

LABOR MOBILITY IN THE ENERGY INDUSTRY: EVIDENCE FROM THE SHALE BOOM

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Overview

Of central interest to policy makers have been the socioeconomic impacts of oil and gas exploration and production activity. This area has experienced renewed attention over the past decade with volatility in the price and production of both oil and natural gas in the United States. Increased activity in extractive industries represents a positive labor demand shock to resource-rich areas that leads to increased wages and employment. In addition, empirical evidence suggests that such shocks will impact education, land values, and safety, among other things.

Migration and workforce mobility, however, are important, albeit understudied, outcomes of resource-related economic activity. The reasons underlying a dearth of empirical evidence on this topic are threefold. First, observational and anecdotal evidence suggest that extraction workers are more mobile than the general working population. For example, “fly-in fly-out” scheduling means that many workers may live and work in geographically distant regions, resulting in a large temporary workforce in resource-rich areas. Second, this mobility contributes to the presence of temporary workers in resource-rich areas. Given the presence of temporary workers, there is a need to separately estimate the effects of labor demand shocks on permanent and temporary migration, the latter of which is particularly difficult to measure. Third, complicated by the other issues mentioned, industry-specific data on migration have been generally unavailable or unsuitable for such analysis. The purpose of this study is to examine the impact of the shale boom on temporary migration in oil-rich regions.

Methods

To provide estimates of both temporary migration and labor force mobility in extractive industries, I will use a newly public data series from the United States Census Bureau. Compiled by the Census, the Longitudinal Employer–Household Dynamics (LEHD) data contain detailed administrative and survey data on local labor markets. The data link many datasets containing firm and worker information to provide detailed data on a worker’s home and workplace as well as other characteristics.

The LEHD Origin-Destination Employment Statistics (LODES) data are organized in three parts. The Origin-Destination (OD) data contain job totals for home and work Census block pairs. The Residence Area Characteristics (RAC) and Workplace Area Characteristics (WAC) contain job totals for residence and workplace, respectively. In addition, each dataset contains broad measures of income and industry of employment for the relevant geographic area. One potential disadvantage is the lack of specific industry of employment. Industry is broken down into three broad categories – goods producing industry sectors (includes oil and gas extraction), trade, transportation, and utilities industry sectors, and all other industry sectors. These data are available for nearly all states from 2002 through 2013, so the study of historical resource shocks is not possible.

Given some of the challenges we face in measuring temporary workers and labor force mobility, particularly in the extractive industries, this relatively new data may help us to better understand labor force responses to economic shocks, especially those that may be industry-specific in nature. I plan to study this by examining the commuting patterns of those in the goods-producing industries as well as those working in resource-rich areas.

To overcome the challenges outlined above as well as empirical challenges outlined in previous studies (Black et al., 2002 and Vachon, 2015, among others), I will implement an instrumental variables (IV) strategy that is based on natural variation in county-level reserves and time-series variation in oil prices.

Results

Preliminary empirical estimates as well as anecdotal evidence suggest a large temporary labor migration response to the oil boom, especially in North Dakota.

Conclusions

In this paper, I exploit exogenous variation in local labor market conditions to estimate the impact of economic growth on temporary migration. The boom in oil production that began in the early 2000s created an unexpected labor demand shock that increased earnings for oil counties across the country. Overall, preliminary evidence suggests that this earnings growth led to significant, large increases in temporary migration. This paper contributes to our knowledge of energy labor markets, an increasingly important topic in today's energy climate. In addition, this research contributes to a growing empirical literature that examines the impact of natural resources on local economic conditions.

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