Bakken activity: How wide is the ripple effect?

By DULGUUN BATBOLD
Research Assistant

ROB GRUNEWALD
Economist

The Bakken oil boom has led to strong growth in employment and record low unemployment rates in that region. Tight labor markets and high wages in the Bakken have also given rise to countless anecdotes from business owners complaining of difficulty finding qualified workers and having to pay higher wages to keep them.

But how big is the impact of Bakken activity, and how far does it reach?

To assess the Bakken effect, county-level data on average weekly wage growth and unemployment rates were compared relative to a county's distance from the Bakken. The data are plotted in 100-mile concentric circles moving away from the 12 counties at the core of oil country (see map).

Not surprisingly, the strongest wage growth and lowest unemployment occurred in the immediate Bakken area, where average weekly wages have increased 140 percent since 2001, and unemployment has fallen to under 2 percent. From there, the effects dissipate (see Charts 1 and 2). Counties within 100 miles of the Bakken experienced the next-largest increase in wages and the next-lowest level of unemployment. At distances farther than 100 miles, the Bakken effect continues to show up with unemployment rates. For example, counties within 100 to 200 miles saw higher unemployment than those within 100 miles, but lower unemployment than those beyond 300 miles.

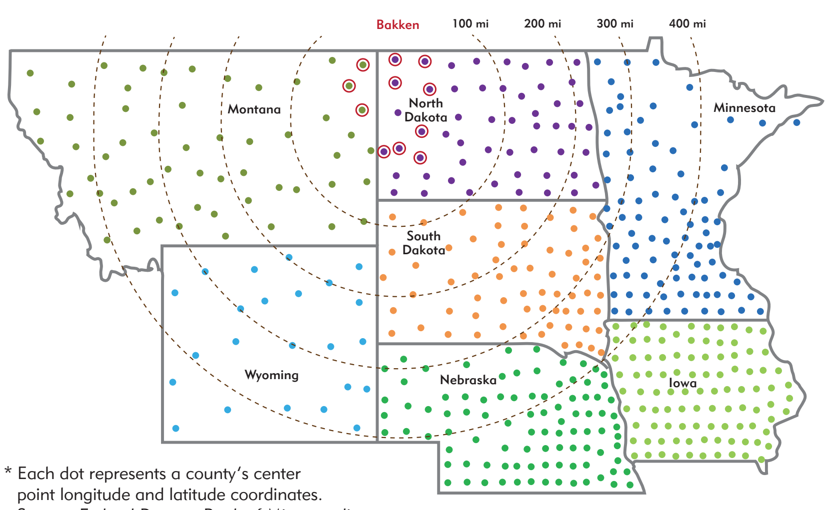
Interestingly, wage growth shows no additional Bakken effect after 100 miles. That is, counties 100 to 200 miles away have lower wage growth than those within 100 miles, but about the same wage growth as counties 200 to 300 miles away and those 300 to 400 miles away. This suggests that the Bakken reach, in terms of distance, is greater with respect to unemployment and less so with respect to wages.

This ripple effect on wages has been fairly recent, however. Wage growth in the Bakken began to separate from other counties in 2004 and accelerated after 2005, the start of the oil boom (see Chart 1). But wage growth in counties up to 100 miles away from the Bakken didn't separate from other non-Bakken counties until 2009.

Unemployment rates across these areas looked quite similar in 2003 and continued lower in a fairly tight band until about 2008. But a notable divergence sprouted in 2009. While rates went up across the board, they rose faster in relation to the distance from the Bakken. Beginning in 2010, unemployment rates started falling, but did so much faster in Bakken counties, and there is now a much wider spread of unemployment rates that adhere closely to the distance from the Bakken (see Chart 2).

As distance increases, many other factors likely explain wage gains or unemployment rates relative to distance from the Bakken. For example, more agriculture-intensive counties are also benefiting from the strong farm sector. Nevertheless, the negative correlation between wage growth and distance from the Bakken, as well as the positive correlation between unemployment and distance from the Bakken, has been growing stronger over time (see Chart 3).

Coordinate map of counties surrounding the Bakken*

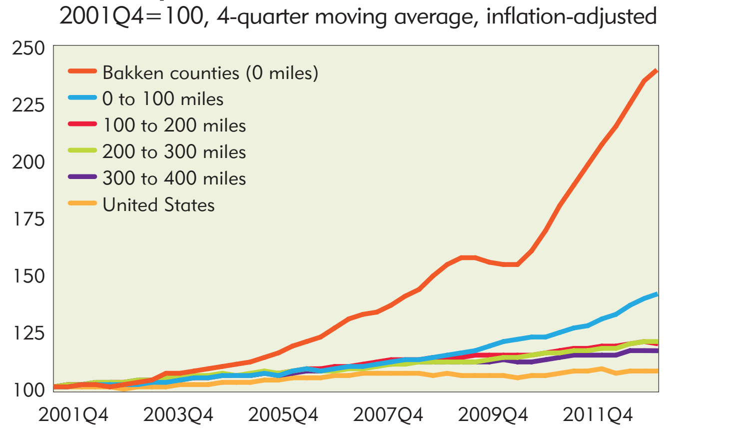


* Each dot represents a county's center point longitude and latitude coordinates.
Source: Federal Reserve Bank of Minneapolis

Chart 1

Index of average weekly wages by distance from the Bakken*

2001Q4=100, 4-quarter moving average, inflation-adjusted



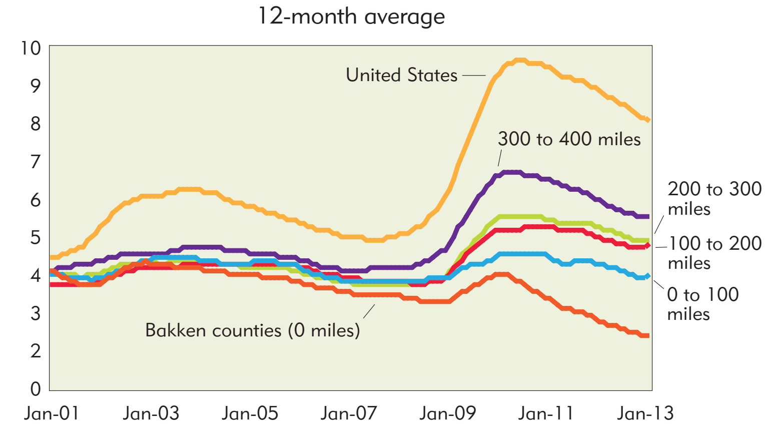
*Limited to counties in Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota and Wyoming. Bakken area counties: Billings, Burke, Divide, Dunn, Golden Valley, McKenzie, Mountrail, Stark and Williams in North Dakota and Richland, Roosevelt and Sheridan in Montana; distance is calculated using center point longitude and latitude coordinates of counties. Averages weighted by employment levels.

Source: Estimates based on Bureau of Labor Statistics, QCEW data

Chart 2

Unemployment rate by distance from the Bakken*

12-month average

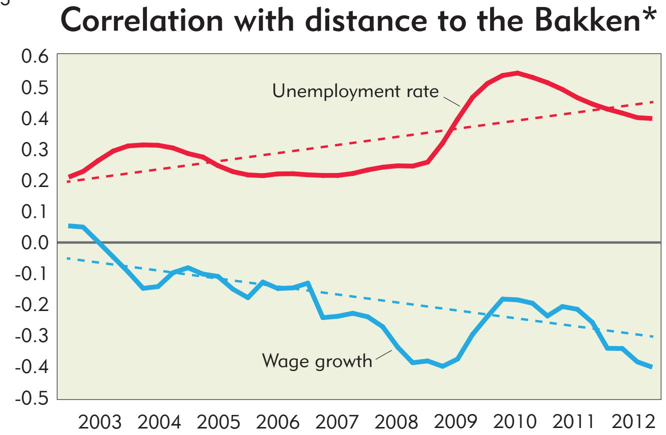


*Limited to counties in Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota and Wyoming. Bakken area counties: Billings, Burke, Divide, Dunn, Golden Valley, McKenzie, Mountrail, Stark and Williams in North Dakota and Richland, Roosevelt and Sheridan in Montana; distance is calculated using center point longitude and latitude coordinates of counties. Unemployment rates calculated for each area.

Source: Estimates based on Bureau of Labor Statistics, LAUS data

Chart 3

Correlation with distance to the Bakken*



*Limited to counties in Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota and Wyoming. Bakken area counties: Billings, Burke, Divide, Dunn, Golden Valley, McKenzie, Mountrail, Stark and Williams in North Dakota and Richland, Roosevelt and Sheridan in Montana; distance is calculated using center point longitude and latitude coordinates of counties. Wage growth represents year-over-year percent change in 4-quarter average weekly wages; unemployment rate is 12-month moving average.

Source: Based on data from Bureau of Labor Statistics, QCEW and LAUS