Thep 6304641670

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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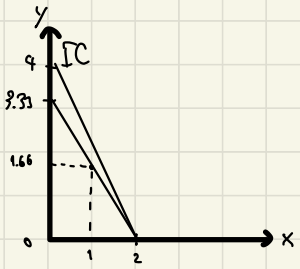


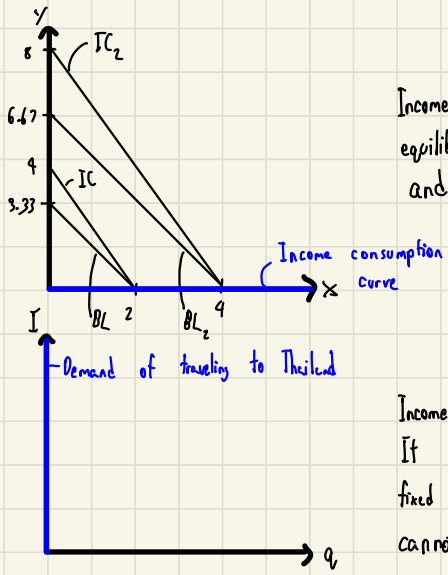
$$MRS = \frac{\Delta Y}{\Delta X} = \frac{MU_x}{MU_y} = -\frac{2}{1}$$

$$MRMS = \frac{I / \text{Thai price}}{I / \text{Maldives price}} = \frac{\text{Maldives price}}{\text{Thai price}} = \frac{5000}{3000} = 1.66$$

In the question, it does not tell where is the point that Neo receives Marginal utility to go to Maldive twice compared to travelling to Thailand. Therefore, we assumed two destinition are perfectly substituable (MRS is constant)

Neo will choose to go to Maldives 2 times. This is because at point (2,0), Neo used up all his budget and it MRS is constant, it does make sense that he will choose to go to Maldive 2 times

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.



Income consumption curve will pass through the equilibrium points. In this case, it will be drawn in blue and overlay the x-axis.

Income demand of traveling in Thailand is drawn in blue. It overlaies to the y-axis. This means quantity demanded is fixed at 0 (no demand). And no matter what level of incomes, it cannot affect quantity demand.

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?

$MRTS_{LK} = \frac{\Delta K}{\Delta L} = \frac{MP_L}{MP_K} = \frac{6}{8} = \frac{3}{4}$

$MRMS = \left|\frac{P_L}{P_K}\right| = \left|\frac{w}{r}\right| = \frac{3}{r}$

Find cost minimization at output (Q_0) and fin r.

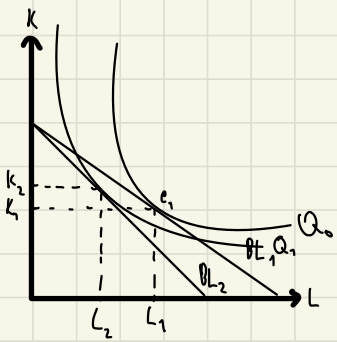
Cost minimize : $MRTS_{LK} = MRMS$

$\frac{3}{4} = \frac{3}{r}$

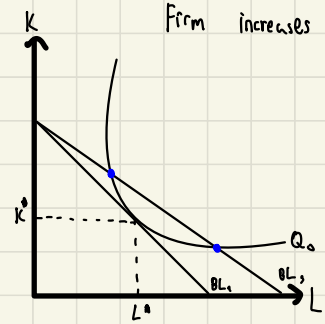
$\frac{4}{r} = \frac{1}{4}$

interest at equilibrium is \$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.



When the new budget line are drawn (BL_2), it will change in combination of input (K and L optimal). At the new combination e_2, firm will hire less labour and rely more on capital.

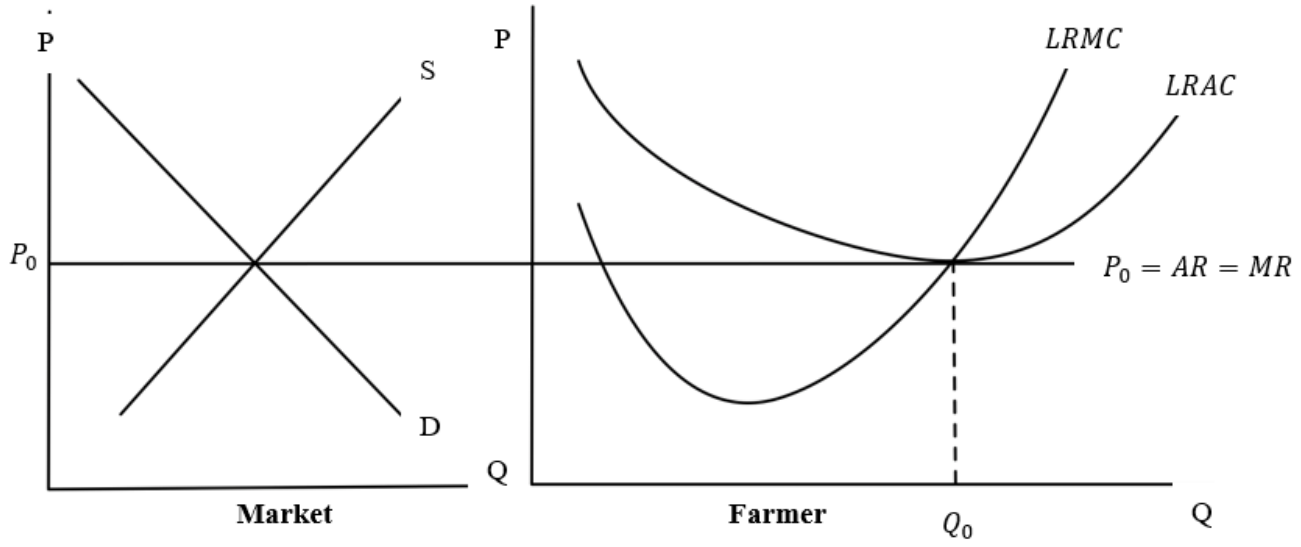


Moreover, to get the same amount of output at Q_0, firm need to increase more budget in the production. Finally, when capital stays the same, labour will be increased.

BL_1 : w = 3, r = 4

BL_2 : w = 4, r = 4

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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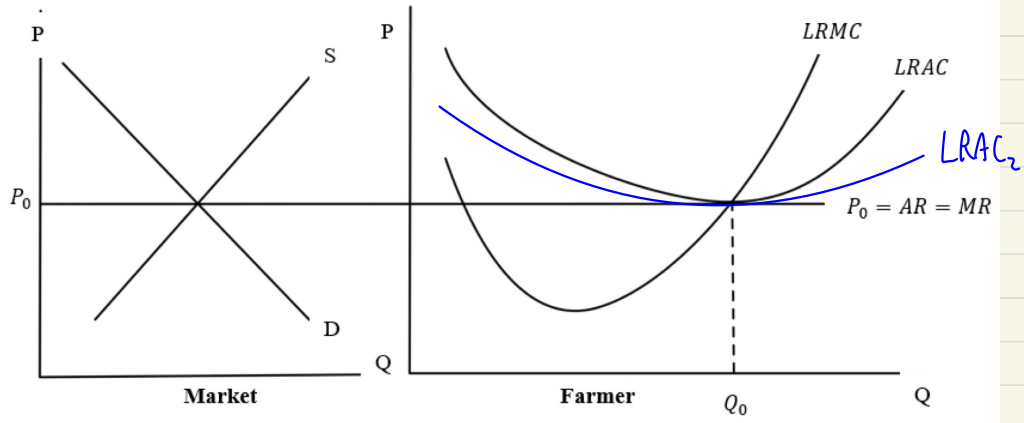

a) The government grants a lump sum subsidy to every farmer. How will this change the LRAC? Explain why LRMC does not change.

LRAC will be more flat compared to the graph provided. This is because when a lump-sum subsidy is given to the firm, it will reduce help reduce the fixed cost. In other words, at every unit of production, the average cost is reduce. ($LRAC_2$)

LRMC remains the same because it does not depend on fixed cost. It purely depends on variable cost at that time.

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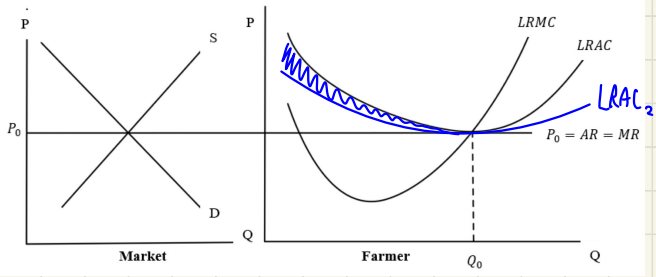

b) Will the lump sum subsidy change the quantity the farmer wants to produce to maximize his profit? Show in the graph that the farmer now earns an Excess Profit. Explain.

Farmers will not change the quantity of the production because to produce more than Q_0, marginal cost will more than marginal revenue.
The blue area that are shaded is the excess profit that farmers will get. This is because subsidy will help reduce the fixed cost, as aforementioned in question a.

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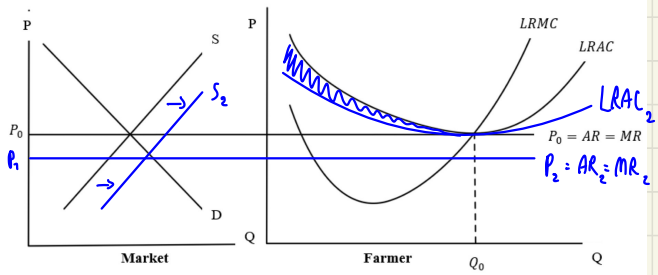


c) Demonstrate how this Excess Profit will affect the market price in the Long Run that allows new entry to the market.

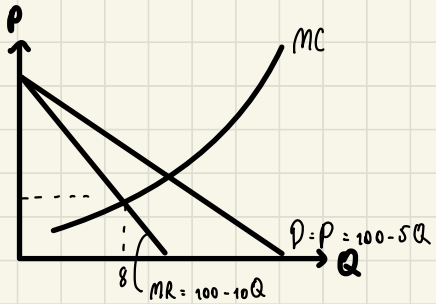
When the outsiders of this market see that there is an excess profit, they will enter this market. Therefore, this cause the supply to shift to the right ($S \rightarrow S_2$). Moreover, when there are more supply and demand remains the same, the equilibrium price is reduce ($P_0 \rightarrow P_2$).
When the price is at P_2 the average revenue and marginal revenue will decrease ($AR \rightarrow AR_2$), ($MR \rightarrow MR_2$). Finally, in the long-run, farmers will not gain an excess profit even government provide a lump-sum subsidy.

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.



MR curve is as twice as steep compared to demand curve. To maximized the profit, it should be the price where MR = MC This means $100 - 10Q = 20 \Rightarrow -10Q = -80 \Rightarrow Q = 8$ 8 units of output will maximized monopolist's profit in short-run.

This product cost can be calculated by using the formula $P = 100 - 5Q$

$P = 100 - 5(8) = 100 - 40 = 60$

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

To calculate the cost $Q = 8$ and $MC = 20$, then $TC = 8(20) = 160$

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

Profit (π) : TR - TC

$TR = P \cdot Q$
$= (100 - 5Q) \cdot Q$
$= 100Q - 5Q^2$
$= 100(8) - 5(8^2) = 800 - 320 = 480$

$TC = TFC + TVC$
$= 160 + 8(20)$
$= 320$

$\pi = TR - TC$
$\pi = 480 - 320$
$\pi = 160$

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.

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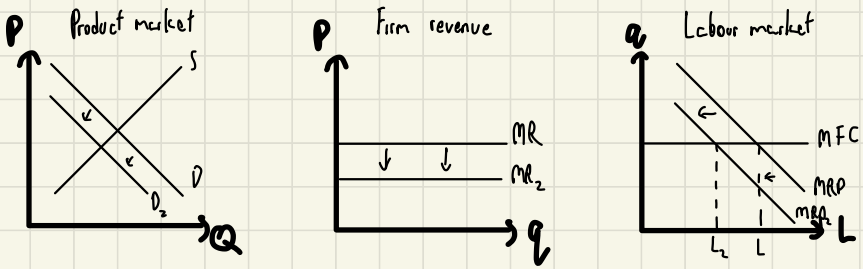
This product can be sold in the market for $12 each while labor wage is $48, answer the following questions clearly.

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.

To maximize the profit, it is the point where MC = MRP
Marginal cost (MC) is the cost for hiring one more unit of labour, therefore MC = 48
Marginal revenue (MRP) is the additional revenue from hiring one more unit of variable factor.
In this case, MRP can be calculated by Marginal product x price.
We want to find MP which provide MRP = 48.
MC = MR ⇒ 48 = MP x P ⇒ 48 = MP x 12 ⇒ MP = 4
When MP = 4, it is the marginal product when hiring 5th labour. So firm will hire 5 units of labour.

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.



When the economic recession drivins consumers' purchasing power downward, the demand curve in product market shifts to the left because at the same price level the quantity demanded deerease.
On the firms' side, they get lower revenue. So, what the firm do will hire less labour.

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

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.

a) (1) Not a market failure : It's just consumers' feeling. It's not consider as a market failure.

b) (3) Externalities : This is a negative externality from a third party.

c) (5) Moral hazard : She has a choice to take a risk.

d) (4) Public goods : Earthquake alarming system is non-excludable and non-rivalrous

e) (2) Market power : In the coffee meket, starbuck has a market power to set the price in this market.