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Technology and State Capacity:
Experimental Evidence from Illegal Mining in Colombia*

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Abstract

New monitoring technologies can help curb illegal activities by reducing information asymmetries between enforcing and monitoring government agents. I created a novel dataset using machine learning predictions on satellite imagery that detects illegal mining. Then I disclosed the predictions to government agents to study the impact on illegal activity. I randomly assigned municipalities to one of four groups: (1) information to the observer (local government) of potential mine locations in his jurisdiction; (2) information to the enforcer (National government) of potential mine locations; (3) information to both observer and enforcer, and (4) a control group, where I informed no one. I use an independent expert validated dataset that measures gold mining to evaluate the effect of the intervention. I find that the effect of treatment is relatively similar regardless of who is informed: in treated municipalities, illegal mining is reduced by 11% in the disclosed locations and surrounding areas. However, when accounting for negative spillovers — increases in illegal mining in areas not targeted by the information — the net reduction is only 7%. These results illustrate the benefits of new technologies for building state capacity and reducing illegal activity.

JEL classification: H26, K42, O13, O17, Q55

Keywords: Illegal mining, Monitoring Technology, Colombia

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