



OECD Mining Regions: building a network to enhance productivity and well-being

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Local Economic Development in the Presence of a Large Scale Mine

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Economic Development requires investments that increase the wealth of a region over time

- Five forms of wealth:
 - Natural Resource Endowment – minerals, energy, land and forests, fish, natural amenities
 - Human Capital – number of workers, their skill levels and characteristics (e.g. entrepreneurial behavior)
 - Public Infrastructure – electricity and transport grids, sewer and water systems, hospitals and schools and all the other public facilities in a region
 - Private Capital – firm investments in: improving land, constructing buildings, and acquiring machinery and equipment
 - Social Capital – the institutions, organizations and governance systems that allow people to interact with each other.

Mining regions are “Low Density Economies” (LDEs), which limits their development opportunities

- LDEs are characterized by:
 - Small dispersed populations spread over a large area.
 - Limited connections to large urban regions.
 - Highly specialized and truncated economies, because they: have small home markets; have limited workforces, both in numbers and skills; and can only be competitive in a few export-oriented industries.
 - Reliance on extraction and first –stage processing of some natural resource as their main economic function within a larger economic system.

Stylized Economic Development in an LDE

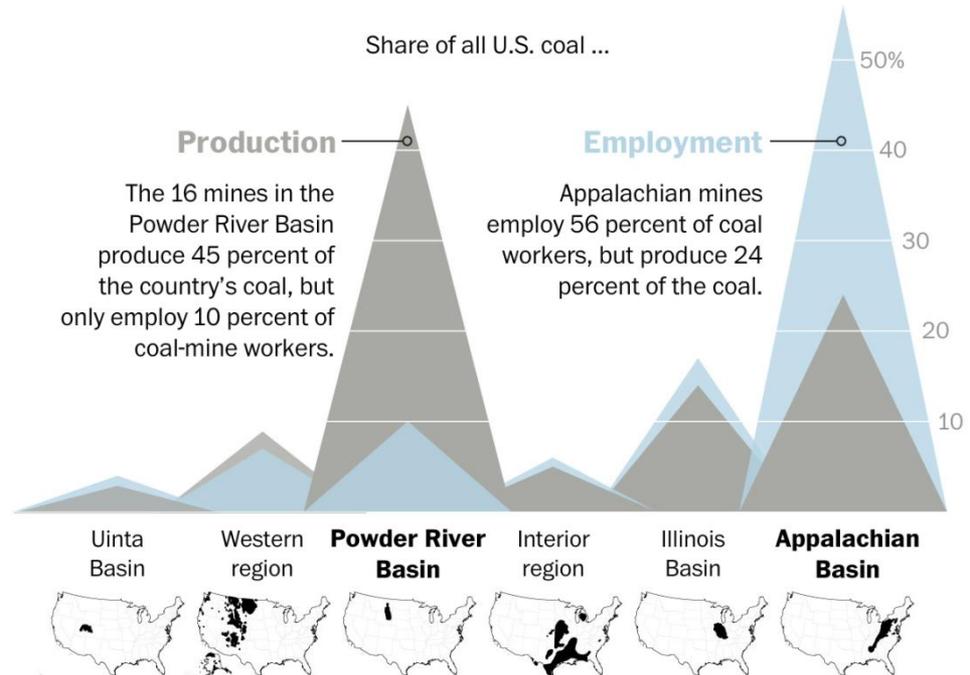
- Region depletes its natural resource wealth over time, but uses the income to invest in other forms of wealth that lead to increases in worker productivity and the competitiveness of the region – “smart specialization”.
- Two Key Assumptions
 - Region has an appropriate strategy for taking the resource income stream and making the right investments to allow ongoing prosperity
 - Region gets enough money from the resource to allow full implementation of the strategy

Appalachia: An Example of What Can Go Wrong

Appalachia has produced coal for well over 100 years – billions of dollars of coal have been extracted, but Appalachia is one of the poorest parts of the United States.

Wages in the coal industry are relatively good, but employment has declined since 1920. Workers continue to have weak skills, environmental damage is high, no adequate alternative sources of jobs and income have been found.

Year	Total U.S. Coal Production	Total U.S. Coal Miner Employment	Annual Production Per Miner
1900	269,684	448,581	0.60
1910	501,596	725,030	0.69
1920	658,265	784,621	0.84
1930	527,172	644,006	0.82
1940	512,256	530,388	0.97
1950	560,388	488,206	1.15
1955	490,838	258,616	1.90
1960	434,329	188,451	2.30
1965	526,954	144,864	3.64
1970	612,659	146,078	4.19
1975	654,641	193,787	3.38
1980	829,700	228,569	3.63
1985	883,638	169,281	5.22
1990	1,029,076	131,306	7.84
1995	1,033,000	83,462	12.38
2000	1,073,600	71,522	15.01
2006	1,162,750	82,595	14.08
2013	982,877	80,209	12.25



Characteristics of Modern Resource Industries

- Rapid adoption of labour saving innovations that come from international sources.
- Large economies of scale – large sites have lower costs.
- Prevalence of large multinational firms that can afford the investments in developing and operating multiple sites in a range of countries.
- Cyclical industry that produces standardized commodities – focus is on cost control because only limited ability to set prices.

Economic Development Challenge: Three Players with Incompatible Incentives

- **Region**

- Resource extraction reduces wealth, but offsetting investments in other forms of wealth can increase economic development.
- Strong interest in creating local employment and income.

- **Firm**

- Profit maximization is associated with: low cost production, rapid exploitation to recover start-up costs, minimizing legacy costs from shut-down.
- Firm adopts innovations that save money or increase productivity – capital that replaces workers (robotics?) or fly-in fly-out operations that reduce start-up and shut-down costs.

- **National Government**

- Rents or royalties from extraction are a significant revenue stream that can help with public finances
- Plays the lead role in negotiating with the multinational firm

Region has the weakest hand in the game

- As an LDE it has few other economic development choices – resource extraction is its best option
- But, over time resource extraction replaces workers with equipment, so fewer local jobs and less potential for capturing supply chain linkages – firms adopt highly specialized equipment with international sources.
- Firm is typically the largest local employer with good wages, but employment can be volatile. High resource wages make it hard for other types of firm to attract workers which hurts diversification efforts.
- Region may have an economic development strategy but find it difficult to implement:
 - Branch plant problem – local managers have limited discretion to work with region and corporate leaders tend to work with national government.
 - Company town problem – company managers play a dominant role in local society, but have no long-term attachment to the community and owe allegiance to the company.
 - “Dutch disease” problem – high wages in mining push up local wages and harm other sectors.
 - National governments retain the vast majority of royalties and negotiate deals that limit region’s capacity to push company to collaborate with it.

Conclusion: Mining dependent regions can face major long term viability challenges

- Eventually the resource will be depleted, and without a new function the region will decline.
- But during the extraction period, which can last for multiple decades, it can be hard to build a replacement function:
 - Other sectors do not pay as well - leads to less interest in entrepreneurship and developing a broader skill base. (“lock-in problem”)
 - Dominant firm does not want competition for workers and discourages diversification efforts.
 - Easy for local actors to adopt a short term attitude, even as the number of workers is reduced by new technology.
 - Extraction can be incompatible with other opportunities – environment as an amenity. In the USA old mining towns have been redeveloped in the western states, but only after the mine closes

Some suggestions

- It really is about “smart specialization” – regions have to identify what they can do that is competitive when their current function ends – particularly true for mining regions.
- It is crucial to invest in people and place (human capital, social capital, infrastructure) and to provide the platform for the next economic function. In particular, this means helping people imagine a time when the mine is gone, or their job is gone, and what can replace it.
- The more dominant the mining industry is in the region, the more important it is to develop a local strategy for adjusting to changes during operation, and to develop ideas for a new role as the mine closes.
- The region has to understand that neither the mine operator, nor their national government will want to provide funds for making investments in future activities. Regions have to push hard to unlock the money to do this while the mine is operating and money is available.



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