

EE211 Assignment #3 (Section 2 Semester 2/2020)

Instructions:

- Assigned date is Thursday the 13th, May 2021. **Due date is Friday the 21th, May 2021 before 11.59 PM.**
 - Submission is only received through BE Moodle platform as PDF file.
 - Name your file as StudentID_nickname, such as 1234567489_Bo.
 - There is no need to rewrite the question into your answer sheets. Indicating clearly question and item number is sufficient.
 - Write your nickname and student ID on top-right corner of the first page.
 - For those who do not have a digital device to write on, you can write your answers in sheets of paper, take pictures, convert them into a single PDF then submit in on Moodle.
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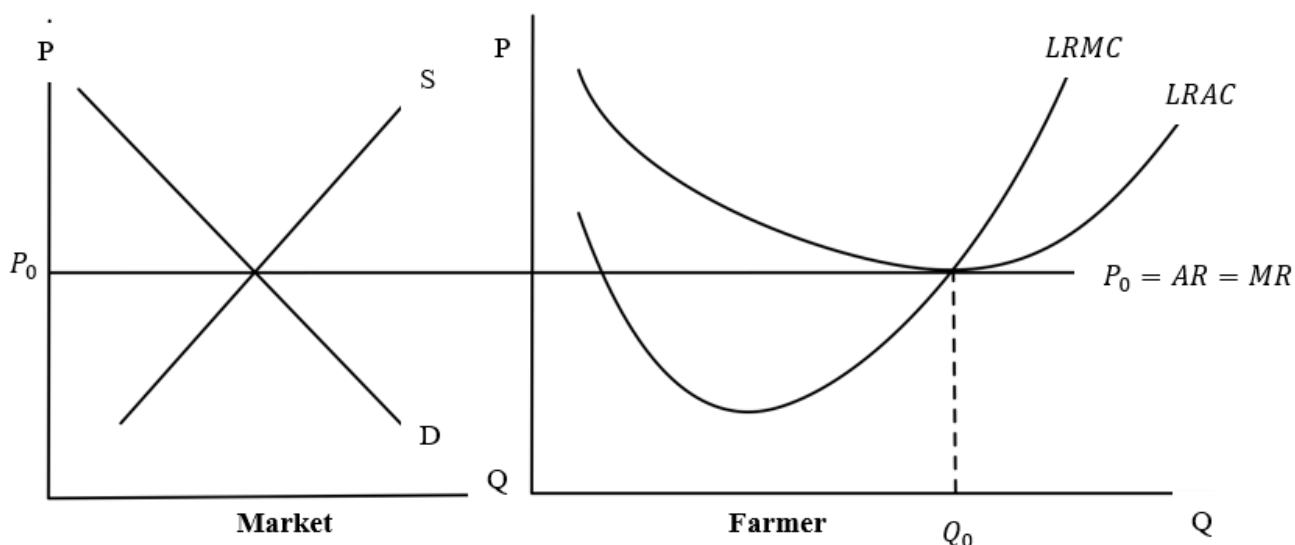
1. Neo loves traveling. Supposed he has two choices of destination, Thailand and Maldives which costs him 3,000 baht and 5,000 baht respectively. His utility received from traveling to Maldives is twice compared to traveling to Thailand. Answer the following questions.

- a) If Neo has 10,000 baht of budget, how many times of each destination he will choose to travel and why? Draw his indifferent curve and budget line to analyze his decision and indicate details on the graph.
- b) If his budget increases to 20,000 baht, draw his income-consumption curve. Also plot his income demand of traveling in Thailand, find its slope and explain.

2. Consider a long-run production in which there are only two inputs labor and capital, and the input prices for labor and capital are wage (w) and interest rate (r), respectively. Suppose that at the equilibrium levels of labor and capital (L^* , K^*), the marginal product of labor (MP_L) and marginal product of capital (MP_K) are 6 and 8, respectively.

- a) (5 points) Calculate the marginal rate of technical substitution (MRTS) and state the cost-minimization conditions of this firm, given that the required output is fixed at Q_0 . If the market wage rate (w) is \$3, what is the interest rate at the equilibrium?
- b) (5 points) Suppose now that the wage rate (w) increases to \$4, ceteris paribus. Draw a diagram to illustrate the changes in the cost-minimizing combination of inputs.

3. A Thai rice farmer is in a long run equilibrium in a perfect competition and produces at the quantity Q_0 as shown in the graph below.



- The government grants a lump sum subsidy to every farmer. How will this change the LRAC? Explain why LRMC does not change.
- Will the lump sum subsidy change the quantity the farmer wants to produce to maximize his profit? Show in the graph that the farmer now earns an Excess Profit. Explain.
- Demonstrate how this Excess Profit will affect the market price in the Long Run that allows new entry to the market.

4. An inverse demand function in a monopoly market is given by

$$P = 100 - 5Q$$

Supposed that the monopolist is very efficient, which gives a constant marginal cost of \$20, answer the following questions.

- How many units of this product will be produced that maximizes monopolist's profit in the short-run? Also, how much does this product cost? Show your argument clearly.
- How much is the total variable cost when the monopolist's profit is maximized?
- If this monopolist has a fixed cost of \$160, how much is the monopolist's profit?

5. Assumed both a product market and a labor market are perfectly competitive, a table of marginal product is given below.

Unit of labor	Marginal product of labor
2	12
3	8
4	6
5	4
6	2

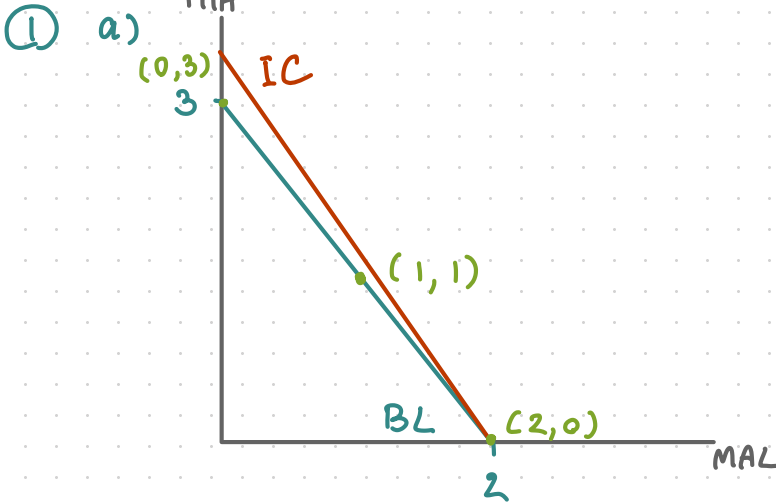
This product can be sold in the market for \$12 each while labor wage is \$48, answer the following questions clearly.

- a) Figure out how many units of labor this firm will choose as input for its production to maximize profit. Illustrate a graph to support your answer and explain.
- b) Supposed that there is a sudden economic recession driving consumers' purchasing power downward, what would happen to the units of labor hired by this firm? Support your answer with illustrations that also show a connection between product market and labor market.

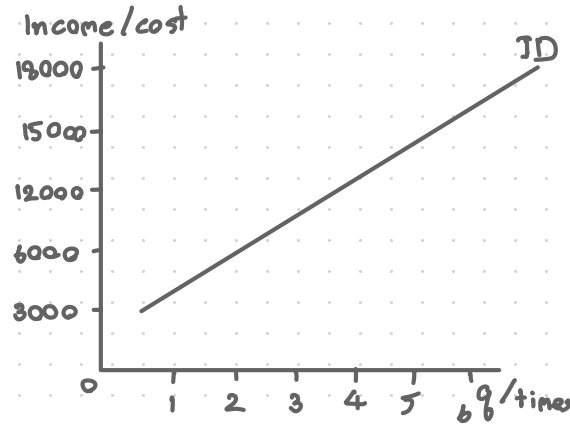
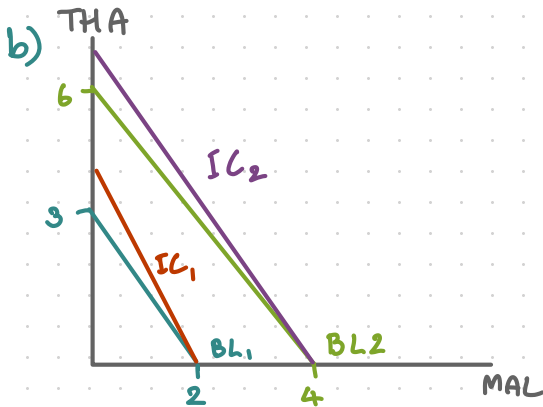
6. Consider these statements and indicate which one of the choices fits with each statement and roughly explain why.

Choices:

1. Not a market failure
 2. Market power
 3. Externalities
 4. Public goods
 5. Moral hazard
 6. Adverse selection
- a) People feel that price level is hiking.
 - b) Morpheus always hears a loud fight coming from a room next to his.
 - c) Trinity does not receive her full-benefit until her first 3-month of her work position.
 - d) In Chiang Mai, there is no earthquake alarming system.
 - e) Starbucks coffee is more expensive than Amazon coffee.



Neo will go to Maldives twice to maximize his utility because with the 10,000 baht of budget, he can go to Maldives 2 times and get 4 utils which is the most. If he chose other ways he only gets 3 utils.



To maximize Neo's utilization, he will spend all of his budget to go to Maldives. Therefore, he will not go to Thailand which make his income demand of traveling in Thailand curve and the slope = 0

$$\textcircled{2} \quad MP_L = 6 \quad MP_K = 8$$

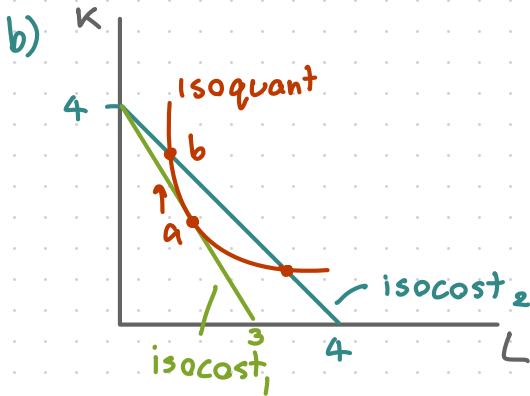
$$a) \quad MRTS = \left| \frac{\Delta K}{\Delta L} \right| = \frac{MP_L}{MP_K} = \frac{6}{8} = 0.75$$

$$\text{the equilibrium: } \frac{MP_L}{MP_K} = \frac{w}{r}$$

$$0.75 = \frac{3}{r}$$

$$r = 4$$

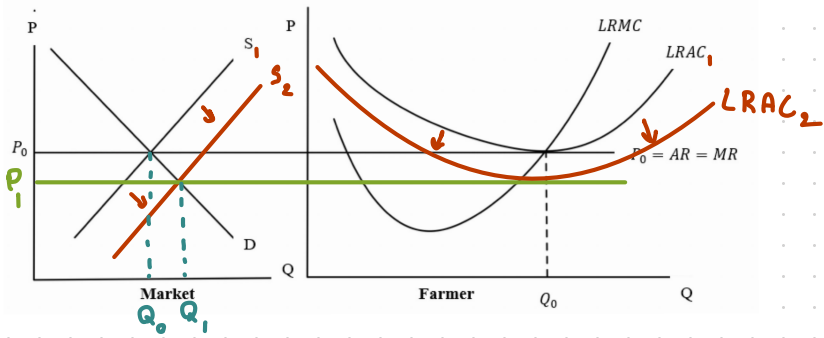
\therefore the interest rate at the equilibrium is \$4 *



When wage become more expensive, it creates new isocost at isocost₂ but still yeild the same amount of product. So, the combination that minimizing the cost move from a to b

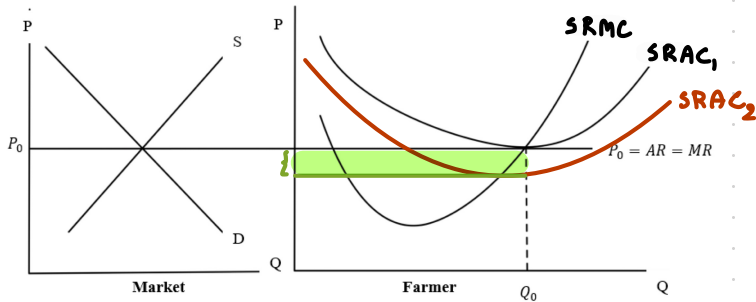
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a)

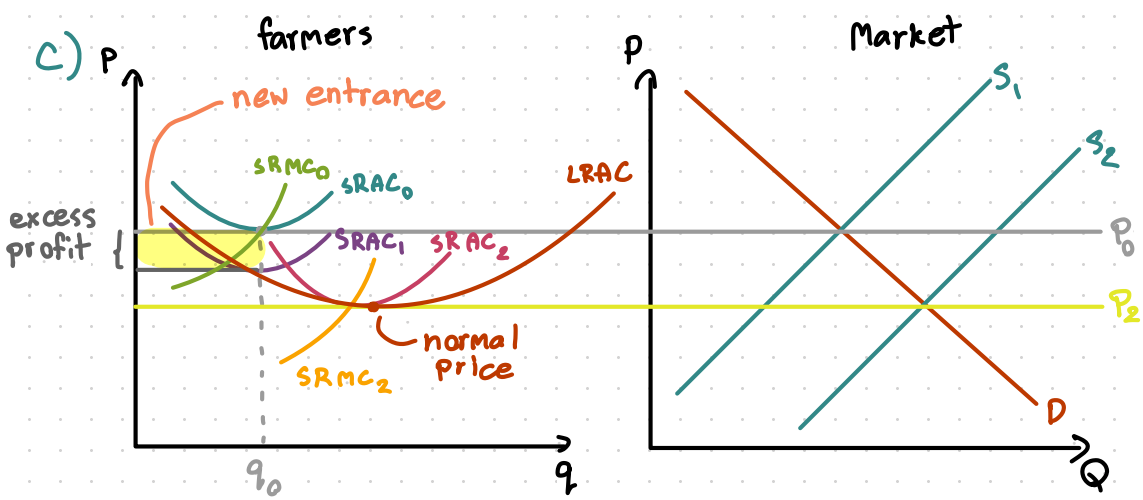


With lump-sum subsidy, farmers can lower their cost of production which lower the LRAC and decreased the price as well. And because lump-sum subsidy reduces the farmer's fixed cost. It doesn't affect the variable cost, therefore, the cost that increase per one unit of product doesn't change.

b)



Lump-sum subsidy reduce farmer's cost of production which makes the revenue higher than cost, creates excess profit as highlighted. And in the short run, farmers will produce at the same quantity where $MC = MR$



When there is an excess profit, it attracts new entry (perfect comp., no barrier) in to the market. Then the supply will increase, lower the price ($P_0 \rightarrow P_2$). Therefore, it creates the new normal price in the long run.

④ a) To maximize profit : $MR = MC$

$$MR = \frac{\Delta TR}{\Delta Q}$$

$$TR = P \cdot Q = (100 - 5Q)Q$$

$$= 100Q - 5Q^2 \Rightarrow MR = \frac{dTR}{dQ} (100Q - 5Q^2)$$

$$= 100 - 10Q$$

$$MC = 20 \text{ (Given)}$$

$$MR = MC ; 100 - 10Q = 20$$

$$Q = 8$$

$$\therefore P = 100 - 5(8) = 60$$

\therefore The firm has to produce 8 units of product to maximize profit which cost \$60 #

b) $MC = AC$
 $TVC = MC \cdot Q$
 $= 20 \cdot 8$
 $= \$160 \#$

c) $\pi = TR - TC$

TR: $TR = P \cdot Q$
 $= 60 \cdot 8 = \$480$

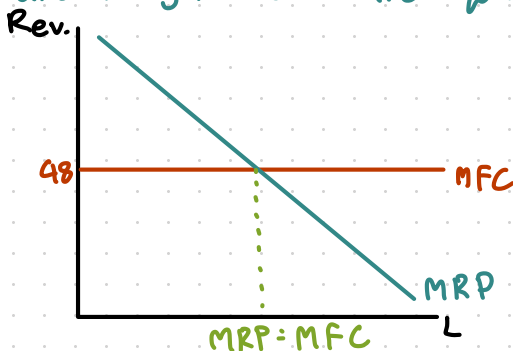
TC: $TC = TVC + TFC = 160 + 160 = \320

$\therefore \pi = 480 - 320$
 $= \$160 \#$

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Unit of labor $\times 48$	Marginal product of labor	$\times 12 = TR$	π
2 = 96	12	144	48
3 = 144	8	240	96
4 = 192	6	312	116
5 = 240	4	260	120
6 = 288	2	384	96

The firm will maximize profit when the marginal benefit and marginal cost are equal ; $MRP = MFC$



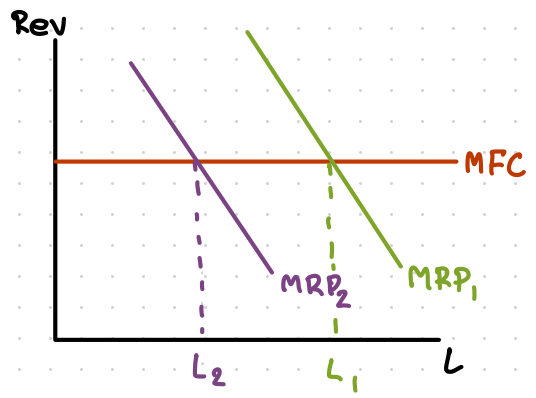
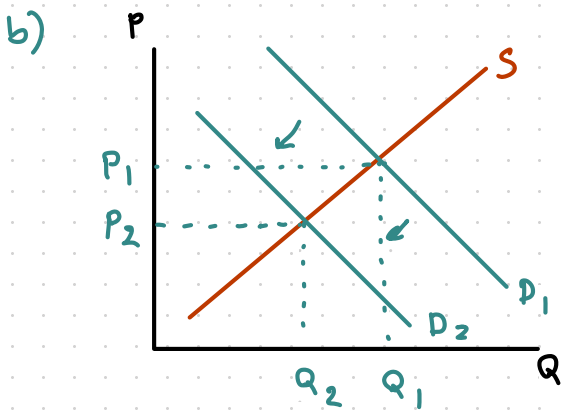
$MFC = 48$ (wage)

$MRP = MR \cdot MP = 12 \cdot MP$

$\Rightarrow 12 \cdot MP = 48$

$MP = 4$

\therefore Firm will maximize profit when $MP = 4$. Therefore, it will hire 5 units of labor $\#$



The when consumers' purchasing power is decrease, the demand will decrease as well, makes the price and quantity go down. This affect the firms' marginal revenue of product to be decrease as well. Then creates new equilibrium of firm's demand of FoP, decreasing the units of labor hired by this firm.

- ⑥
- Not a market failure.** It's regular in the market that the price can be increased and decreased.
 - Externalities.** The loud noise is irrelevant to a trade.
 - Moral hazard.** The behavior change after the work contract was signed
 - Public goods.** The lack of service that is not allocated through pure market and doesn't generate benefit
 - Market power.** Starbucks has positioning itself in the market that can sell the coffee more expensive than others.