



Did the U.S. Fracking Boom Shale-Shock Regional Patenting?

The U.S. shale boom, beginning in the early 2000s, transformed the nation into an energy powerhouse and significantly disrupted local economies in shale-rich areas. Researchers at NERCRD, Penn State University and Iowa State University examined the impacts of the U.S. shale boom on regional patenting at a commuting-zone level. Because patents can serve as an indicator of innovation activity, this research provides valuable insights into the long-term effects of natural resource extraction booms on innovation and economic growth.



Key Findings of the Research

- While shale-rich areas experienced short-term economic benefits, the boom may have hampered long-term, innovation-induced economic growth.
- Areas with higher drilling densities have lower levels of patented innovation compared to areas where drilling does not occur.
 - A one standard deviation increase in non-vertical well density decreases patent intensity by 3.74% of the mean.
- The shale boom may have widened the innovation gap between shale-rich and shale-infeasible areas in the U.S.
- Several mechanisms may explain the negative impact on patenting:
 - Decreased local college attainment
 - Altered composition of workers across industries
 - Crowding out of capital investment in more innovative industries
 - Potential regional limitations on venture capital
 - Deterioration of local amenities, making areas less attractive to high-skilled workers

Additional Resources

- Han, Luyi and John V. Winters. 2024. Did the U.S. Fracking Boom Shale-Shock Regional Patenting? *Growth and Change: A Journal of Urban and Regional Policy*, Forthcoming.