THE MACRO BULLETIN
Macroeconomic research from the FEDERAL RESERVE BANK *of* KANSAS CITY
MARCH 3, 2016

The Reallocation of Energy-Sector Workers after Oil Price Booms and Busts

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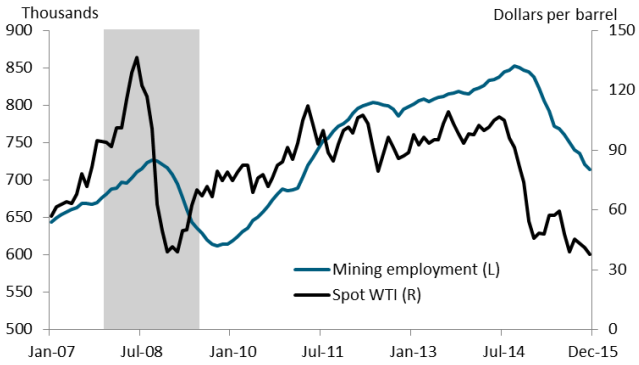
Over the past year, the mining sector lost 140,000 jobs, the majority of which were related to oil and gas extraction. This loss outstrips even the loss of mining employment during the Great Recession. We compare the two episodes and find substantial differences in workers' job opportunities and earnings. Overall, workers appear to have had an easier time finding other employment over the past year than they did during the recession. In addition, more workers who left the mining sector in the past year saw their earnings increase than those who stayed.

In the mid-2000s, a perfect storm of new technology and rising energy prices led to the rapid development of oil and natural gas across several regions of the United States. This development boosted growth in mining employment until midway through the Great Recession (Chart 1). The price of oil dropped from $136 per barrel in mid-2008 to a low of just under $39 per barrel toward the beginning of 2009; consequently, mining employment plummeted by 115,000. As the price of oil increased following the recession, mining employment quickly ramped back up and continued to increase over the next five years.

Chart 1: WTI price and mining employment



Sources: Energy Information Administration, Chicago Mercantile Exchange, Bureau of Labor Statistics, and Haver Analytics.

In mid-2014, the price of oil peaked again near $107 per barrel, but dropped dramatically as the market reacted to an imbalance between global supply and demand of oil. After a brief rebound in early 2015, the price of oil dropped further, perhaps due to concerns the imbalance between supply and demand would persist. Mining employment responded dramatically: after peaking in September 2014 at 852,500, payrolls fell by nearly 140,000 by the end of 2015.

While the mining sector lost more jobs in the past year than in the Great Recession, the broader macroeconomic climate has improved. For instance, the unemployment rate was 5 percent in 2015:Q4 compared with 9.9 percent in 2009:Q4. To contextualize the recent downturn, we investigate how mining workers' employment and earnings changed over the past year compared with the Great Recession.

We use information from the Bureau of Labor Statistics's Current Population Survey (CPS) to follow individual mining workers over time. Individual respondents to the CPS are interviewed eight times over two years, allowing us to observe changes in their employment status, industry of employment, occupation, and earnings from one year to the next. To match the same individual from one year to another, we follow an approach described by Madrian and Lefgren. We first identify respondents who were employed in the mining sector at its peak employment level in September 2014. We then identify these same respondents in September 2015 to observe whether their employment and related factors changed. To compare the recent

period of falling oil prices with that of the Great Recession, we repeat this exercise for the prior peak in mining employment in September 2008.

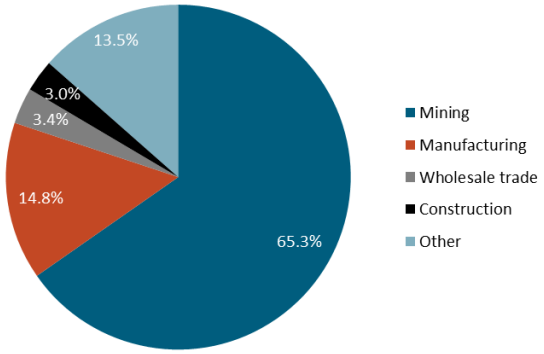
To follow workers in the mining sector across both expansions and contractions, we also construct an average of year-over-year comparisons for the month of September from 2009 through 2014, when the mining sector was growing. Finally, we compare an average of year-over-year comparisons for October through December 2014 with October through December 2015, when mining employment continued to decline.

Although the mining sector lost more jobs from 2014 to 2015 than from 2008 to 2009, separated workers appear to have had a more difficult time finding new employment during the recession. From September 2008 to 2009, 7.3 percent of respondents became unemployed. In contrast, during the years when mining employment was growing (2009–14), on average only 1.2 percent of respondents became unemployed from year to the next. More recently, from September 2014 to September 2015, 4.2 percent of respondents became unemployed.

Mining workers' transition to other sectors differed somewhat during the recession, when the overall U.S. labor market was in worse shape. About two-thirds of those employed in the mining sector in September 2008 were still working in the sector a year later; workers who left the sector mostly went into manufacturing (Chart 2). In contrast, slightly less than two-thirds of those employed in the mining sector in September 2014 were still working in the sector a year later, and those who left moved into a broader range of sectors including manufacturing, transportation and warehousing, and construction, consistent with a healthier labor market (Chart 3).

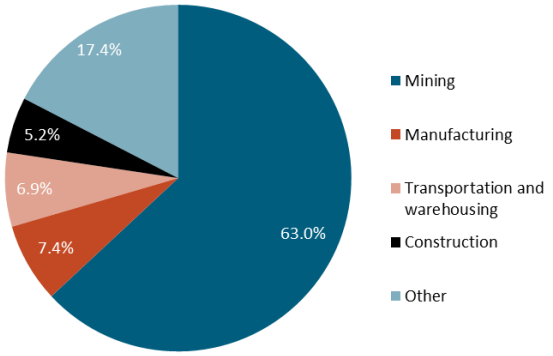
Workers' earnings also differed between the 2008–09 and 2014–15 periods. Much of this difference depended on whether workers stayed in or left the sector. In September 2009, 44.6 percent of workers who stayed in the sector saw their earnings decline (Chart 4) compared with 63.4 percent of workers who left the sector (Chart 5). When mining employment was growing (2009–14), workers were more evenly split between increased and decreased earnings. However, as job losses continued in the later months of 2015, the percentage of respondents

Chart 2: Employment sectors of September 2008 mining workers, one year later



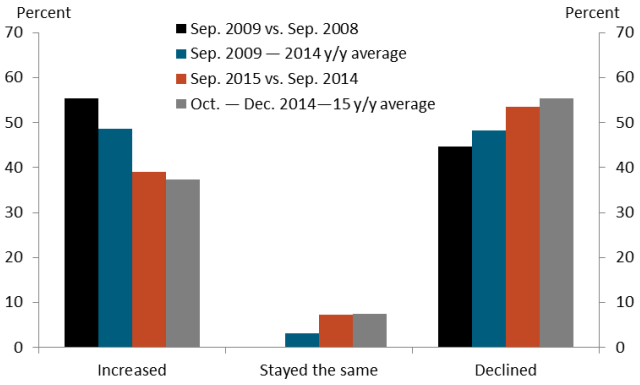
Sources: Current Population Survey, Census Bureau, Bureau of Labor Statistics, and authors' calculations.

Chart 3: Employment sectors of September 2014 mining workers, one year later



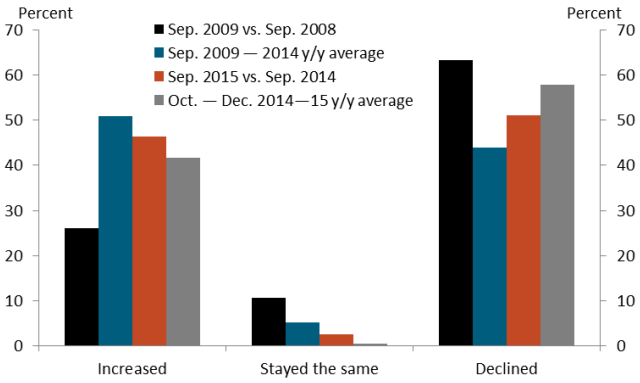
Sources: Current Population Survey, Census Bureau, Bureau of Labor Statistics, and authors' calculations.

Chart 4: Earnings if respondent stayed in mining sector



Sources: Current Population Survey, Census Bureau, Bureau of Labor Statistics, and authors' calculations.

Chart 5: Earnings if respondent left mining sector



Sources: Current Population Survey, Census Bureau, Bureau of Labor Statistics, and authors' calculations.

who reported higher earnings decreased, while the percentage reporting lower earnings increased regardless of whether they stayed or left mining (Charts 4 and 5).

The main takeaway from this analysis is that with respect to earnings, mining workers were better off on average if they were able to remain in mining during the recession. However, this pattern appears to have reversed more recently. Workers who left mining over the past year saw increased earnings over those who stayed. One important caveat is that we do not observe mining workers who switched their residency while in the sample: the CPS is a household survey, and thus does not capture individuals who move after they were initially surveyed. As a result, we cannot track how individuals' earnings changed if they moved to another location. However, the general trends we observe are consistent with what we would expect in a year in which the U.S. labor market was healthier, making it easier for workers to find other employment compared with the recession.

References

Madrian, Brigitte C., and Lars J. Lefgren. "An Approach to Longitudinally Matching Current Population Survey (CPS) Respondents," *Journal of Economic and Social Measurement,* vol. 26, pp. 31–62.

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