

Question 1. (30%) - Concepts/models

Explain the following concepts/models in words and give an example for each concept:

(a) Scarcity

Scarcity is an important concept in economics. Since there is a limited amount of resources, the theoretically limitless demand is greater than the supply. Therefore, one has to prioritize how to best use the available resources that may produce something of value for society when put to alternative use.

Examples: Time, labor, capital, etc.

(b) Pauly and Satterthwaite model

On a reputation goods market an increase in providers (high competition) leads to higher search costs for the consumers because it has become harder to catalogue the pros/cons of each provider. This gives the providers more market power and the ability to increase the price.

Examples: GPs, restaurants, etc.

(c) Adverse selection

*The consumers know more about the value of the contract than the providers do. Since the price is the same for everyone, consumers with a low value contract (lower than the price) will withdraw from the contract. The consequences will be that the provider has to increase the price. This will continue until only the consumers with the highest value contract remains.
(Note that the value of the contract is defined from the perspective of the consumers)*

Alternatively

The providers know more about the value of the good than the consumers do. Since the price is the same for all goods, providers that provide goods with a higher value than the price will stop providing to the market. The consequence will be that the price of the good decreases as fewer high value goods are on the market. This will continue until only the lowest value goods remains on the market.

Examples: Insurance, cars, etc.

(d) Public good

Public goods are goods without rivalry and without excludability.

NON-RIVALRY: A person's utility from consuming a good does not affect the utility of other persons in consuming the same good.

NON-EXCLUDABILITY: Those persons who want to consume the good cannot be excluded from consuming it.

Examples: Streetlights, emergency unit preparedness, knowledge,

Question 2. (30%) - Externalities

- (a) Give two examples of goods that causes externalities on the health of others (one positive and one negative).**

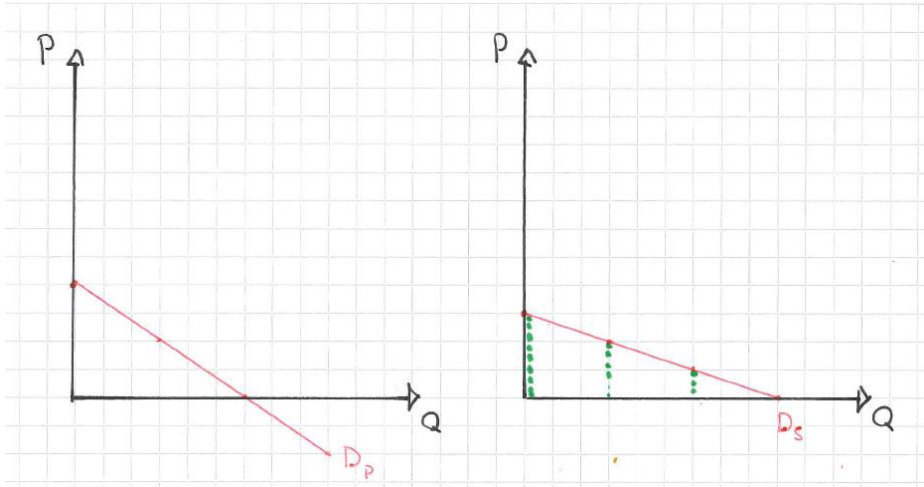
Positive externality examples: Vaccine

Something an individual consumes that also causes a benefit for a third party.

Negative externality: Pollution, smoking,

Something an individual consumes that also causes harm/a cost for a third party.

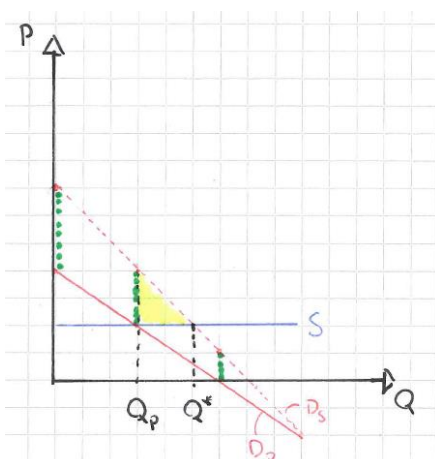
- (b) Illustrate graphically what the consumption of a good with positive externality would be without government intervention. Additionally, illustrate what the social optimal consumption of this good would be. For simplicity, assume a constant marginal cost function.



The marginal social benefit of a good with a positive externality consists of the private willingness to pay (marginal private benefit) that is illustrated in the graph above to the left, and the society's willingness to pay (society's marginal benefit) that is illustrated in the graph above to the right. By summing the two (private willingness to pay and the society's willingness to pay) vertically we obtain the marginal social benefit, which is illustrated by the stippled line in the graph below. The solid line in the graph below illustrates the private willingness to pay. Note that the difference in height between the private willingness to pay and the marginal social benefit is exactly the society's willingness to pay. The blue (S)upply line illustrates the marginal cost function of this market.

The point along the horizontal quantity axis where the private willingness to pay coincides with the marginal cost function illustrates what the consumption would be without government intervention (Q_P).

The point along the horizontal quantity axis where marginal social benefit coincides with the marginal cost function illustrates the social optimal consumption (Q^*).



- (c) Explain the concept of dead weight loss and illustrate it in a market with a positive externality, given the social optimal solution.

Dead weight loss is an efficiency loss, where less (or more) goods are consumed than what would be socially optimal. The socially optimal consumption would be when the marginal willingness to pay (or marginal benefit) is equal to the marginal cost.

The dead weight loss in a market with a positive externality given the social optimal solution is illustrated by the yellow area in the graph above. In this area we have that the marginal social benefit is higher than the marginal cost, yet these units are not consumed.

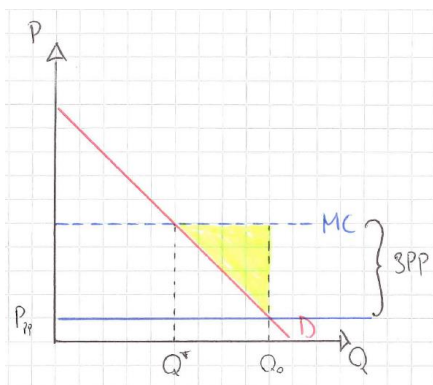
Question 3. (40%) - Insurance

- (a) Explain the concept of ex-ante moral hazard and give a suitable example.

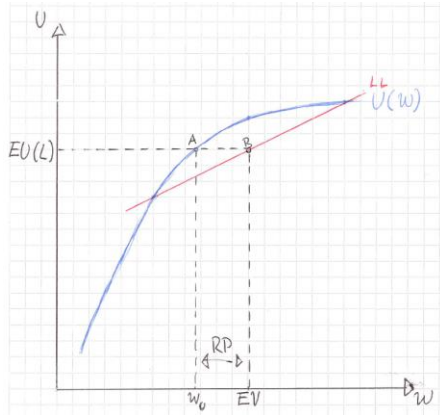
After the individual has signed up for an insurance, but before the event, the individual will change behavior to a more risk taking behavior. The event could be an accident, falling ill, etc. The risk taking behavior may include smoking, less exercise, or anything that means lower investments in the individual's own health. This results from the knowledge that the insurance will take care of the individual's health if an event would occur. The result will be that being insured leads to more consumption of health care services because of underinvestment.

- (b) Assume that an individual has signed up for a health insurance with a copayment structure where the patient pays a fraction of the cost for treatment. Explain ex-post moral hazard and illustrate in a graph. Also, illustrate the dead weight loss. For simplicity, assume a constant marginal cost function.

After the individual has signed up for an insurance and after the event, the individual will consume more health care services than what he/she values the services. Hence, the individual's marginal willingness to pay is lower than the marginal cost (MC) for the last consumed units, but since the insurance company (third party payer) covers a fraction of the payment, the individual does not face the marginal cost, but only a fraction thereof. Therefore the individual will not consume the optimal consumption (Q^*), but instead he/she will overconsume (Q_0). This and the dead weight loss is illustrated in the graph below, where the dead weight loss is the yellow area.



(c) Illustrate the maximum risk premium (RP) of a risk avert individual.



The maximum risk premium is illustrated by the difference in wealth between the Lottery line and the utility line at the utility level equal to the expected utility of the lottery.

In the illustration above:

B is the point along the lottery line where the expected utility (EU) is that of the expected value (EV) of the lottery.

A is the point along the utility line with the same utility level as the expected utility of the lottery, but with a certain wealth outcome (w_U)

RP is the difference between the certain wealth outcome (w_U) and the expected value of the lottery (EV).

(d) Illustrate the maximum risk premium (RP) of a more risk avert individual (than in question 3 c) using an identical lottery as in question 3 c.

The utility of wealth of a more risk avert individual is illustrated by a utility line with an increased bend. This should lead to an increase in RP.

(e) Discuss the pros and cons of private health insurances - you only need one pro and one con for full points on this question.

Pros mentioned during class:

- *Private insurance companies are more responsive to policyholders and can adapt to the costumers' heterogeneous preferences - in terms of new technologies, dynamic innovation, and non-standardized policies.*
- *Private insurance companies are more concerned with cost-containment: tougher when bargaining with providers on price and content.*

Cons mentioned during class:

- *Inefficient due to administrative expenses (marketing costs, duplicating fixed costs etc.)*
- *Profit-motive induces cream-skimming (attracting low risk policyholders and "those already with a disease" may not get insured)*
- *Unfair premiums – risk-rated premiums*
- *When as a supplement insurance to public insurance – "free ride" on public insurance plans*