Rural Wealth Creation and Emerging Energy Industries

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The views expressed are those of the presenter and do not reflect the positions of the Federal Reserve Bank of Kansas City or the Federal Reserve System.
Background

• Rural economic development is a perennial challenge in the U.S.

• Decline in farm population lead to need for alternative sources of employment and income (Irwin et al., 2010)

• Earlier strategies depended upon (Deller and Goetz, 2009)
  • natural resource uses, e.g., mining, forestry
  • recruitment of manufacturing sectors, e.g. clusters
  • picking “winners” vs. “losers” (Partridge, 2013)

• Attracting people to rural areas (Pender, Marre, Reeder, 2012)
  • Tourists, retirees, commuters, the creative class, entrepreneurs
  • Based on idea that jobs follow people rather than people always follow jobs
Recent Work


• “Capturing Rents from Natural Resource Abundance: Private Royalties from U.S. Onshore Oil and Gas Production” with Tim Fitzgerald and Jeremy Weber. In progress.
Wealth Creation Framework

Energy Demand & Supply Drivers (population, income, exchange rates, OPEC policies, etc.)

Federal, State, and Local Government Policies

New Energy Development (oil & gas, wind, etc.)

New Technology (horizontal drilling, fracking, wind turbine technology)

Energy Markets and Prices

Energy Payments (leases and royalties)

Local wealth
- Natural resources
- Natural amenities
- Human capital
- Physical capital/Infrastructure
- Financial capital
- Social capital

Ownership of Land and Mineral Rights

Local Property Values

Landowners’ Income

Consumption, Savings, Investment

Landowners’ Wealth
Context plays an important role

• Economic potential of rural economic development strategies depends on:
  • Temporal and spatial economic, institutional, and policy context

• Recent boom in oil and natural gas production
  • Combination of technology, geography, and prices
  • State and local governments have encouraged or slowed/stopped development (e.g., Oklahoma vs. New York)
    • Taxes on production, tax breaks, bans on drilling, etc.

• Locals pursuing energy resources are vulnerable to changes in contextual factors
Local endowments and interactions of wealth

- Local endowments of multiple types of wealth and their interactions affect:
  - feasibility and desirability of particular strategies

- Local endowments of oil and gas
  - Also requires local infrastructure
  - Water for hydraulic fracturing
  - Treatment and storage options for waste

- Residents and institutions have strong incentive to ensure part of private gain from using public infrastructure and natural resources supports infrastructure maintenance

- New tax revenue from energy development may enable public investment in other kinds of assets
  - Improvement to schools, training programs, parks, etc.
Local ownership of assets effects outcomes

- Most initial labor related to oil and gas development comes from outside of the area

- Over time, local firms and residents tend to supply a larger share of materials and labor (Marcellus Shale Education & Training Center, 2011)

- Weber (2012) found that for counties in Colorado, Texas, and Wyoming with each $1 million in natural gas production generated $91k in local wage and salary income

- Local residents are more likely to spend or invest locally than out-of-state workers and business owners

- Local ownership of oil and gas mineral rights varies substantially across the United States (Fitzgerald, 2014)
Feedback effects on different types of wealth

• Long-term effects from unconventional drilling are unknown

• Broader literature has highlighted bust effects can be larger than boom in the case of coal mining (Black et al. 2005)

• Long-lasting positive effects have been documented in oil-producing counties (Michaels 2010)

• May encourage dropping out of secondary education (Cascio and Narayan, 2015)

• Changes to natural amenities and overall quality of life can make an area less attractive
Oil & Gas Royalty Income Example

- Leasing data are from DrillingInfo
  - nearly 1.8 million private leases from around the country

- Estimate that six major plays generated $39 billion in royalties in 2014

- In more rural areas, royalties rival
  - Government transfer payments
  - Federal farm commodity programs

- Percentage of mineral rights held by county residences varies substantially across shale plays, 12 to 55 percent
Shale Plays

Source: Energy Information Agency
Value of Production & Royalty Rates by Play

Source: Authors’ calculations
Local Ownership & Local Value of Production

Source: Authors’ calculations
## Royalty Income Estimates, 2014

<table>
<thead>
<tr>
<th>Shale Play</th>
<th>Bakken</th>
<th>Eagle Ford</th>
<th>Haynesville</th>
<th>Marcellus</th>
<th>Niobrara</th>
<th>Permian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalty income ($ per capita)</td>
<td>27,414</td>
<td>12,007</td>
<td>1,811</td>
<td>431</td>
<td>739</td>
<td>9,768</td>
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<tr>
<td>Local royalty income ($ per capita)</td>
<td>4,148</td>
<td>2,942</td>
<td>398</td>
<td>236</td>
<td>224</td>
<td>1,161</td>
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<tr>
<td>Govt. transfers ($ per capita)</td>
<td>6,455</td>
<td>6,712</td>
<td>8,345</td>
<td>9,146</td>
<td>5,652</td>
<td>6,997</td>
</tr>
<tr>
<td>Federal farm payments ($ per capita)</td>
<td>587</td>
<td>33</td>
<td>10</td>
<td>9</td>
<td>44</td>
<td>186</td>
</tr>
</tbody>
</table>

1 BEA REIS; 2 2012 Census of Agriculture

Source: Authors’ calculations
Conclusion

• Context plays a key role in economic development

• Local ownership of assets has large influence on overall effect of natural resource extraction

• Long-term effects from unconventional drilling are unknown

• Greater need for research on environmental and quality of life effects
  • Limited data is a significant challenge

• Need for local capacity to plan and implement strategies to address these and other concerns