Performance Bonding and Reforestation of Surface Mined Lands

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Abstract: The Surface Mining Control and Reclamation Act of 1977 (SMCRA) mandates that surface mined land in the United States be returned to a condition capable of supporting its pre-mined use or a use of higher value, and that the land be reclaimed in a fashion that renders it at least as productive after mining as it was before mining. Mine-land reclamation under SMCRA follows a process where mine operators agree to a post-mining land use and then post performance bonds held by regulators until reclamation is evaluated and deemed to be successful. A bonding process and law such as this is quite common in several other countries, such as Canada and Australia. Since 1977, the majority of mined land in the Appalachian coal region has been reclaimed as hayland/pasture. Forests on these sites would be of much higher social value given their rent-generating productive role, but also their role in increasing land values or reducing risks such as erosion, flooding, and fire that can threaten communities. Given that mine operators, who are responsible under the law for reclamation efforts, are not likely to make decisions with future land rents in mind, an externality exists in the reclamation process that undermines the intention of the law. Our purpose is to examine the social costs of mine-land reclamation, and to examine the role of several types of bond policy programs in reducing these social costs. An important part of the analysis will be to compare the socially best bond instruments with the ones used in practice. We describe both the theory of performance bonding and simulations that are based on growth functions developed on mined sites. We characterize the reclamation decisions faced by a mine operator and a benevolent social planner, we examine the role of bond payments in reducing the social costs associated with a difference in incentives between the mine operator and the social planner, we present a simulation to reveal the magnitude of social costs under various assumptions about the bond, and we examine potential inefficiencies in bond instruments the way they are currently used in practice.

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