakota, and reached a twenty-year high of 432 in November 2008. The region lost rigs from December 2008 through June 2009. Since July 2009, the rig count has climbed steadily, reaching 391 in late May of this year.

Chart 4. Rig Counts in Rocky Mountain States and North Dakota
(Weekly, 1/3/1997 through 5/27/2011)



Source: Rig Counts: Baker Hughes.

Since 1990, the region's share of all U.S. drilling rigs has been about 20 percent, ranging from lows around 15 percent in the 1990s to a high of 25 percent at the height of the recent natural gas surge. Currently, about 21 percent of all U.S. land-based rigs are located in the five Rocky Mountain energy states (CO, MT, NM, UT, and WY) and North Dakota. While the region's share of rigs has not changed much, the share among individual states has.

In the region, recent drilling activity has demonstrated the strong role of price and technology in determining the viability of extraction activity in unconventional resources. Rigs have moved between states, as between New Mexico and Colorado, as known plays such as coalbed methane in the San Juan Basin have matured and newer plays like natural gas fields in the Piceance Basin have emerged. Meanwhile, since the recession, oil has been the key factor leading the return of rigs, with North Dakota now claiming a larger share of rig activity than did any other state in the region even during the height of the 2003-2008 boom.

If it were not for North Dakota's oil boom, the region would only have about 15 percent of all rigs today. North Dakota is leading rig recovery in the region because high oil prices have remained above the breakeven point for expensive, technology drilling for oil in the Bakken Formation.

Conclusions

Oil and gas drilling activity has made a strong recovery since reaching a recession-induced low in late 2008. Nationally, drilling activity is at 91 percent of a twenty-year high last reached during the 2008 natural gas surge.

When it comes to land-based oil and gas drilling in the United States, there is little evidence that state and federal regulations are hampering industry's ability to respond to market signals. Price and the "primeness" of resource plays, determined by how well resource qualities fit with drilling and production technology, are the key drivers of the location of drilling. That drilling activity has recovered so quickly, and the location of new activity, suggest strong capacity on the part of industry to respond to market opportunities.

The level of drilling activity is a good indicator of trends in oil and gas employment. The location and pace of drilling is sensitive to a variety of factors, primarily price but also technology and the discovery of new resource plays. Drilling activity can shift quickly between geographies and resource types. The mobility of drilling activity helps to explain why energy-producing areas can be so hard hit by boom-bust cycles of energy development.

Specific state details and rig data available upon request

Contact: Julia Haggerty
Julia@headwaterseconomics.org
406.600.1766

Rig counts are sourced from Baker Hughes,
http://investor.shareholder.com/bhi/rig_counts/rc_index.cfm.

For more detailed information, please see our recent report:
Headwaters Economics, 2011. Fossil Fuel Extraction and Western Economies.
http://headwaterseconomics.org/energy/western/maximizing-benefits/