

THE IMPACT OF ENVIRONMENTAL REGULATION ON THE US COAL INDUSTRY: A COUNTERFACTUAL ANALYSIS

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Overview

The state of the coal industry was one of the factors that decided the US 2016 Presidential elections. Between decreasing natural gas prices; an increasingly environmentally conscious world and environmental regulation; and 2007 global economic crisis, the coal country has seen substantial decline in economic prospects. One side of the debate opines that restrictive environmental regulation is the cause of the decline in the economic prospects of the coal industry. Thus, the removal/lessening of the regulation would bring the jobs and other economic prospects from the coal industry back. The other side suggests that despite the huge environmental cost, the economics are not in favor of coal. Thus, even without regulation, the decline of the coal industry is inevitable. Perdue & Pavela (2012) observes that there is a higher incident of poverty in the coal-bearing regions of West Virginia than the counties that do not have coal. Mechanization dramatically reduced the number of jobs available to coal mining communities before even the incidence of environmental regulation. The coal industry by nature provides little opportunity for secondary employment; coal is mined in the raw state, cleaned and shipped out thousands of miles away. Thus, there is little opportunity for value addition and the consequent employment opportunities. In fact, more West Virginians work in Walmart than in the mines (Perdue & Pavela, 2012). Blaacker, Woods and Oliver (2012) observes that the coal industry employed just about 3% of the total employment in West Virginia in 2010. They attribute the economic dependence of the Appalachian region on the coal industry as more of perception than reality. This paper employs counterfactual analysis to assess the validity of the two sides of the debate. I adopt the Pesaran and Smith (2016) counterfactual model to assess the magnitude of the impact of both environmental regulation and economic conditions such as the price of substitute energy sources such as natural gas; increasing extraction cost; decline in exports due to recession and even regulation from other countries. The objective of this study is to build counterfactual scenarios of regulation and other economic events to assess their respective impact on the coal industry. In the counterfactual analysis, I am able to assess the validity of the argument made by either side of the debate.

Methods

This paper develops counterfactual analysis model base on Pesarean and Smith (2016). The variables of interest as a representation of the coal industry in the model are total output (production) and total employment in the coal industry. With this model, I develop a counterfactual scenario of the coal industry to the 1970 Amendment of the Clean Air Act. The 1970 Amendment of the Clean Air Act expanded the powers of the federal government to regulate air pollutants. Thus, my model develops a scenario of what the coal industry would have been if the 1970 Amendment of the Clean Air Act did not happen (if the EPA was not established)- a counterfactual scenario. I then compare the total output (production) and total employment of the coal industry between the counterfactual scenario and the actual situation now. I do the same analysis for the natural gas boom in the United States and the 2007 global financial crisis. With this analysis, I measure the individual impacts of environmental regulation, lower natural gas price (from the shale gas boom) and the 2007 global financial crisis on the coal industry.

Results

My preliminary results show that environmental regulation and the other economic situations have impacted on the coal industry significantly. However, the magnitude of the impact of the environmental regulation is far less than the each of the economic variables.

Conclusions

The study concludes that although the economics have largely been responsible for the decline of the coal industry in the United States, environmental regulation has speed up the process. The consequence of this result is that, even if President Trump eliminate all the regulation (as he promised), it will not be able to reverse the course of the coal industry and bring the coal jobs back.

References:

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