

Instructions

- (1) Please read the instruction carefully. Also take this habit with you into the exam room.
- (2) Please read each question carefully and answer the questions straightforwardly. Always provide economic reasons at least a paragraph for your analysis, or a graph when necessary, even when the question does not indicate so.
- (3) Handing and submitting assignments are only available via BE Moodle.

Answering the questions and preparing answer sheets

- (1) Answers are to be handwritten, in either digital or analog form, in a blank canvas or any clean paper. Make sure that your handwriting is clearly visible and readable.
- (2) There is no need to rewrite the question. Just indicate the question number clearly for each of the answer, such as 1.a).
- (3) When done, for the digital case, collage all the pages into a single PDF file. For those who write on sheets of paper, take photo of all pages then convert all of them into a single PDF file as well.
- (4) **Name your PDF file as StudentID_YourNickname, such as 640123456_Bo.**

Submitting your answers

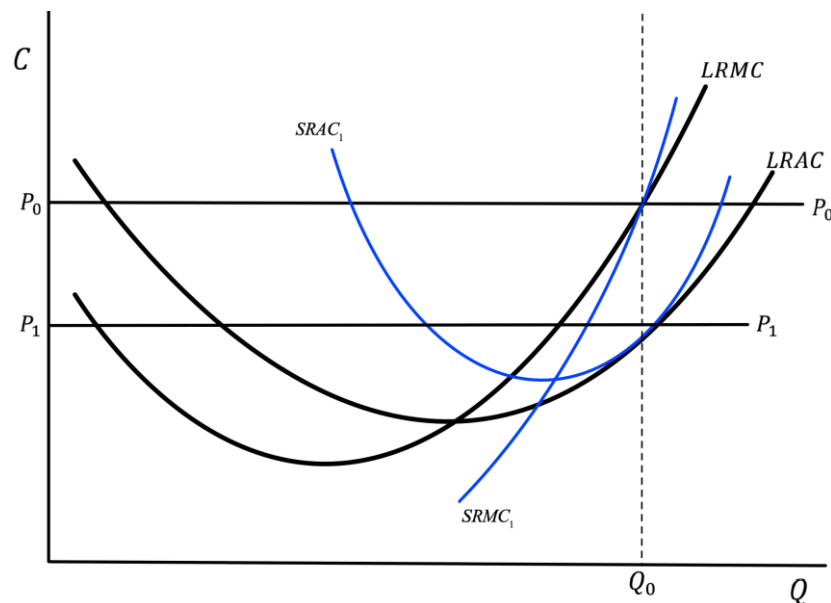
- (1) Make sure your file does not exceed 10MB. This is the maximum file size for BE Moodle upload.
- (2) Login to BE Moodle, head into the course, then the assignment topic.
- (3) Choose your file to submit. Done. There will be timestamp for your upload date and time, so please make sure to not submit later than that.

1. Two COVID-19 vaccines are available in Thailand, Sinovac and Pfizer priced at \$20 and \$40 respectively. Assumed that both vaccines are substitutes, answer the following questions clearly.

1.a) Draw a budget line for these two when a consumer has \$40 and indicate all the essential information on the graph, given that Sinovac is displayed on the horizontal axis while Pfizer is on the vertical axis.

1.b) If a consumer sees that Sinovac is an inferior good while Pfizer is a normal good and Sinovac price is slashed by a half, analyze how consumer's equilibrium changes disaggregating price effect into substitution effect and income effect and explain.

2. In a perfectly competitive market, suppose that every firm is in a long-run equilibrium where each firm receives an excess profit at a market equilibrium price P_0 and produces Q_0 as shown in the graph below.

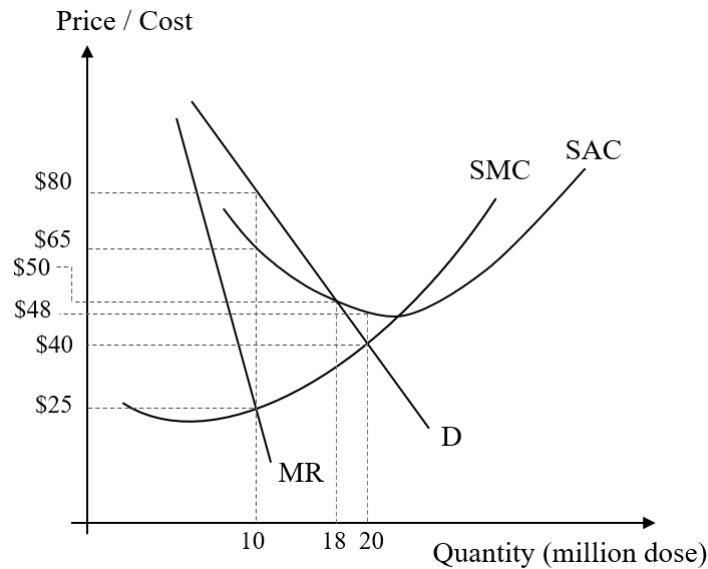


2.a) If the market equilibrium price decreases to P_1 , in the short run according to the given Short-Run cost curves $SRAC_1$ and $SRMC_1$, find the new Short-Run equilibrium quantity Q_1 and profit of the firm. State the equilibrium conditions.

2.b) Show that at the new Short-Run equilibrium quantity Q_1 , the profit earned according to the Long-Run cost curves $LRAC$ at Q_1 and price P_1 is higher than the profit in Short-Run found in 2.a).

2.c) According to the Long-Run cost curves $LRAC$ and $LRMC$, find the equilibrium quantity the firm wants to produce at the new lower price P_1 , when there is no new seller entering the market. State the equilibrium conditions.

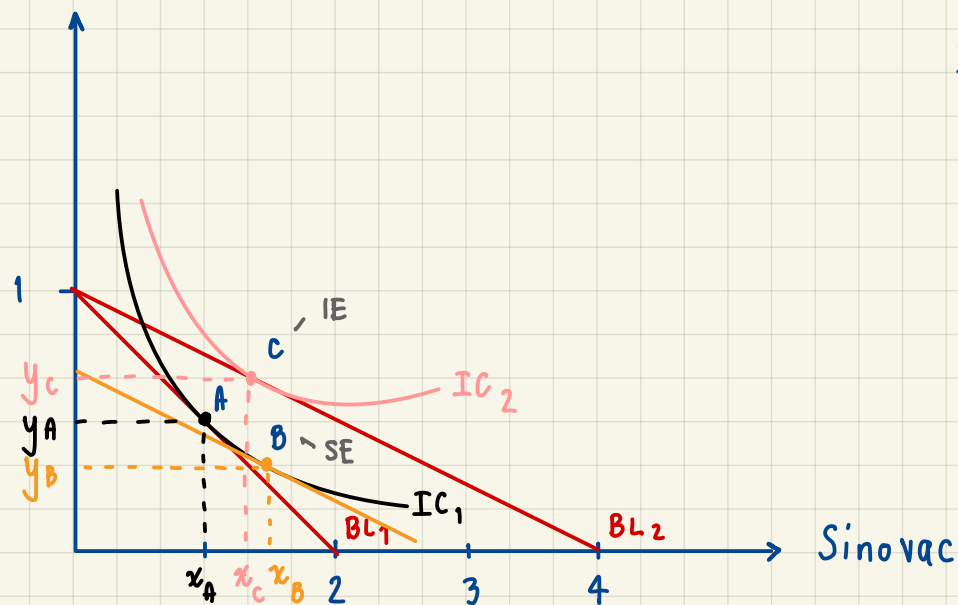
3. Thai government decides to import vaccines from J&J through the Government Pharmaceutical Organization (GPO). Supposed that GPO can act as a private monopoly firm, demand, revenue and cost of importing are displayed in the following graph in USD. Note that a single dose of J&J vaccine is sufficient to immunize COVID-19. Answer the following questions clearly.



- 3.a) If GPO wants to maximize profit, how many million doses should they import and at which price can be sold for each dose?
- 3.b) According to 3.a), how much is the total profit that GPO receives in million USD?
- 3.c) If the government decides to intervene and set a fair price, how many million doses GPO needs to import and how much the price to be set?
- 3.d) To achieve herd immunity with a new strategy, the target number of people privately vaccinated is 20 million people. How much **for a dose** that each person pays for the vaccine and how much does the government should subsidize **in total**?

1.)

1.a) Pfizer



$$I = 40, P_x = 20, P_y = 40$$

$$I = P_x \cdot x + P_y \cdot y$$

$$40 = 20x + 40y$$

$$x = \frac{I}{P_x} = \frac{40}{20} = 2 //$$

$$y = \frac{I}{P_y} = \frac{40}{40} = 1 //$$

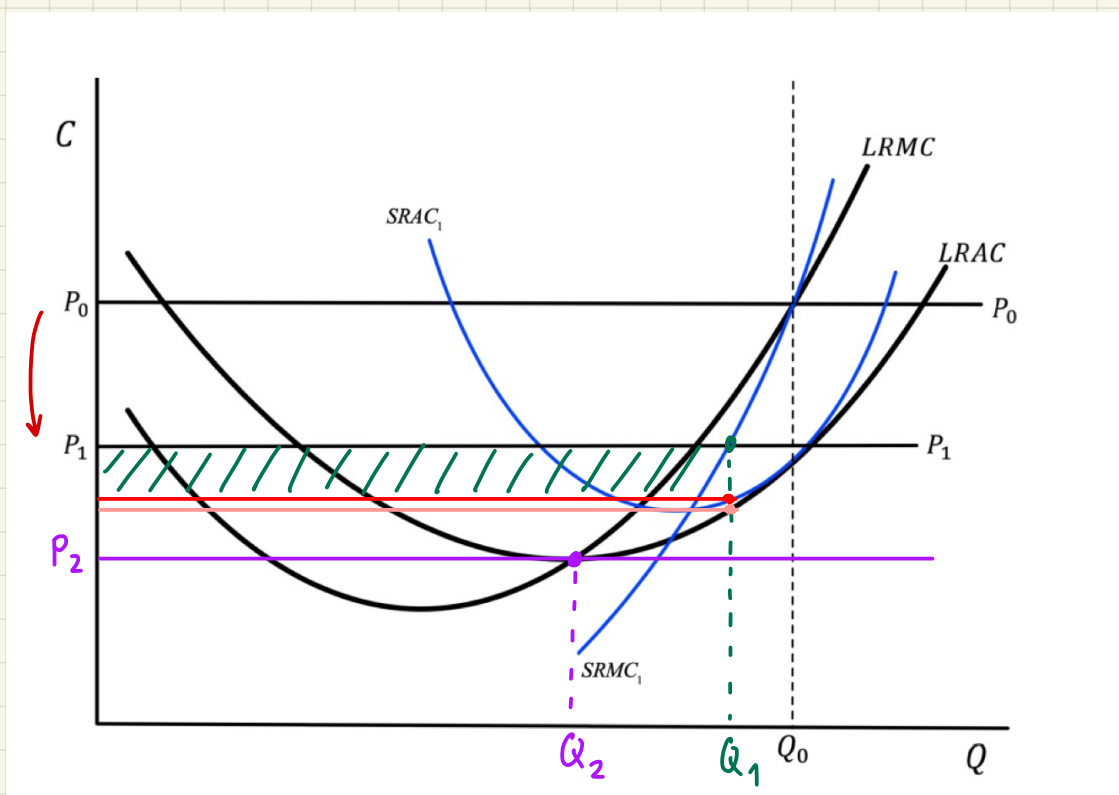
1.b.) Sinovac became inferior good and the price is halved, create a new budget line.

$$x_n = \frac{I}{P_x} = \frac{40}{10} = 4 //$$

S.E : $(x_A \rightarrow x_B)^{(+)}$, $(y_A \rightarrow y_B)^{(-)}$. Since the price of sinovac decreased consumer tend to utilize Sinovac more, while utilize Pfizer less.

I.E : $(x_B \rightarrow x_C)^{(-)}$, $(y_B \rightarrow y_C)^{(+)}$. As sinovac is an inferior good, we tend to consume these kind of product lesser when we have more purchasing power at BL_2 . Therefore, consumer tend to utilize Pfizer than Sinovac (Pfizer is a normal good.)

2.)

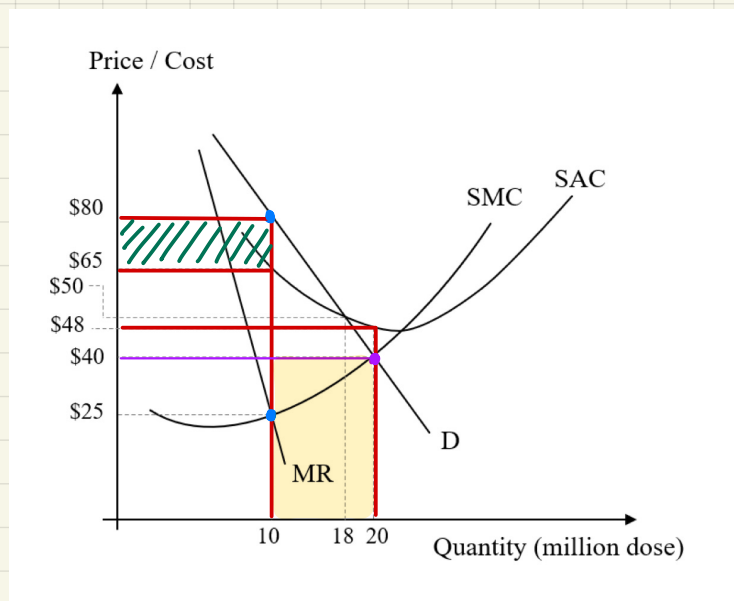


2.a) If the market equilibrium decreases to P_1 , based on short-run cost curves, the new market will be at Q_1 , where the equilibrium condition is $MR = MC$ at this price there are some excess profit for every firm, as the market equilibrium price is more than average cost.

2.b) According to the graph, it can be seen that the profit based long-run curve is higher than the profit in short-run curve, considering the average cost of both curves.

2.c) In this perfect competitive market, every aspect that is associated with production are perfectly equal. Every firm shares the same profit and cost. Therefore, if the firm wants to produce at a price lower than P_1 and stop other new competitors, firms need to sacrifice their excess profit, which will attract more competitors, and decrease their equilibrium market price to the level of average cost. In this case, firms will gain normal profit for their production which will be the compensation for every factor of production later on at the equilibrium condition $MR = MC$.

3)



3.a) If GPO wants to maximize their profit, they should import 10 million doses and sell for \$80 for each dose. Since at 10 million doses the marginal revenue and short-run marginal cost met that will give the rational quantity of vaccines that will maximize the profit of GPO.

3.b) The total profit that GPO will receive is :

$$(80 - 65) \cdot 10 = 150 \text{ million USD, if GPO choose to import vaccines at 10 million doses.}$$

3.c) If the government set a fair price, therefore, GPO has to import more vaccines at 20 million doses and sale at \$48 per dose. Since the price have been set by the government to sale at the same level as average cost per unit.

3d.) The target number of vaccine is 20 million doses for 20 million people. However, GPO want to import only 10 million doses due to profit maximization. If the government demand more 10 million doses, government should subsidize those additional cost for GPO which is :

$$(20 - 10) \times 40 = 400 \text{ million dollars.}$$

