

AAE101: Intro to Ag. & Applied Econ.

Discussion Section 4

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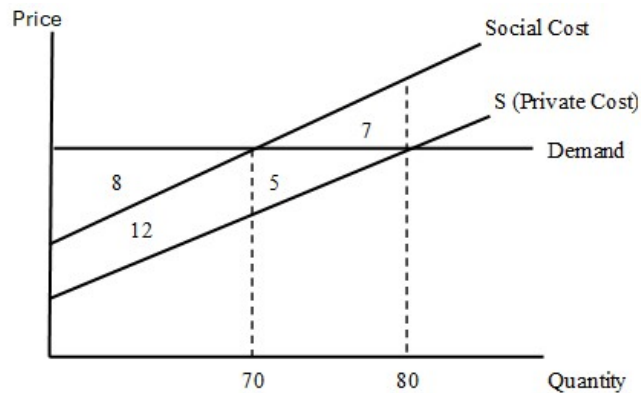
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Today's goal

- Understand the economic impact of negative externalities and explore solutions through bargaining, compensation, and regulation.
- Analyze the effects of a subsidy.

Practice Questions

1. **Negative externality.** Consider a cement factory. It pollutes the air with dust as a byproduct of production, and this negatively affects nearby villagers. Suppose the factory operates in a competitive global market, so it faces a horizontal demand curve. The following graph shows demand for cement and the factory's private costs as well as the social costs, which incorporates the cost of pollution to the villagers. The numbers in the graph represent areas, in dollars.



Suppose:

- There are no transaction costs.
- Villagers have the right to be free from pollution.
- Villagers can move to a spot upwind of the factory and avoid the pollution exposure at a total cost of \$4.

Describe the best possible mutually agreeable deal, from the perspective of the villagers. Does this deal involve the villagers moving away from the pollution? How much cement is produced? Is this deal better for villagers than a government rule that forced cement production to be 70?

Explain your reasoning, using the next page for your answer. To help organize your thinking, I have created a table below. I recommend filling it in with values, focusing on the three main options that villagers have:

- Shut down the factory.
- Stay and require compensation from the factory.
- Move and require compensation from the factory.

	Shut down factory	Stay and require factory to compensate	Move away and require factory to compensate
Amount of cement produced			
Producer surplus			
Pollution costs			
Relocation costs			
Social surplus <i>(size of economic pie, net of costs)</i>			
Minimum payment villagers will accept			
Maximum payment factory will make			
Minimum net benefit to villagers			
Maximum net benefit to villagers			

2. **Supply and demand with a subsidy.** Consider the following market for a good:

- **Demand:** $Q_d = 100 - 2P$
- **Supply:** $Q_s = 4P - 20$

- Find the equilibrium price and quantity without a subsidy.
- Suppose the government provides a per-unit subsidy of \$12 to producers. Find the new equilibrium price and quantity.
- Calculate the total government spending on the subsidy.
- Compute the Deadweight Loss (DWL) due to the subsidy.