

Assurance Methods: A welfare analysis

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Assurance Methods: A welfare analysis

- Neoclassical Economics:
 - Optimal Allocation of Resources (and maximization of Social Welfare) obtains when:
Marginal Cost Equals Marginal Benefit
or
 $MC = MB$

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- Environmental Damage is an **External Cost**

– Means:

Marginal Cost (Private) < Marginal Cost (Social)

Hence if a producer produces up to:

$$MC_{\text{private}} = MB$$

Then overproduction and reduction in Social Welfare results

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- Additional Complexities with Environmental Externalities:

Cost Uncertainty at the outset

Possibly long time lags till all damage is observed

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- **Social Welfare Improvement Requires:**
Internalization of the External Cost

Mechanisms:

- 1) Liability Rules
- 2) Bonding Mechanisms
- 3) Reclamation Fund (proposed here)

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- Liability Rules:
 - Advantage:
 - Allows Cost Internalization
 - Disadvantages:
 - Administrative (i.e. arbitrary) determination of costs
 - Burden of Proof on parties incurring the damage
 - Large transaction costs (to bring suit)

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- Assurance Bonds:
 - Advantages
 - Internalization of Costs
 - Burden of proof on party causing the damage
 - Reduced administrative & enforcement costs
 - Incentive to engage in R&D activity to reduce reclamation costs

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- Assurance Bonds:

- Disadvantages:

- Difficult to set bond amounts to socially optimal levels
 - Subject to legal challenges because of incomplete contracting
 - Asymmetry (Moral hazard): If reclamation costs $<$ bond amount \rightarrow Reclaim; otherwise: Forfeit
 - Inability to deal with uncertainty (Max Reasonable Value proposal)
 - Unable to deal with long run costs
 - Liquidity Costs: Capital tie-up

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- Advanced Fee Reclamation Fund (AFRF)
 - Idea: Based on California's Beverage Container Recycling Program, and FDIC
 - Scheme: Impose Advance Reclamation Fees, on a per acre basis, depending on a set of characteristics. When mining operation is complete, AFRF auctions reclamation work. Low bid wins. Low bidder receives the amount submitted by the second lowest bid.

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- Advanced Fee Reclamation Fund (AFRF)
 - Advantages:
 - Exploits private information by the operator
 - Introduces incentives to take actions to reduce observed/unobserved reclamation cost
 - Cross-subsidization resolves uncertainty issue
 - Reduces liquidity costs/ allows exploitation of marginal mines
 - Provides updated market information via successive auctions
 - Retains and strengthens incentive to engage in cost reducing R&D activity
 - Can easily deal with long time lags (pay-as-you-go feature)

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- Advanced Fee Reclamation Fund (AFRF)
 - Disadvantages
 - Creates additional bureaucracy
 - May be subject to political pressures (localities may pressure to reduce fees to attract operators)

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- Conclusion:

An Advanced Fee Reclamation Fund is proposed as a means to improve upon bonding schemes by reducing transaction and enforcement costs, eliminating the asymmetry problem, and insuring mitigation of future, long-run environmental damages.

Furthermore, the AFRF arguably results in an improved allocation of resources by reducing the liquidity constraints on operators, increasing overall output by allowing exploitation of marginal operations, reducing the incentive to declare bankruptcy, and eliminating possible adverse selection problems.