6304641761 Penguin

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.

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.

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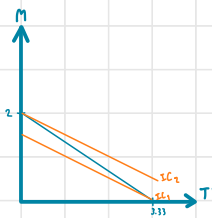


$10{,}000 \geq 3000T + 5000M$

$\frac{10}{3}$: T : w/ this bl, Neo can come to TH 3.33 times

2 : M : w/ this bl, Neo can come to M 2 times

BL slope : $\frac{P_x}{P_y} = \frac{3000}{5{,}000} = \frac{3}{5} = 0.6$

IC slope : $\frac{MU_x}{MU_y} = \frac{1}{2} = 0.5$

To compare utility maximization

TH : $\frac{MU_x}{P_x} = \frac{1}{3000}$

M : $\frac{MU_y}{P_y} = \frac{2}{5000}$

$\frac{1}{3000} < \frac{2}{5000}$

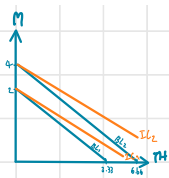
∴ Neo should go to Muldives as utility per unit of price is larger than Thailand which is travelling to Maldives 2 times. (No travelling to TH)

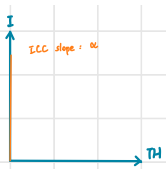
b) If his budget increases to 20,000 baht, draw his income-consumption curve. Also plot his income demand of traveling in Thailand, find its slope and explain.

$20{,}000 \geq 3{,}000TH + 5{,}000M$

TH = 6.66 : w/ this budget, Neo can come to TH 6.66 times.

M = 4 : w/ this budget, Neo can come to M 4 times.





when budget increases the new optimal point is travelling to Maldives 4 times. ICC slope is ∞ as it is vertical line.

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.

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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?

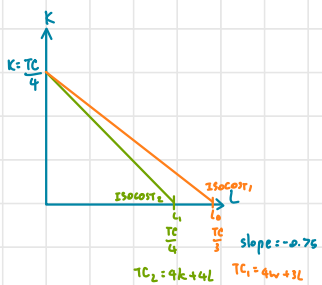
$|MRTS_{LK}| = \left|\frac{\Delta K}{\Delta L}\right| = \left|\frac{MP_L}{MP_K}\right| = \left|\frac{6}{8}\right| = 0.75$

Cost minimization $\left|\frac{MP_L}{w}\right| = \left|\frac{MP_K}{r}\right|$ $\frac{6}{3} = \frac{8}{r}$

$6r = 24$

$r = 4$

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.

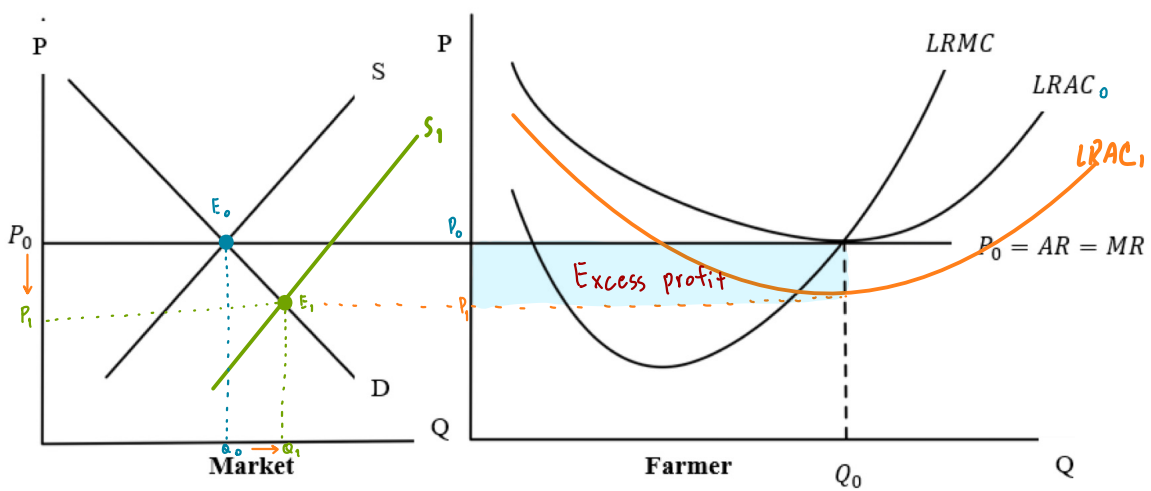


Isocost : $TC = rk + wL$

slope $= -\frac{w}{r} = -\frac{4}{4} = -1$

when the firm increase wage rate, which mean the firm should hire less labor from L_0 to L_1 but K is still the same

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.



a) The government grants a lump sum subsidy to every farmer. How will this change the LRAC? Explain why LRMC does not change.

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When the government grants a lump sum subsidy meaning that the farmer want to enter and compete in this market due to excess profit. In the market side the supply curve shifts from S_0 to S_1. the price decreases from P_0 to P_1 and Q_0 to Q_1. The equilibrium moves from E_0 to E_1. Thus, $LRAC_0$ moves to $LRAC_1$. In LR, firms in perfect competition tend to receive normal profit, and achieve the lowest point of the average cost. Lump sum subsidy is one time fixed money, so it will not affect the variable factors → LRMC doesn't change.

b) 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.

Farmer will not change the quantity b/c the MR and LRMC doesn't change. To maximize profit, MR=MC. The excess profit is blue area.

c) Demonstrate how this Excess Profit will affect the market price in the Long Run that allows new entry to the market.

When new competitors enter to compete in this market making supply increases, market price decreases, profit decreases. It will cause zero economic profit. There won't be new competitors enterering in this market anymore.

a) 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.

$P = 100 - 5Q$

$TR = P(Q) \cdot Q = 100Q - 5Q^2$

$MR = \frac{dTR}{dQ} = 100 - 10Q$

Maximize profit $MR = MC$

$100 - 10Q = 20$

$80 = 10Q$

$8 = Q^*$ ✳

product cost $= (100 - 5(8))$

$= 100 - 40$

$= 60$ ✳

b) How much is the total variable cost when the monopolist's profit is maximized?

$TVC = MC \cdot Q$

$= 20 \cdot 8 = 160\$$ ✳

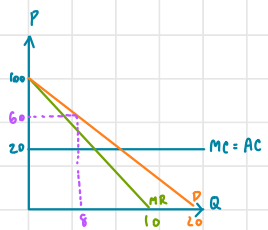
c) If this monopolist has a fixed cost of $160, how much is the monopolist's profit?

$Profit = TR - TC$

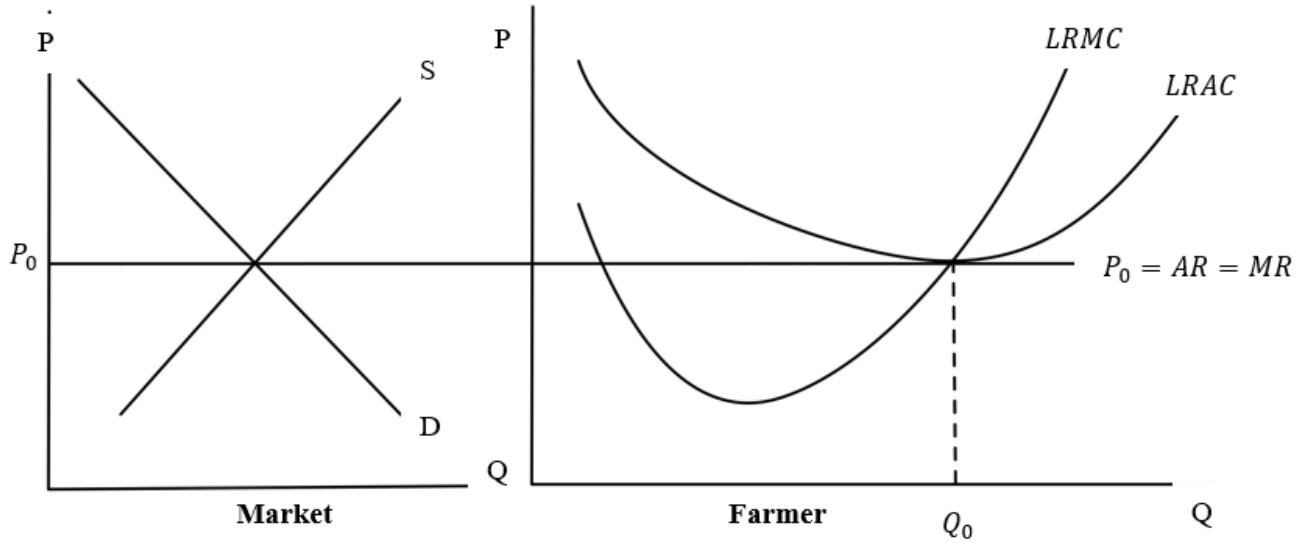
$= TR - (TFC - TVC)$

$= 480 - (160 + 160)$

$= 160\$$



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.



a) The government grants a lump sum subsidy to every farmer. How will this change the LRAC? Explain why LRMC does not change.

b) 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.

c) 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.

a) 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.

b) How much is the total variable cost when the monopolist's profit is maximized?

c) If this monopolist has a fixed cost of $160, how much is the monopolist's profit?

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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 96	12
3 144	8
4 192	6
5 240	4
6 280	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.

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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.

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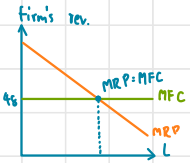


a.) MRP = MFC

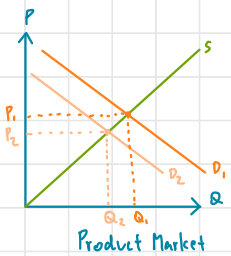
MP · MR = 48

MPL · 12 = 48

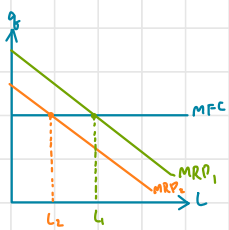
MPL = 4

∴ 5 units of labor

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.



Purchasing power decrease make demand drop lead to reduction of quantity and price.



When price drop, since MR=P, MR will drop too. Moreover, MRP= MR · MP will shift from MRP_1 to MRP_2 and make the labor units decline too.

a) People feel that price level is hiking.

Not a market failure. It is a normal mechanism of market.

b) Morpheus always hears a loud fight coming from a room next to his.

Externalities, Negative externalities from third party.

c) Trinity does not receive her full-benefit until her first 3-month of her work position.

Moral hazard, The company bear the risk instead of Trinity.

d) In Chiang Mai, there is no earthquake alarming system.

Public goods, The earthquake alarming is benefit to everyone.

e) Starbucks coffee is more expensive than Amazon coffee.

Market power, Starbucks can set price higher than others for the same product.