

Written Exam for the M.Sc. in Economics summer 2013

Health Economics

Re-Exam

August 15th 2013

(3-hour closed book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by “eksamen på dansk” in brackets, you must write your exam paper in Danish.

This exam consists of 3 pages in total (including this front page) with 3 questions.

Question 1

The following equation is a linearized version of the pure investment model in Grossman (1972):

$$\ln M_t = B_0 + B_{WM} \ln W_t + B_{EM} E + B_{PM} p_t + B_{IM} t + u$$

M is the demand for medical care, W is the hourly wage rate, E is education, p is the consumer co-payment for medical care and t is age.

- a) What is the driving force behind the demand for medical care in the pure investment model?

Consider a group of chronically ill patient. Their disease lowers their quality of life, but most are still able to work. Assume that a new treatment becomes available that improves their life quality. The treatment is financed through taxes, so without private co-payments, but is time consuming.

- b) Use the pure investment model to discuss how the demand for this treatment will vary among different groups of patients with different wages.

Assume that there is imperfect information about the availability of the treatment, and as a consequence an information campaign directed towards patients is enacted.

- c) What role does information play in the Grossman model? Can you imagine that some patients will react more to an information campaign than others? Based on the Grossman model and empirical evidence: What is the likely impact of the information campaign?

Question 2

A hospital is considering introducing a new drug instead of the one that has been used so far for a given group of patients. All drugs extend life of the patients.

The current drug, drug A, costs 15,000 DKK per patient and the gain of treatment with this drug is 5.1 QALY.

Three new drugs are considered. In table 1 you see their costs, gained QALYs, cost-effectiveness ratios and ICER's.

Table 1. Cost and QALY of four mutually exclusive drug treatments.

Drug	$Q_i = \text{QALY}_i$	$C_i = \text{Costs}_i$	C_i/Q_i	$\text{ICER} = (C_{i+1} - C_i)/(Q_{i+1} - Q_i)$
A	5.1	15,000 DKK	2,941	
B	5.12	18,000 DKK	3,515	150,000
C	5.14	20,000 DKK	3,891	100,000
D	5.17	30,000 DKK	5,802	300,000

Previous year, the hospital replaced another drug for a different patient group with a new drug. The new drug provided a gain of 0.02 QALYs per patient and the hospital was willing to pay the additional costs of 5,000 DKK per patient, i.e. 250,000 DKK per added QALY.

The costs occur immediately and effects have not been discounted. Hospital procedures are not altered by use of the new drugs and costs are measured by the budget outlay for the consumed amounts of drugs, which are traded on perfect competitive markets.

Questions:

- Assume the patient would die if not treated, and that life quality is measured at 0.6 utilities (on a 0-scale, where 1 is perfect health and 0 is death) after treatment. Draw a QALY diagram for the treatments and interpret it.
- Draw a cost-QALY frontier and discuss if any alternatives are dominated.
- Conduct an economic evaluation of the choices considered by the hospital. What do you recommend the hospital should do?

Question 3

- Define horizontal inequity in health care use.
- Mention two arguments for caring about inequity in health care use
- How can we measure horizontal inequity in health care use?