

Examination guidelines HECON 4100: Fall 2024

Question 1 (33.3 %): Explain the following concepts;

(a) Social surplus

1. For a given quantity (quality) consumed of a good or service, the social surplus is the difference between the willingness to pay for this particular quantity (quality) and the social costs that follow from producing this quantity (quality). This could be shown by drawing the supply and the demand functions and give an interpretation of the two functions.
2. The social surplus is maximized for the quantity defined by equality between the marginal willingness to pay and the marginal social cost.
3. If the realized social surplus differs from the maximum social surplus, we are in a situation with inefficiency (deadweight loss).
4. If the good is traded in a market, then a price will exist in the market and the price – quantity combination will generate an amount of social surplus and this social surplus is the sum of the consumer surplus and the producer surplus.
5. If the market considered is a perfect competitive market (say what characterizes such a market), the social surplus is maximized (allocative efficiency is achieved). If this market is a market where the producers have market power, the social surplus will not be maximized.
6. The social surplus is not concerned with distributive issues (wealth and non-wealthy).
7. It is preferable that some graphs that illustrates the social surplus is presented.

(b) Depreciation and discounting

1. Both concepts relate to a dynamic perspective (a planning perspective) and both are part of the concept of capital costs.
2. The health of an individual can be perceived as a stock of health (human capital) and health promotion activities and health visits may be perceived as investments (flows) in your future health.
3. Depreciation captures the fact that your health will become lower in future periods mainly because due to aging. The higher the depreciation rate, the lower will your health be in future periods. However, this future decline in your health stock can be reduced by investing in your both today and in the future.
4. It would also be nice to put some formulas that describe the health dynamics over time.
5. The incentive for investing into health today will be reduced the higher the depreciation rate. This happens because the future net returns from investing in health decrease with a higher depreciation rate.
6. Discounting converts the value of future income and future benefit streams into a reference period, often being the current period (present value). This implies that the value of a given future cost or a given future benefit are valued less, the longer in the future these effects occur.
7. The more impatient an individual is, the higher is the discounting of future benefits, and the lower the incentives for investing in health.
8. Present the formula for the present value

(c) Supply-induced demand.

1. This concept refers to a situation with asymmetric information in that the provider of health care services is better informed about the relevant diagnosis and the adequate treatment than the consumer of health care services.
2. This asymmetry of information implies that the producer has market power.
3. Such a market power can be used to manipulate the consumer when informing the patient about the treatment effects of the various treatments.
4. Depending on the reimbursement system in place (fee-for-service or capitation), the provider is confronted with an incentive to convince the patient about the willingness to pay being higher or lower than the true willingness to pay of the consumer.
5. Such behavior may result in too much or too little health care consumption relatively to what would be the optimal level for the patient (and possibly society) if being perfectly informed.
5. Professionalism and norms may reduce such provider behavior.
6. Use graphs to describe a situation with supply-induced demand and define the deadweight loss.

Question 2 (33.3%):

- (i) Discuss what dimensions (elements) should be included in the concept of health care quality.
 1. Here a presentation of one or more suggestions that appear in the literature is relevant. Possible examples are (i) the Norwegian white paper that mention effective services, safe services, the involvement of users, coordinated services, cost-efficiency and accessibility, (ii) Donebedian that mentions structure, process and outcome, and (iii) Grepperud that mentions clinical quality, care quality, infra-structure quality and duration.
 2. It will be relevant to compare the various suggestions wrt similarities and differences.
 3. It will be adequate to discuss to what extent the quality dimensions mentioned are possible to measure and what dimensions that are observable for the patients The observability of quality using the concepts of search goods, experience goods, credence goods and son.
 4. Could also discuss to what extent providers are confronted with adequate social incentives to supply the various dimensions of quality.
- (i) What is the optimal level of health care quality for society?
 1. The quality level that makes the marginal willingness to pay for quality equal to the marginal social cost of providing this particular quality level.
 2. The socially optimal quality level maximizes the social surplus.
 3. This definition implies that better quality does not always represent an improvement for society – quality may in practice be too low or too high and this may vary depending on the actual quality dimension being focused upon.
 4. Some dimensions of quality are hard to observe both for consumers and policy makers making it difficult in practice to define the optimal level.
 5. Draw a graph that presents the optimal quality level.

- (ii) Consider a monopolist that is facing the following demand function; $h = D(P, Q)$, where h is the number of health care services. P is the price of the health care services where the demand for h is assumed to become lower for a higher P . Q is the quality level of the health care services where the demand for h is assumed to become higher for a higher Q . It is also assumed that the consumers (patients) can observe the true quality level that is supplied by the monopolist (fully informed about quality).

First, for a given level of quality ($Q = Q_0$), explain what the optimal number of level health care services (h) and the optimal price (P) will be for a monopolist that maximizes profit.

Second, assume that the quality level, for some reason, becomes higher ($Q = Q_1 > Q_0$), what will now be the effects on the monopolist's optimal choices of h and P ?

1. This question might be challenging to answer if not putting a graph that presents the monopoly solution.
2. The monopolist has a downward falling demand function meaning that it possesses some market power. The degree of market power is higher the more inelastic the demand function.
1. The monopolist knows that the higher the price charged for h , the lower will the demand for h be.
2. The optimal level of h for the monopolist is the level that makes the marginal revenue from h equal to the marginal monopoly cost (illustrate in a graph). Here it is possible to draw the social surplus and point to the fact that this is not the maximal social surplus.
3. The marginal revenue consists of two contradicting effects. First, a higher price implies that the monopolist gets more income for a given number of units sold (a positive revenue effect). Second, a higher price implies that less units of h now will be sold (a negative revenue effect).
4. A higher quality implies an upward shift in the demand function since the willingness to pay for the consumers for any h now is higher (perfectly informed consumers). Consequently, the marginal revenue function will also shift upwards, and this change will typically induce a higher monopolist price and a higher supply of health care services.
5. However, a higher quality level may also imply that the marginal cost function of the monopolist is changing since higher quality typically means that production costs become higher. If the marginal cost becomes higher due to higher quality, the total effects on P and h from a higher Q become indeterminate.
6. The deadweight losses associated with monopoly could be identified in the presented figures

Question 3 (33.3%):

The *Norwegian sick leave scheme* provides a 100% financial compensation (up to a given cap) for employees who are temporarily unable to work due to illness or injury. In this scheme, the employees are allowed to self-certify (egenmelding) their sick leave for up to three consecutive calendar days up to four times per calendar year without needing a medical certificate (sykemelding). If the illness or injury lasts longer than three days, a medical certificate from a physician is

required. The sick leave can last up to 52 weeks (1 year). For the first 16 calendar days of sick leave, the employer is responsible for paying the employee's salary. After the initial 16 days, the state-run Norwegian Labour and Welfare Administration (NAV) takes over and pays the sick leave benefits.

- (I) It has been said that the *Norwegian sick leave scheme* can be perceived as being an insurance scheme. Explain why this is the case?
- 1. Provides a complete (100%) risk protection (wage income loss protection).**
 - 2. The risk related to wage income losses is eliminated for 52 weeks. This means that risk averse individuals gain a benefit from such an insurance.**
 - 3. This insurance does not resemble a private insurance but is “almost” a universal insurance since all employed are covered by the insurance and most of the expenses are covered by the taxpayers. A compulsory insurance scheme – in this perspective it parallels the national health insurance scheme in Norway.**
 - 4. However some of the insurance expenses are covered by the employers. The employers pay the first 16 days are the employers, while the remaining expenses are covered by NAV.**
 - 5. There is no co-payments in this Norwegian scheme due to a 100% compensation, however, there is an upper limit on the compensation (up to 6G), meaning that high-income workers not necessarily become fully compensated. There are dimensions that must be considered; (i) the degree of wage income-loss compensation, and, (ii) the period of time. Low income workers are fully compensated for a year, but after this the insurance ends (no compensation, but a transition to other type of insurances i.e. disability insurances). Furthermore, if you stay away from work for more than 3 days in a row or more than 12 days altogether (and you do not get a medical certificate), you become fully responsible for your wage income-loss.**
- (II) Discuss some possible effects that may arise from having such a scheme in place (relatively to the situation without such a scheme).
- 1. Since people are risk averse, such a scheme provides benefits in terms of less risk exposure. The scheme produces benefits for society since the costs of becoming sick are reduced. However, the risk benefits are quite insignificant for minor diseases (low risk benefits) while they are substantial for major diseases (high risk benefits).**
 - 2. Ex-ante moral hazard – the probability of getting sick and staying away from work may increase since people do less in trying to avoid getting sick. The costs of becoming sick becomes lower when being insured.**
 - 3. Ex-post moral hazard – when being sick, the period an individual stays away from work if becoming sick may become longer since being insured or because some now chooses to stay away from work also when not being sick (fraud).**
 - 4. The presence of ex-ante and ex-post moral hazard may cause productivity losses for the employees but also for society.**
 - 5. The presence of this insurance implies that workers with contagious diseases stay at home when having contagious disease (avoid a negative externality).**

6. There is no co-payments for this insurance-scheme in Norway. The employers carry all costs the first 16 days plus productivity losses that follow from sick leave. Nav (the society) carry all the financial costs after the first 16 days and these costs are covered by general taxation. In addition, there are societal productivity cost .

- (III) Suggest one possible reform of the *Norwegian sick leave scheme* and discuss the possible advantages and disadvantages that may follow from introducing the suggested reform.

Possible reforms that could be discussed are;

- (i) A percentage reduction in the degree of compensation for a given time period. For example by reducing the degree of compensation to 80 or 90% for short term leave, for long terms leave or for both.**
- (ii) The first day away from work is not compensated (“karensdag”),**
- (iii) Change the distribution of the financial responsibility between the employers and NAV - for example by increasing the responsibility of the employer. Here you open up for a discussion about the employers incentives to “keep” their workers healthy.**
- (iv) Pay the workers, not being away from work due to sickness during a period of time, higher wages or give them a bonus in terms of a day or two off-work.**
- (v) Replace the current system with a private voluntary system.**