

EE403 Law and Economics
Semester 1/2016
Mid-Term Examination

Date: Wednesday 8 October 2016

Time: 14:00-15:30 hrs.

Instructions:

1. There are two essay questions with a total of 30 points.
2. Write your answers in the provided booklets.
3. Books, notes, calculators and electronic devices are not allowed.
4. Use pens to write your answers; pencils are allowed for drawing only.

Questions:

1. What is the major difference between the **economic analysis of law** and the **traditional approach** to legal analysis (e.g., by lawyers)? What are the meanings of the **'efficiency criterion'** used by the economists? (10 points)

Answer: The **traditional approach to legal studies** adopts the criterion of 'justice' and 'fairness' in analyzing the nature, meanings and impacts of specific legal rules. It also recommends changes in legal rules based on the reason of 'justice and fairness'. So it must involve some definitions of what constitute 'justice' or 'fairness' which determines what is 'right' or 'wrong'. Such definitions are usually described in relation to certain political and philosophical positions, which, in turn, depend on the person's political and philosophical preferences. Their definitions usually incorporate certain criteria of distribution goals for legal rules, i.e., law should, in the name of 'justice', provide 'protection' of certain categories of population, such as the poor, consumers, women, etc.

The **economic analysis of law** uses economic theory to analyze the impact of legal rules on individual behaviors and to provide economic criteria for choosing particular legal rules. Law imposes 'costs or the implicit price of action' and thus influences the individual's incentives to behave in a certain way. Economics provides the **positive analysis of law** to predict the effect of legal sanction on individual behaviors. The outcome is evaluated based on the efficiency criterion, which is a scientific question and can be studied and analyzed in quantitative terms. The economic analysis of law also makes **'normative'** contribution to legal studies by recommending the use of efficiency as the most important criterion in designing or choosing particular legal rules to influence individual behaviors into certain desirable goals (e.g., to internalize external effects of one's own action and to achieve efficiency).

Efficiency in economics is defined in two related meanings.

- **'Technical or production efficiency'** is the maximization of social wealth, or the maximized social net benefit which is equal to social benefit minus social costs.

- **‘Pareto or allocative efficiency’** is the situation in which it is impossible to change it so as to make at least one person better off without making another person worse off.

2. Suppose that a railroad runs beside a field in which commercial crops are grown. The railroad is powered by a steam locomotive that emits sparks out of its smokestack. From time to time, those sparks land on the crops near the track and burn them. Assume the following:

- Each year, the farmer whose crops are burned loses \$2,000 in profits.
- The annual cost to the railroad of installing and maintaining a spark-arrester that would prevent any damage to the crop is \$4,000.

Use the information above to answer the following two questions:

Question 2.1: Assuming zero **transaction costs**, use the **Coase Theorem** to analyze the effects of the two different legal rules on the efficient outcome (10 points):

Rule 1: The law protects the farmer from invasion by sparks.

Rule 2: The law allows the railroad to emit sparks without liability.

Which rule is the more efficient in terms of resource allocation?

Answer to 2.1:

The Coase Theorem states that, when transaction costs are zero, an efficient use of resources results from private bargaining regardless of the legal assignment of property rights.

Rule 1 means that the farmer has the right to his crops and safety from sparks. The railroad has two choices:

- to install a spark-arrester at a cost of \$4,000.
- to avoid installing a spark-arrester (and to continue emitting sparks) by offering at least \$2,000 to farmers but no more than \$4,000.

With zero transaction costs, the railroad can bargain with the farmer and will choose option b. The railroad’s threat value is to pay no more than \$4,000 while the farmer’s threat value is to accept no less than \$2,000. The surplus from cooperation is $\$4,000 - \$2,000 = \$2,000$. If the parties agree to split the surplus in half, the railroad will pay $\$2,000 + \$1,000 = \$3,000$ to the farmer and save up \$1,000 by not installing a spark-arrester.

Rule 2 means the railroad has the right to emit sparks and the farmer must bear the cost of the damage at \$2,000. The farmer has two choices:

- to suffer the crop damage of \$2,000, or
- to offer to pay at least \$4,000 for the railroad to install a spark-arrester (so as to stop emitting sparks).

As the resource (the right to emit sparks) already belongs to the one who values it the most (\$4,000 for the railroad against \$2,000 for the farmer), **there is no need for private bargaining**. The farmer will continue to suffer the crop damage as the least-cost choice.

Both Rule 1 and Rule 2 are equally efficient in terms of resource allocation, i.e., a spark-arrester will not be installed. The only difference is how the surplus is shared and who will bear the cost of crop damage. In Rule 1, the railroad bears the cost of crop damage and the surplus is shared by both parties. In Rule 2, the farmer bears the cost while the surplus is appropriated wholly by the railroad.

Question 2.2: But if **transaction costs are high** (so that private bargaining is not possible) and the law protects the farmer from invasion by sparks (**Rule 1**), analyze the effect of **the following remedies granted by the court** on the outcome of the dispute (10 points):

- a) Railroad pays **future damages** to the farmer or stops emitting sparks.
- b) A court **injunction** for the railroad to stop emitting sparks.

Which remedy is the more efficient in terms of resource allocation? And explain your reason why that particular remedy is more efficient than the other.

Answer to 2.2:

When transaction costs are high, parties to the dispute cannot bargain and must resort to a lawsuit. Rule 1 means the farmer has the clear right to safety from sparks while the railroad is liable to any damages to the farmer or must be subject to an injunction (not to emit sparks).

- a) If the court requires the railroad to pay damages to the farmer, the amount of damages is \$2,000 (which is actually the price of the farmer's right to safety from sparks). Or the railroad can avoid paying such damages by installing a spark-arrester at a cost of \$4,000. So the railroad will minimize its costs by paying \$2,000 damages to the farmer and will not install a spark-arrester.
- b) The injunction is equivalent to a clear assignment of property rights without the court setting the price of such rights. With high transaction costs and no private bargaining, the railroad must stop emitting sparks by installing a spark-arrester at a cost of \$4,000 while the farmer saves up \$2,000 from the crop damage.

Therefore, **damages as a remedy is more efficient**. It minimizes costs for society at the crop damage of \$2,000 rather than paying for a spark arrester of \$4,000. The railroad will pay \$2,000 damages to the farmer and will not install a spark-arrester. The reason is that damages (Choice a) allow the railroad to choose the solution which minimizes its private cost (and costs to society) whereas the injunction leaves the railroad with no choice other than installing a spark arrester, which is more expensive.

The only difficulty with damages as a remedy is that the court must incur **low information costs** in finding out the exact amount of damages. For example, if the court sets too high damages at \$5,000, the railroad will choose to install a spark arrester (at \$4,000) which is more expensive than the actual crop damage to the farmer (at \$2,000). Efficiency will not be achieved.