Microeconomics, Module 17, “Externalities” (Chapter 13)

Illustrative Test Questions

(The attached PDF file has better formatting.)

Question 17.1: External Costs

If firms’ production activities create external costs, we infer that

A. Consumers injured by external effects can sue for damages.
B. Competitive behavior will result in underproduction of the firms’ product relative to the social optimum.
C. Social marginal cost will be higher than private marginal cost.
D. Social marginal cost of the firms’ product will equal its social marginal benefit at the competitive equilibrium.
E. Economic efficiency is maximized if government prohibits negative externalities.

Answer 17.1: C

Competitive behavior results in overproduction, since it does not consider the losses created by the externalities.

Question: Does insurance create any external costs?

Answer: In general, it does not, though one can devise scenarios that seem to have an external cost. One might reason as follows:

Illustration: If there were no auto insurance, parents might not let their 17 year old son drive the car, since the annual accident frequency for some groups of young unmarried male drivers is about 50%. Since the parents have insurance coverage, they let their son drive the car. Their premium increases by the additional expected loss costs. But society as a whole loses, since the higher accident rate is not offset by benefits derived from 17 year old men driving cars.

This reasoning is not persuasive, since the value that parents get from letting their son drive may be worth much to them. Actuaries doubt it is worth as much as the injuries they cause to other people, but economists can’t judge social welfare on opinions.

Question 17.2: Weak Coase Theorem

According to the weak Coase theorem, in the absence of transaction costs, economic efficiency is unaffected by

A. Changes in property rights
B. Pigou taxes
C. Private bargaining
D. Incomplete liability rules
E. Environmental legislation prohibiting external costs

Answer 17.2: A

Question 17.3: Coase Scenario

A metalworks factory creates smoke. The smoke makes it harder to clean clothes and increases the costs of the neighboring dry cleaner by $400 per week. The factory can install an air-cleaning system that costs $200 per week, and the dry cleaner can install a new ventilation system that costs $100 per week. Both systems would eliminate the smoke damage at the dry cleaners.

Suppose transaction costs are zero. If the factory is not liable for the dry cleaner's damages and can continue to produce smoke, then

A. The factory will pay the cleaners $400 per week in smoke damages.
B. The dry cleaner will bear the $400 per week cost of smoke damages.
C. The factory will install the air-cleaning system.
D. The dry cleaner will install the ventilation system.
E. Consumers of dry cleaning ultimately bear the cleaning costs.

Answer 17.3: D

The dry cleaner installs the ventilation system since this is the most efficient method to reduce the smoke. The factory does not pay the cost (the dry cleaner pays the cost), since the factory is not liable for the smoke damage. Who ultimately bears the costs depends on the elasticities of the supply and demand curves.

Question 17.4: Assignment of Liability

Suppose transaction costs are zero. If the factory is assigned liability for the dry cleaner's smoke damages, then

A. The factory will pay the cleaners $400 per week in smoke damages.
B. The dry cleaner will bear the $400 per week cost of smoke damages.
C. The factory will install the air-cleaning system.
D. The dry cleaner will install the ventilation system.
E. Neither the factory nor the dry cleaner is better off by the assignment of liability.

Answer 17.4: D

The dry cleaner installs the ventilation system since this is the most efficient method to reduce the smoke. The factory pays the cost, since it is liable for the smoke damage. The factory pays between $100 and $200 per week, depending on the negotiating power of the factory and the dry cleaner.

Question 17.5: Socially Optimal Solutions

Suppose transaction costs preclude the possibility of private bargaining between the factory and the dry cleaner. If a Pigou tax is levied on the factory with the proceeds given to the dry cleaner, then

A. The factory will pay the cleaners $400 per week in smoke damages.
B. The dry cleaner will bear the $400 per week cost of smoke damages.
C. The factory will install the air-cleaning system.
D. The dry cleaner will install the ventilation system.
E. The dry cleaner will install the ventilation system only if the Pigou tax is ≥ $200 a week.

Answer 17.5: C

Since the transaction costs prevent the factory and dry cleaner from negotiating, they do not arrive at the socially optimal solution of the dry cleaner installing the ventilation system. Since the factory would have to pay a Pigou tax if it did not eliminate the smoke damage, it installs the air cleaning system.

Question 17.6: Negotiation Difficulties

A firm uses a lake for cooling, which makes the lake warmer and damages the quality of fishing. When the dispute between the firm and the fishers over the use of the lake is resolved in court, liability is assigned to the firm. The firm wishes to negotiate with the fishers, but it finds this difficult because of the continual entry of new fishers at the lake. This situation is an example of

A. The Coase theorem
B. The principal-agent problem
C. Incomplete property rights
D. The free-rider problem
E. The tragedy of the commons

Answer 17.6: C

If specific fishers had the property rights to the lake, the firm could negotiate with these fishers to arrive at a socially optimal solution to the externality. Since various (unnamed) fishers have rights to the lake, negotiations may not be possible and an efficient solution may not be achieved.

Question 17.7: Economic Efficiency

Suppose a firm's production imposes external costs on neighboring households. There are no transaction costs to prevent private bargaining between the firm and the households. When could a Pigou tax *lower* economic efficiency?

A. When transaction costs prevent tax recipients from bargaining with the firm and households.
B. When tax recipients can enter negotiations with the firm and the households.
C. When the revenues from the Pigou tax are given to the households.
D. According to the Coase theorem, a Pigou tax cannot lower economic efficiency in this situation.
E. When the Pigou tax is less than the transaction costs.

Answer 17.7: A

The Coase theorem says that the optimal social solution is achieved by private negotiation between the firm and the households. If the tax recipients can not bargain with the firm and the households, economic resources are not being used most efficiently.

Question 17.8: Strong Coase Theorem

According to the strong Coase theorem, which of the following is unaffected by the reassignment of property rights?

A. Transaction costs
B. Income distribution
C. Resource allocation
D. Pigouvian tax rates
E. Wealth of property owners

Answer 17.8: C

Social efficiency depends on how resources are used, not on who receives the profits from the use of these resources. Whoever receives the property rights is better off (wealthier), but this does not affect how resources are used.

Question 17.9: Free-Rider Problem

Which of the following situations is the best example of a free-rider problem?

A. Positive externalities cause beekeepers and orchard growers to establish elaborate contracts.
B. Property rights to a smoke free workplace are given nonsmokers in general instead of to a specific group of nonsmokers.
C. Mine owners are unable to observe if their workers follow safety guidelines.
D. Only about 10% of the viewers of public television contribute money to pay for its costs.
E. Property owners may higher taxes to compensate for their rent.

Answer 17.9: D

Question 17.10: Principal-Agent Problem

A principal-agent problem occurs when

A. Transaction costs are too high to permit private bargaining.
B. An employer is unable to fully monitor an employee's behavior.
C. An agent attempts to avoid paying for benefits received from the principal.
D. Property rights are assigned to vague groups instead of to specific people.
E. Exclusive agents are less efficient than career agents.

Answer 17.10: B

The principal-agent problem does not deal with insurance agents (exclusive agents and career agents). The managers of a firm are the agents of the shareholders.

Question 17.11: Principal-Agent Problem

What is the most efficient liability rule when transaction costs are created by a principal-agent problem?

A. The agent should be made liable for all damages resulting from the interaction of the principal and the agent.
B. The principal should be made liable for all damages resulting from the interaction of the principal and the agent.
C. The principal and the agent should be made equally liable for any damages resulting from the interaction of the principal and the agent.
D. The assignment of liability does not affect efficiency in accordance with the Coase theorem.
E. Assignment of liability should depend on the elasticities of the agents' and principals' work efforts.

Answer 17.11: A

Since the principal can not verify the work performed by the agent, setting the agent liable for damages puts the liability on the party best able to control it.