



# B.E. International Program

Faculty of Economics, Thammasat University



## EE 474 Health Economics

Semester 2/2017

### Review Questions (After Midterm)

1. Summarize the three models that explain non-profit hospital behaviors.
2. Suppose the physician's utility function depends on the net income ( $\pi$ ) and inducement ( $I$ ), assuming that physicians dislike inducing patient demand. Moreover, the physician's net income is given by the function:

$$\pi = mQ_0 + mI,$$

where  $m$  is the profit rate ( $m > 0$ ),  $Q_0$  is the amount of patient care without inducement, and  $I$  is the inducement level.

- a. Suppose that  $m = 2$ . Draw an indifference curve to illustrate the trade-off between the physician's net income ( $\pi$ ) and inducement ( $I$ ), given that physicians dislike inducing patient demand. Identify the optimal inducement level ( $I^*$ ), and illustrate how the optimal inducement level ( $I^*$ ) if the profit rate ( $m$ ) decreases to 0.75. Assume that the physician responds to lowered profit rate by increasing influence on patient demand. [Note: you do not need to do any calculation here.]
- b. Re-draw the diagram in part (a), but assume that there is no income effect. What happens to the optimal inducement level?

3. Consider the information in the following table.

Number of Workers (N)	Wage (\$/N)	Additional Lab Test from Each Worker ( $MP_L$ )	Price Per Lab Test (MR)
1	10	2.25	20
2	12	2	20
3	14	1.75	20
4	16	1.5	20
5	18	1.25	20
6	20	1	20
7	22	0.75	20
8	24	0.5	20
9	26	0.25	20

- a. Construct the demand for labor and the supply of labor curves based on the above information, and illustrate the equilibrium level of workers hired. What is the competitive equilibrium wage? [Hint: First, you need to calculate the marginal revenue product (MRP) for each number of workers.]
- b. Suppose now that there is a single buyer of labor in this market (i.e. there is a monopsonist). Draw a diagram to illustrate the optimal number of workers hired by the monopsonist. [Hint: you need to calculate marginal factor cost (MFC).]

4. Consider the following table which depicts the stages of development for a new drug.

	<u>Research</u>		<u>Protected</u>		<u>Expired</u>	
	<u>t = 1</u>	<u>t = 2</u>	<u>t = 3</u>	<u>t = 4</u>	<u>t = 5</u>	<u>t = 6</u>
Cost	150	200	10	10	10	10
Revenue	0	0	200	150	100	50

- a. Suppose that the discount rate ( $r$ ) is 0.10. Calculate the net present value (NPV) of this project. Should the pharmaceutical company invest in this new drug development?
  - b. Suppose now that the discount rate ( $r$ ) is 0.15, should the company undertake this project? Show your calculation of the new NPV.
5. In a pure exchange economy with two persons and two commodities, use the Edgeworth box diagram to illustrate the followings: [Note: You may use separate diagrams.]
- a. Offer curve
  - b. Contract curve
  - c. Competitive equilibrium
6. Public goods
- a. Explain the two features of public goods and provide examples of *pure* public goods.
  - b. Draw a diagram to illustrate the optimal quantity of a public good, and discuss why the existence of public goods leads to inefficiency.
7. Monopolist
- a. Draw a diagram to illustrate the optimal price and quantity in the monopolist market, and identify the corresponding welfare loss in the society. Explain why the optimal quantity for the monopolist is not efficient. Assume that the marginal cost of the monopolist is constant.
  - b. Suppose a price control is imposed by the government. Show the changes in the quantity and the corresponding change in welfare loss.
8. Use the information below to answer the following questions.

<b>Treatment</b>	<b>Cost</b>	<b>Outcomes (Life-years gained)</b>	<b>Quality of Life</b>
A	\$50,000	4 years	0.8
B	\$122,000	8 years	0.5

Suppose that treatment A is currently adopted. Based on cost-utility analysis (CUA), calculate the ICER for replacing treatment A with treatment B. Should the new treatment be adopted? Why?

9. Compare and contrast the four models of health care systems discussed in class, regarding financing, reimbursement, and production.