The Economic Consequences of Hydraulic Fracturing

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Abstract

The discovery of hydraulic fracturing, which has allowed for the extraction of natural gas and oil previously trapped in shale deposits, is the most important change in the energy sector since the commercialization of nuclear energy in the 1950s. It has greatly increased US energy production, created economic opportunity in weak economic times, altered geopolitics, and yet local communities that control access to the resources have had mixed reactions with many banning it. This paper uses detailed data from shale basins across the US to estimate the local impacts of fracturing, relying on differences in underground geological characteristics to estimate the causal effects of fracturing on local economic activity. There are four primary findings. First, counties with high fracturing potential produce roughly an additional $250 million of oil and natural gas annually three years after the discovery of successful fracturing techniques, relative to other counties in the same shale basin. Second, these counties experience marked increases in economic activity with gains in per capita income, employment, and salaries. Third, there is a large increase in the share of the population accounted for by men 18-39 but little evidence of a change in crime rates. Fourth, we examine the housing market to assess the net welfare consequences of fracturing on local communities. We document a roughly 6% increase in housing prices, a sharp increase in the construction of new housing units, and a statistically insignificant decline in the acres of agricultural land (presumably converted to residential uses) that together point toward positive average welfare consequences for the people living in these communities before fracturing was initiated.