

Examination guidelines for HECON4220 – Paying Providers of Health Care Spring 2021

Question 1: (50 %)

a) Describe main components of a payment system for privately practicing physicians.

A description can be based on the lecture notes on “Paying physicians” and/or chapter 10.4.2 of Zweifel et al. (from now called the textbook). Describe also combinations of the different components and give examples.

b) Explain the meaning of the GP’s objective function as described by the expression (1). Which are the physician’s decision variables?

An explanation should include that the objective function reveals the GP as a partial altruist. The different component of the objective function should be explained and in particular, the health component that includes the number of patients should be given attention. In particular, the implication of a concave health function combined with the number of patients should be elaborated on.

c) Explain why the optimal number of services from the physician’s perspective is smaller than the optimal number of services from the individual patient’s perspective and equal to the minimum number of services that is considered acceptable by the profession (q).

Make use of reasoning from the lecture notes and from Iversen (2015). Explain why the GP’s objective function implies that the minimum number of services that is considered acceptable by the profession coincides with the maximum of the GP’s objective function. In the explanation, particular attention should be given to role of the health function in arriving at the optimal number of services from the physician’s perspective.

- d) Does the optimal number of services from the physician's perspective depend on the payment system? Justify the answer.**

The optimal number of services from the physician's perspective does not depend on the payment system. The conclusion should be justified by deriving (by math and/or words) the optimal number of services under alternative payment schemes. Particular attention should be given to the result that the minimum number of services is optimal also under fee for service in this case.

- e) Consider then an alternative formulation of the GP's objective function (utility function):**

$$V = \delta [A + (R + Fq)n - c(nq)] + (1 - \delta)h(\theta, q) \quad (1)$$

$$c'(nq) > 0, c''(nq) > 0,$$

Give an interpretation of the difference between the objective function in expression (1) and the objective function in expression (2).

The difference between (1) and (2) comes from the different formulations of the health part of the objective function. An interpretation relates to the GP's community responsibility and to how the content of this responsibility may change with the supply of GPs.

- f) Explain the GP's optimal number of services under alternative payment systems with the objective function described by expression (2). Explain why the optimal number of services differs from the optimal number of services under the objective function described by expression (1).**

The optimal number of services from the physician's perspective should be justified by deriving (by math and/or words) the optimal number of services under alternative payment schemes. The contributions of the revenue part and the health part should each be given attention. In the comparison of the results with the two objective functions, particular attention should be given to the role of the two alternative health components.

- g) Under fee-for-service and objective function (2), the optimal q is determined by $h'_q(\theta, q) = 0$. Explain the number of services this expression implies. Is it an optimal number of services from the patient perspective? Is it an optimal number of services from the society's perspective?**

The expression implies the optimal number of services from the patient's perspective, which is greater than the optimal number of services from the society's perspective. The difference between these two optima should be explained by math/figure/words.

- h) Discuss to what extent the reasoning above can help policy-makers in constructing optimal payment schemes for GPs in various countries.**

Optimal payment schemes may depend on the environment, for instance in terms of the supply of GPs. A good answer should elaborate on what payment system that may be optimal under different environments.

Question 2: (50 %)

- a) Explain the distinction between a risk neutral health care provider and a risk averse health care provider.**

An explanation can make use of the lecture notes from "Optimal payment schemes for providers I" and/or the textbook chapter 10.2.2. An explanation should include that risk aversion implies a concave utility function, which implies that the expected utility of participating in a lottery is smaller than the utility of receiving the expected return from the lottery with certainty.

- b) Explain why some health care providers may be risk neutral while others are risk averse.**

An explanation may be inspired by chapter 10.4 "Implications for the Design of Payment Systems" of the textbook. An important keyword is diversification of assets, patients and ownership. The authors argue that physician practices in general are less diversified than hospitals.

- c) Is it reasonable to assume that the third party payer (insurer) is risk averse? Justify your answer.**

Health insurers can behave as risk neutral with large number of customers with independent illness probability. Things may become more complicated with mutually dependent illness probabilities and/or asymmetric information between the insurer and the insured.

- d) Explain then why the payer (health insurer or public sector) might be interested in compensating some of a risk averse provider's actual costs.**

By compensating some of the provider's actual costs, the payer's expected costs are reduced because of reduced risk premium paid to the provider. A successful answer should explain by math/graphs/words why partial cost compensation is optimal to a risk neutral payer.

e) In the textbook, the optimal degree of cost compensation(γ^*) is determined by:

$$\gamma^* = \frac{r\sigma^2}{1+r\sigma^2}$$

where $r \geq 0$ is the degree of risk aversion and σ^2 is the variance of the costs. Explain the meaning of the expression. Explain then what guidance the expression offers to the construction of actual provider payment systems.

A successful answer should explain that the optimal degree of cost compensation increases with the degree of risk aversion and the variance of the costs. The explanation should be done by math/graphs/words. The explanation should be related to how these parameters may vary across types of providers.

f) Is it optimal with first best cost reducing effort from a risk averse provider? Justify your answer.

No, it is not optimal with first best cost reducing effort from a risk averse provider. The candidate should explain that first best cost reducing effort implies full cost responsibility to the provider, which is not optimal with a risk averse provider.

g) Explain the meaning of a trade-off between cost compensation and the provider's cost reducing effort.

The trade-off follows from the answers to questions d) – f).

h) Mention additional reasons for why a payer may be interested in partly compensating the provider's actual cost. Elaborate in some more detail on one of these additional reasons.

Additional reasons may be asymmetric information about patient composition, asymmetric information about quality and the possibility of patient selection. A successful answer would elaborate on one of these by making use of reasoning from textbook and lectures.