ECN 371 - Environmental Economics
09:00-12:00 - May 19, 2016

A1: No books except English dictionary, no other aiding tools.
This exam consists of 4 questions, for a total score of 100 points.
All questions are to be answered. You may answer in English or Norwegian.

Question 1 (20 points)

Truth telling, also denoted truthful revelation, is an essential feature of modern environmental economics.

(a) Explain what is meant by the term *truth telling* in modern environmental economics, and connect the term to the relevant resource allocation mechanism criteria. **(5 points)**

(b) Explain how an emission tax motivates *truth telling* under certain conditions. Name these conditions and explain their relevance. **(5 points)**

(c) In some cases *information rents* are impossible to avoid. Provide an example where you explain how information rents play a role. Using your example, discuss possible advantages and disadvantages of requiring truthful revelation. **(10 points)**

Question 2 (20 points)

One objective of (modern) economics is to enhance societal welfare (well-being). Pareto improvements are frequently used as a condition for what constitutes improvements in the well-being of agents.

(a) Explain why a *Pareto improvement* may be too restrictive a requirement for welfare improvements in the sense that potential welfare improvements are not realized. Justify your answer and provide an illustration clarifying your reasoning. **(10 points)**

(b) Explain how certain pay-off rankings may constitute an obstacle for achieving welfare increases. Provide an illustration where this is the case, and show how side-payments in principle may solve the deadlock. Given your example, explain why side-payments remain problematic for achieving welfare increases. **(10 points)**

Question 3 (20 points)

Self regulation and voluntary regulations have frequently been mentioned as alternatives to conventional regulations.

(a) What are common features of successful *self regulation* and standard regulations? Please justify your choice of features. Briefly discuss settings where self regulations that used to work now may fail. **(10 points)**

(b) What are the main difficulties using *voluntary regulations*, and how can these difficulties be amended or reduced? **(10 points)**

Question 4 (40 points)

Genetically modified organisms (GMOs) are among the most controversial issues in today's policy debate, with strong proponents and opponents for allowing more wide spread use.

Proponents for GMOs argue that with reduced growth in food production, GMOs are among the most promising ways of maintaining or increasing growth in global food supplies. They also point to GMOs contributing to less demand for pesticides. Reduced pesticide use may have beneficial environmental effects in addition to reducing consumer's and farm worker's exposure to pesticides or pesticide residues.

Skeptics towards GMOs argue that the long term health effects from consuming genetically modified (GM) foods are still not sufficiently investigated, and that GMOs may pose severe biological risks if not properly contained, for example if traits of the GMO spread to wild plants and animals.

(a) Which of the above attributes could be termed *positive or negative externalities*. Briefly explain your reasoning. **(10 points)**

(b) How do you propose to deal with these possible externalities? **(10 points)**

(c) With the large uncertainties surrounding more widespread adoption of GMOs, some argue for restraint on the use of GMOs until these uncertainties are resolved or reduced. Show how this position can be defended using relevant economic tools for analyzing risky decisions. **(10 points)**

Labeling of GM foods is one of the most hotly debated issues surrounding GMOs. Proponents of GMOs argue that there is no widely accepted scientific study indicating health problems due to consumption of GM foods. Hence, they claim there are no valid science based reasons for requiring GM foods to be labeled. Skeptics towards GM foods argue that if GM foods are not labeled, consumers are deprived of informed choice.

(d) From a transaction cost perspective explain why the issue of labeling is so important. **(10 points)**

              Eric Nævdal (sign.)   Eirik Romstad
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