

Examination guidelines for HECON4220 – Paying Providers of Health Care Spring 2022

Question 1: (50 %)

Question 1 draws on the textbook by Zweifel, Breyer & Kifmann (2012) chapter 10, “Paying Providers”.

a) A financing system for hospitals often consists of many components. Explain the most common components.

The textbook reference is 10.4.3.1 Overview of Payment Systems, where the concepts Payment base and Payment schedule are introduced. It would be fine also to introduce the concepts prospective and retrospective payment components and other typologies introduced in Jegers et al: A typology for provider payment systems in health care. Also, content from the lecture notes is relevant.

b) Explain briefly the main objectives a financing system for hospitals should fulfill. Give one or more examples of why these objectives often have to be balanced against each other.

The lecture notes describe social efficiency as:

- Expected costs of a treatment should be reasonable compared with the expected health benefits
- Incentives for providers to reduce costs
- Prevent upcoding of case-mix
- Providing optimal quality of care
- Health improvements of transferring tasks to specialized care must be balanced against the additional cost of transferring a patient from primary care to specialized care.
- No selection of patients due to economic consideration by the provider
- Contribute to an equitable distribution of resources among patients
- Keep expenditures within the budget

Trade-offs involved should be elaborated on. For instance, quality of care may have to be balanced against incentives for providers to reduce costs.

- c) In the textbook models, the provider can influence cost by means of cost-reducing effort. Give examples of types of cost-reducing effort. Explain why the provider chooses low level of effort when payment is retrospective and higher level of effort when payment is prospective.**

Two examples are effort to organize surgical departments to increase utilization of operation theatres without creating congestion and setting up shift systems that provide an efficient use of the hospital staff.

Under a retrospective payment system, there is no financial gain for the hospital manager and hospital staff to provide cost reducing effort.

- d) Assume now that a provider receives prospective payment from a payer. In the textbook model, the provider's optimal level of cost-reducing effort is then determined by the condition:**

$$V'[e] = -EC'[e]$$

where,

e = level of cost-reducing effort

V[e] is disutility of exerting effort

$V'[e] > 0$ is the first order derivative of the disutility of effort function

EC[e] is expected cost as a function of effort

$EC'[e] < 0$ is the first order derivative of the cost function

Explain with words what the condition for optimal level of cost-reducing effort expresses.

You are supposed to elaborate on the first order condition described above. The first order condition states that the marginal disutility of effort equals the marginal cost reduction of effort. It is a good idea to introduce Fig. 10.1. Optimal Effort Level to Control Costs. Explain the figure and motivate that the first order condition makes sense.

- e) Explain why it is not optimal for the payer to aim at a maximum level of effort by the provider.**

Again, you can make use of Figure 10.1 to explain why it is not optimal for the payer to aim at a maximum level of effort by the provider, since the provider would then require extra money to obtain the reservation utility.

- f) Explain what it means that the level of cost-reducing effort is not contractible. Discuss whether the optimal payment system should depend on whether cost reducing effort is contractible or not.**

The important reference is chapter “10.2.1.3 Implementing the First-Best Solution” of the text book. If cost is the only concern, a fixed budget can implement the first best solution when cost reducing effort is not contractible. A successful answer should also reflect on the type of contract that is optimal if the provider is risk averse, if quality is a concern etc.

Question 2: (50 %)

Question 2 draws on the textbook by Zweifel, Breyer & Kifmann (2012) chapter 10, “Paying Providers”.

- a) A provider’s casemix influences the costs of treating patients. Explain why the payer is likely to have less information about a provider’s casemix than the provider has. Give an example of a type of patients where the asymmetric information about casemix is likely to be considerable.**

While the provider collects detailed information from the processes of diagnostics and treatment, the payer observes patients at a distance and has to rely on the information from the provider. Considerable variation in disease severity within a diagnosis group add to the asymmetric information about casemix.

- b) Assume that expected hospitals costs are:**

$$EC(\beta, e) = \beta - e,$$

where β reflects casemix, with $\underline{\beta} < \beta < \bar{\beta}$, and e is the level of cost-reducing effort.

Both e and β are assumed to be non-contractible.

The provider maximizes expected utility equal to:

$$\max_e EU = F - (1 - \gamma)(\beta - e) - V(e),$$

where F is a fixed revenue, γ is the proportion of expected costs that is compensated by the payer (degree of cost reimbursement), and $V(e)$ is the convex disutility of effort ($V'(e) > 0$ and $V''(e) > 0$). Assume first that $\gamma = 0$.

Explain what is meant by “Information rent”? Does the magnitude of the information rent depend on the level of β that is optimal for the provider to report?

The central textbook reference is “10.2.3 Casemix and Information Rent”. A successful answer should explain that the information rent implies that the provider’s utility is greater than the reservation utility and increases with the difference between the cost of treating the most severely ill patient and a patient with the expected severity.

- c) We now allow for some cost-compensation in terms of $\gamma > 0$. It can be shown that the optimal degree of cost-compensation from the payer’s perspective (γ^*) is equal to:**

$$\gamma^* = \frac{\bar{\beta} - E\beta}{-e'(\gamma^*)} > 0,$$

where $e'(\gamma^*)$ is the marginal effect of cost compensation on provider's optimal cost-reducing effort. Explain the expression for γ^* .

The optimal level of cost reducing effort, $e(\gamma)$ is determined by the condition

$$1 - \gamma = V'(e)$$

Explain why the optimal level of cost-reducing effort for $\gamma > 0$ is smaller than the first best optimum and why it is still optimal for payer to have $\gamma > 0$.

What are the trade-offs that are involved for the payer? Explain the factors that pull in the direction of a high degree of cost-compensation.

Again, the central textbook reference is "10.2.3 Casemix and Information Rent". It is important to interpret the numerator and denominator of the expression for optimal degree of cost reimbursement. Also, explain the factors that contribute to an increase in the optimal degree of cost reimbursement.

(Typo: a d) has been omitted from the questions)

Start by explaining the first best optimal level of cost reducing effort and then explain why the optimal level of cost reducing effort is smaller than the first best level. The first best level is not optimal since the information rent would exceed the cost reduction from first best level of cost reducing effort.

e) **Finally, are there measures that could be taken to make casemix contractible? What would be the implication for the optimal payment system?**

Explain to what extent improvement in information systems may reduce the asymmetric information of case mix. Reduced asymmetric information makes it optimal to reduce the degree of cost reimbursement.