

Annotated Bibliography

Anon. 2009. *The Potential Financial Impacts of the Proposed Rockfort Quarry*. The Centre for Spatial Economics.

The report finds significant negative financial impacts on nearby property values. Also the study finds negative impacts on surrounding groundwater systems if proposed mitigation policies are not observed by the quarry operators. Essentially, this study employs two separate scenarios; one dealing with the impact of the quarry on housing values and the other with groundwater valuation. Scenario I, in assuming the site is “economically viable and mitigation [for groundwater issues] procedures are successful,” finds the “to-date costs for the Town, Region and CVC total \$3.3 million while the present value of their future costs totals at least \$14.6 million, and possibly \$27.9 million, for an overall total between \$17.9 million and \$31.2 million.” Thus, clearly the choice of the discount rate matters quite a bit. However, it seems with these figures, even if one conservatively estimates the costs, the impacts are still quite significant.

Aroca, Patricio. 2001. “Impacts and development in local economies based on mining:: the case of the Chilean II region.” *Resources Policy* 27 (2) (June): 119-134. doi:10.1016/S0301-4207(01)00013-7.

This paper measures the economic impacts of the Chilean mining sector using an input-output model. To overcome the shortcomings of such method in underestimating the economic impacts, the author creates a range of economic multipliers that the true multiplier would fall in. This particular study reports the mining sector multiplier to fall between 1.28 and 1.80. These figures represent the dichotomy of an open and closed economy. An open economy is assumed to be one in which workers receive more money than is explicitly spent in the local economy. A closed economy is one that assumes all wages are spent in the region. The author then reports output and input linkages. The most prominent output linkages are to the business service sector, utilities sector and the retail sector. Regarding inputs linkages, different income multipliers exist. There also exists a notable difference between private and state owned enterprises. State owned companies hired almost all the workers they need to operate whereas private firms outsource much of their operation.

Black, Dan, Terra McKinnish, and Seth Sanders. “The Economic Impact Of The Coal Boom And Bust.” *The Economic Journal* 115, no. 503 (April 1, 2005): 449-476.

This paper looks at the coal boom and bust of the 1970s and 1980s to measure the effect on a variety of economic outcomes. It addresses two questions: How were non-mining sectors affected by the shocks to the mining sector? How did these effects differ between sectors producing local goods and those producing traded goods? Particular pertinent in this paper is its focus on the labor market, arguing that local firms not experiencing a sudden demand shock must pay higher wages to compete for local workers, driving down their competitiveness. Thus, this perpetuates an inflow of migration. Overall, the authors find the boom to be progressive; with increased wages and reduced levels of poverty in coal areas, suggesting residents benefited from the boom.

Bender, Lloyd D., and And Others. 1985. *The Diverse Social and Economic Structure of Nonmetropolitan America. Rural Development Research Report No. 49.*
<http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED2629>

This report posits that mining-dependent counties (those with 20 percent or more of acquired income from mining) have “high rates of recent population increase accompanying energy demands, after decreases in the prior decade, high income, and lower than average concentrations of service activities.” The authors claim that increases in the population mirror the increased demand for energy and minerals. “Mining wages remained high even during slack demand because of the structure of the industry, the skills required, and the structure of the work force.” Notably, however, the lower concentration of service activities may be due to the uncertainties and volatility of the mining industry. “One finds few economies at the county level with a balanced mix of agriculture, mining, manufacturing, services, and government.” Thus, this implies localities concentrating in one economic activity. Particularly pertinent to mining, this may lead to a very unstable local economy.

Blanchard, Olivier Jean, Lawrence F. Katz, Robert E. Hall, and Barry Eichengreen. “Regional Evolutions.” *Brookings Papers on Economic Activity* 1992, no. 1 (January 1, 1992): 1-75.

This seminal article attempts to answer four questions concerning regional booms and busts. First, the authors ask, “when a typical US state over the postwar period has been affected by an adverse shock to employment, how has it adjusted?” Next, “did wages decline relative to the rest of the nation?” And finally, “were other jobs created to replace those jobs destroyed by the shock? Or did workers move out of the state?” Labor market shocks lead to a change in wages and unemployment relative to the rest of the country. Adjustment ensues through labor and firm mobility. “By then, however, employment is permanently affected; to what extent depends on the relative speed at which workers and firms adjust to changes in wages and unemployment.” Blanchard and Katz, through statistical analysis, posit that states adjust to shocks primarily through movement in labor rather than job creation or job migration.

Bunker, Stephen G. “Modes of Extraction, Unequal Exchange, and the Progressive Underdevelopment of an Extreme Periphery: The Brazilian Amazon, 1600-1980.” *American Journal of Sociology* 89 (5) (March 1, 1984): 1017-1064.

Per Freudenburg and Frickel (1994), Bunker contrasts with previous studies. “While earlier writers (and present day leaders) have often expressed strong optimism that extractive activities would lead to a broader form of development in extractive regions, Bunker concluded that extractive activities in the Amazon not only contribute to unequal exchange, but “...directly limit the capacity for local response to and benefit from subsequent exchange opportunities created by industrial development and technological advances in the world system.”” A connection, perhaps, to rent squandering. Bunker primarily proposes “that different regional levels of development result from the interaction between changing world demand for specific commodities and the local reorganization of modes of production and extractions in response to new or changing market opportunities and pressures.”

Bury, Jeffrey. 2005. “Mining mountains: neoliberalism, land tenure, livelihoods, and the new Peruvian mining industry in Cajamarca.” *Environment and Planning A* 37 (2): 221 – 239.
doi:10.1068/a371.

Aside from analyzing the developmental implications of increased mining activity in Peru after the restructuring of its constitution, the author draws upon case-study research that evaluates how a very large gold mining operation has transformed “land-tenure institutions, land values, and the spatial distribution of

land-use patterns throughout the region.” He finds that a common effect of the mining boom was dramatic increases in land values, with estimates nearing increases of more than 600%. However, this increase in land value largely contributes to a “shift away from non-mining related land use activities, particularly because former landholders have been unable to obtain new land resources in the region and the increasing prices of the “mining value” of lands in the region have decreased the availability of land for other activities.” Thus, such a predicament has forced many landowners to change their land use activities.

Chicoine, David L. 1981. “Farmland Values at the Urban Fringe: An Analysis of Sale Prices.” *Land Economics* 57 (3): 353-362. doi:10.2307/3146016.

This paper looks at the factors associated with fluctuations in the value of farmland. “This is accomplished by the development and empirical estimation of a hedonic price model for an urban fringe farmland market near Chicago, Illinois.” The author, through an econometric analysis, finds a statistically significant negative coefficient associated with Mining/Quarrying Land use. “Uses of neighboring land were found to significantly impact urban fringe farmland prices.”

Cushing, B. 1999. “Migration and persistent poverty in rural America: A case study from Central Appalachia.” *Pandit K and Withers D et al., Migration and restructuring in the US Rowman and Littlefield: Longman.*

Cushing analyzes the migrational patterns of rural Appalachia, a region noted for its coal industry. He begins his economic analysis by exploring the volatile fluctuations in employment since the 1970s OPEC oil embargo. “Employment declined by 19 percent between 1976 and 1980 and then by another 35 percent by 1983. With the rapid switch to long-wall mining, the decline in mining employment has continued through the first half of the 1990s.” Cushing, with this decline of employment in mind, studies specific attributes of in/out migrants for the 1985-1990 period. He notes, “on the whole, migration to and from Southern West Virginia during the 1985-90 period was not favorable for the future economic stability and growth of the region. . . in-migrants to the region included a disproportionate number of older and/or less-educated individuals.” In rural regions, “there is less diversity in employment, fewer opportunities for retraining and placing dislocated workers, and less opportunity for local development.”

Dorrian, A.M., and C.G. Cook. 1996. “Do rock quarry operations affect appreciation rates of residential real estate?”

The authors study the effects of rock quarries on nearby residential property values in central Ohio. Using separate quarry operations for comparability purposes, this study finds that “property owners have not experienced a negative impact on their property values as a result of being located adjacent to an existing quarry.” This is an interesting finding and seems specific to quarrying as it follows the two conclusions of two previous studies (one being Rabiansky and Carn 1987).

Erickcek, G. 2006. “An assessment of the economic impact of the proposed Stoneco Gravel Mine operation on Richland Township.” *Report completed for Richland Township Planning Commission, August 15: 2006.*

This study assesses “the potential impact on residential property values in Richland Township,” as well as “the potential employment impact of the proposed gravel mine on the area’s economy.” The author finds that the “proposed gravel mine will have a significant negative impact on housing values in Richland

Township,” reducing property values by \$31.5 million in aggregate. Such an estimate encompasses 60% of the total residences in the town. “The loss in house value is a way to quantify in dollars the deterioration in quality of life, as capitalized in the price of the house.” Also, due to the increasingly mechanized nature of extractive industries, the study finds an insignificant increase of 2 jobs into the region. “Although the mine will employ an estimated 5 to 10 workers and require drivers to haul an estimated 115 to 120 truckloads of gravel per day, most all of these jobs would simply ‘displace’ any employment growth in the county’s 15 existing gravel pits.” This study then goes on to reject the findings of previous studies (Rabianski and Carn, Dorian and Cook) for their flawed logic and use of outdated and incorrect methodology.

Freudenburg, William R, and Frickel, Scott. “Digging Deeper: Mining Dependent Regions in Historical Perspective I.” *Rural Sociology* 59, no. 2 (June 1, 1994): 266-288.

Freudenburg and Frickel provide a historical narrative case-study of what has been called the first mining boom in the US, involving lead mines in the Upper Mississippi Valley during the first half of the 19th century. “The lead mining experiences of the Upper Mississippi Valley demonstrate that not all extractive activities inevitably lead either to economic diversification and regional prosperity or to progressive underdevelopment; instead, at least some extractive regions have followed development trajectories that are highly contingent on the specific social, historical, and environmental characteristics of their place.” This primarily is a sociological study focusing on a qualitative analysis of this historical mining event.

Freudenburg, William R, and Wilson, Lisa J. “Mining the Data: Analyzing the Economic Implications of Mining for Nonmetropolitan Regions.” *Sociological Inquiry* 72 (4) (January 1, 2002): 549-575. doi:10.1111/1475-682X.00034.

This article assembles relevant qualitative and quantitative findings on mining in published literature specific to the US. Among the many conclusions, those most reinforced associate mining with increased levels of income, but also increased levels of poverty and unemployment. This is a curious anomaly discussed at length. Overwhelming, the authors conclude that the peer-reviewed literature find predominantly adverse effects due to mining. Those finding improved economic conditions are “considerable less common in the empirical literature.” Regionally, the prevalence of mines help dictate a favorable economic environment. The study also discusses problems in comparing studies due to the nature of the data used; either longitudinal or cross-sectional. Noted in the conclusion, possible reasoning for the anomaly of increased income, and increased levels of poverty and unemployment is mechanization. Mining procedures are becoming increasingly capital intensive allowing for relatively high wages for a decreasing few. Others are displaced by new technology.

Furby, L., R. Gregory, P. Slovic, and B. Fischhoff. 1988. “Electric power transmission lines, property values, and compensation.” *Journal of Environmental Management* 27 (1): 69–83.

The authors do a brief literature review describing some methodological flaws previously done studies seem to encompass. Such flaws generally result from have insufficient data and being quite unspecific in terms of differentiating between asking and eventual selling prices of residences studied. However, two studies are identified with “sound methodology” and find that the “construction and operation of transmission lines adversely affected land values.” In one particular study, (Colwell and Foley

1979), the regression analysis conducted found a negative relationship “between selling price and proximity to the transmission line for properties within 200 feet of the line.” Another study found that proximity of agricultural land to power transmission lines produced adverse effects, and was particularly detrimental to smaller properties.

Hilson, Gavin. 2002. “An overview of land use conflicts in mining communities.” *Land Use Policy* 19 (1) (January): 65-73. doi:10.1016/S0264-8377(01)00043-6.

In this paper, the author reports on the benefits and costs of large-scale mining efforts, albeit with a slant toward environmental consequences. However, relevant economic conclusions are reached. The author notes that increased intensity of large-scale mining operations can render land unsuitable for other industrial applications after reclamation. “The most significant disruptions cause by large-scale mining activities result from major demographic changes...major population influxes—namely the migration of thousands of foreign and non-local employees to the area occupied by the mine—can upset,” the social balance of the local community. This shift can also lead to increased prices for local goods once demand increases. The author does note, however, that “mining land use conflicts are typically most intense in the developing world, where the issue of tenure is the cause of most social problems.” Thus, land tenure is probably not important in terms of Wisconsin frac mining.

Neelawala, P., C. Wilson, and T. Robinson. 2010. “What impact does an announcement of a proposed quarry road have on property values? Evidence from Queensland Australia.” In: The 85th Annual Conference of Western Economic Association International, 29 June – 03 July 2010, Hilton Portland & Executive Tower, Portland, Or.

This study extends from the large base of previously done research that used the hedonic price method to assess the ex-post impact of environmental dis-amenities on property values. Rather, this paper differs as it provides an ex-ante analysis on the effects of an announcement of a proposed haul route to a quarry on nearby residences. “The results of the regression analysis suggest that the marginal willingness to pay to be farther from the proposed road route is 4.92 per cent per kilometer,” equating to a substantial amount in monetary terms. This seems to be an excellent study that not only grants consideration of the proximity of residences to the quarry but also implicates transportation externalities associated with quarrying.

Rabianski, Joseph, and Neil Carn. 1987. “Impact of Rock Quarry Operations on Value of Nearby Housing.”

“On the basis of the methodology and data employed in the research, there does not appear to be any significant difference in changes of housing values over time, between housing units located in subdivisions immediately adjacent to properties that contain a rock quarry within one-half mile of the subdivision, and housing units located in subdivisions in the same general area but several miles away from and not subject [to] potential adverse influences of the rock quarry operation.” The authors note that this conclusion is based on the assumption that rock quarrying can exhibit certain negative externalities such as noise and air pollution. In terms of methodology employed, this study uses a comparison technique that observes changes in property values close to and far away from the quarry, *ceteris paribus*.

Sims, S., and P. Dent. 2005. “High-voltage overhead power lines and property values: A residential study in the UK.” *Urban Studies* 42 (4): 665.

The authors note that finding data on high powered transmission lines is problematic because the effects are “often not apparent until new property comes up for resale.” “The principal aim of undertaking this research was to determine the impact of HVOTLs on residential property value using a combination of opinion surveys. . . The results show that physical proximity and the visual presence of a pylon have a significant and negative impact on value.” However, the authors note that, as power lines are “generally situated in a “right of way” (ROW), a corridor of land where construction is prohibited,” those properties adjacent to a ROW can enjoy the extra land. And indeed, the authors find that a ROW created by the instillation of such power lines can increase the value of adjacent houses, “despite the view of the line itself.”

Williams, A.M. 2011. “The Impact of Surface Coal Mining on Residential Property Values: A Hedonic Price Analysis.”

Williams uses the hedonic price method to study the impact that surface coal mines have on property values. “The results of our statistical analysis show that as the number of surface mines and their average production increases, the median value of housing units in a county significantly decreases. . . we estimate that the addition of a surface mine to the average county decreases aggregate property values by between .34% and 1.7%.” He employs an OLS linear regression to study county based cross-sectional data. However, the author notes that his regression results are found using aggregated data. “In some counties, the housing units in one county may be located closer to mines on average than the housing units in another county.” Interestingly, Williams finds that underground mines do not have a statistically significant impact on housing values.

Wilson, Lisa J. “Riding the Resource Roller Coaster: Understanding Socioeconomic Differences between Mining Communities.” *Rural Sociology* 69 (2) (June 1, 2004): 261-281.
doi:10.1526/003601104323087606.

Wilson is quite upfront in noting that results from this analysis of specific localities should not be generalized to other mining areas. Rather, they should be used to formulate hypotheses to be tested in future studies. The focus of the paper concerns mine employment, mineral prices and overall employment. In one regional case-study, a large proportion of workers lived in surrounding communities, thus commuting to work. Also, contrary to Freudenburg’s (1992) expectation that mining employment is strongly related to commodity price, Wilson’s tests say otherwise. She posits the need to examine location specifics. In comparing her two case-studies presented in the paper, she examines three things directly impacting inter-regional differences; geographic concentration of the workforce (prevalence of commuters), how dependent the local economy is to the mine (thus, resource roller coaster hinted in the title), and finally options available to the mine owners to respond to price changes. In one study, Wilson finds that, since the mine owners operated numerous mines, they were able to relocate workers in response to changing commodity demands.

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