

Overcompliance and Profitability: Evidence from Coal Mines

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Mean regression analysis can hide heterogeneous firm responses to regulatory or economic shifts. Firms which are near a threshold for regulatory compliance may respond strongly to economic or regulatory changes, while firms far from the compliance threshold may not respond at all. I document this in an important setting for worker safety. Underground coal mines typically overcomply with standards for airborne dust, which causes respiratory ailments. Theory suggests that mines facing unusually small penalties for violation will not overcomply, and instead will allow their airborne dust levels to increase to the compliance threshold. I econometrically document this pattern for mines which are near the compliance threshold using a semiparametric panel quantile regression model. Mines which are naturally overcompliant or which face very high compliance costs show no response to moderate changes in penalty level. Conventional expected value regressions of air quality on penalty magnitude yield null effects. This work demonstrates the importance of moving beyond traditional mean regressions in policy analysis.