

The Effect of Coal Combustion Byproducts on the Pricing Strategy of Upstream Industries

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Abstract:

Price discrimination is often difficult to disentangle from price dispersion due to a lack of transaction level data capable of tracking sales from individual companies to quantifiably heterogeneous groups of consumers. Product cost and quality differentiation along with transaction timing are additional confounders that often make it empirically difficult to identify price discrimination. This paper uses coal mine-mouth prices (net of transportation costs) and transportation prices paid by regulated coal-fired power plants in the U.S. coal market during the time period 2008-2010 to study how coal mines and transportation companies practice price discrimination against electric utilities. Power plants with heterogeneous demand for coal are perfectly identified based upon their ability to market flue gas desulfurization (FGD) gypsum, which is a byproduct produced from scrubbing SO₂ emissions. Furthermore, unobserved cost differentials are differenced out under the assumption that costs are constant for a particular mine at a particular point in time. Results indicate that the same coal mine charges different marginal prices to gypsum sellers in comparison to non-sellers on the basis of coal quality. Coal-fired power plants who are able to sell FGD gypsum byproducts are estimated to pay an 8.8 ¢/MMBtu total price premium for a 1 percentage point increase in average sulfur content. Because sulfur is the raw material for FGD gypsum byproduct production, these results are consistent with coal mines charging higher prices to electricity plants with gypsum sales contracts on the basis of their differentiated demand.