

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

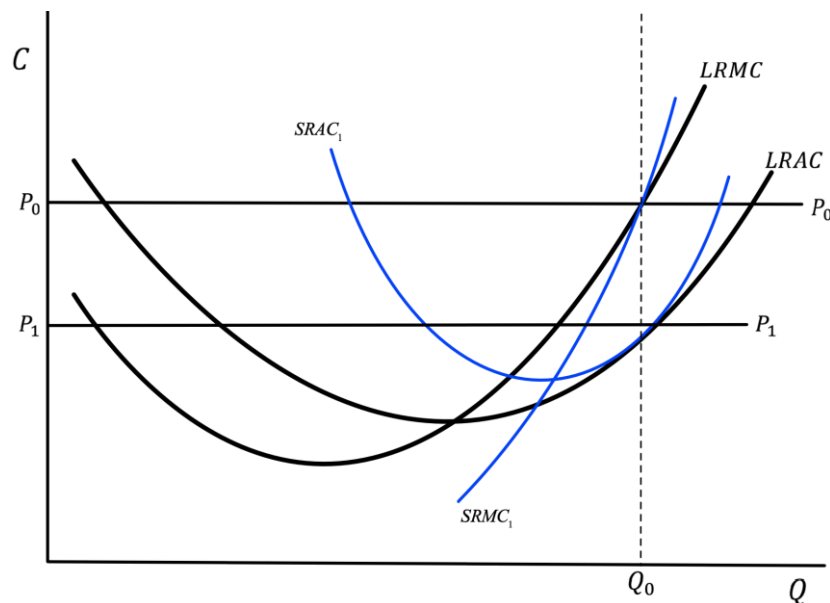
- (1) Make sure your file does not exceed 10MB. This is the maximum file size for BE Moodle upload.
- (2) Login to BE Moodle, head into the course, then the assignment topic.
- (3) Choose your file to submit. Done. There will be timestamp for your upload date and time, so please make sure to not submit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

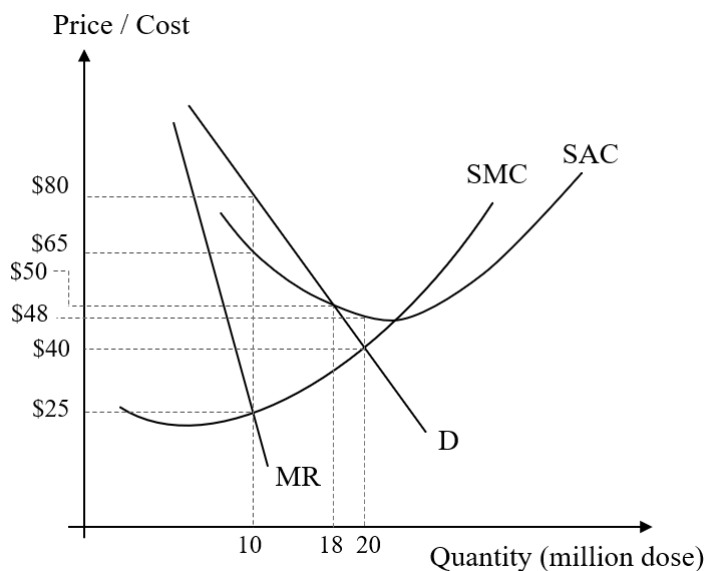
2.b) Show that at the new Short-Run equilibrium quantity Q_1 , the profit earned according to the Long-Run cost curves $LRAC$ at Q_1 and price P_1 is higher than the profit in Short-Run found in 2.a).

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.

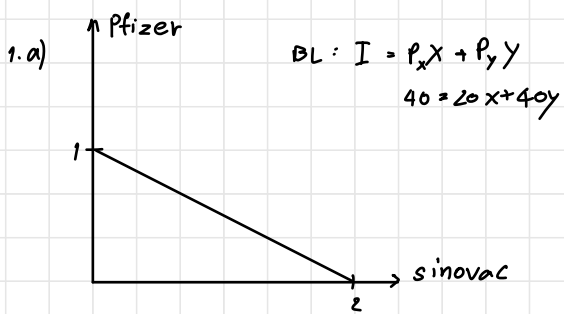
Assignment 3

Assigned on Nov 9th, 2021. To be submitted on Nov 18th, 2021 before midnight.

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.



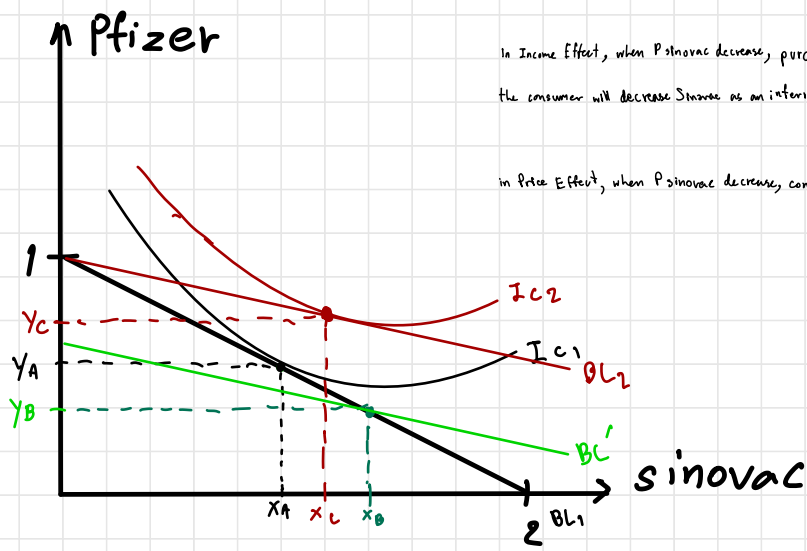
- 3.a) If GPO wants to maximize profit, how many million doses should they import and at which price can be sold for each dose?
- 3.b) According to 3.a), how much is the total profit that GPO receives in million USD?
- 3.c) If the government decides to intervene and set a fair price, how many million 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**?



assume that this sinovac and Pfizer are not perfect substitution,
 the indifference curve will be a convex shape.

1. b) $P_x \downarrow$ by half from $20 \rightarrow 10$
 $40 = 10x + 40y$

in substitution Effect, when $P_{sinovac}$ decrease, consumer will increase sinovac and substitute by decrease Pfizer in order to maintain his constant utility ($A \rightarrow B$)



In Income Effect, when $P_{sinovac}$ decrease, purchase power will increase from BL_1 to BL_2 \therefore

the consumer will decrease Sinovac as an inferior Good, and increase Pfizer as a normal Good ($B \rightarrow C$)

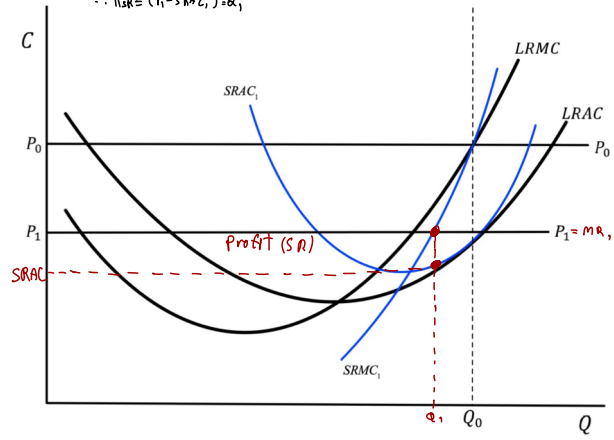
in Price Effect, when $P_{sinovac}$ decrease, consumer will increase Sinovac as an ordinary good ($A \rightarrow C$)

(2.a)

* $MAR = MC$

$P_1 = SRMC_1$

$\therefore \pi_{SR} = (P_1 - SRAC_1) \times Q_1$



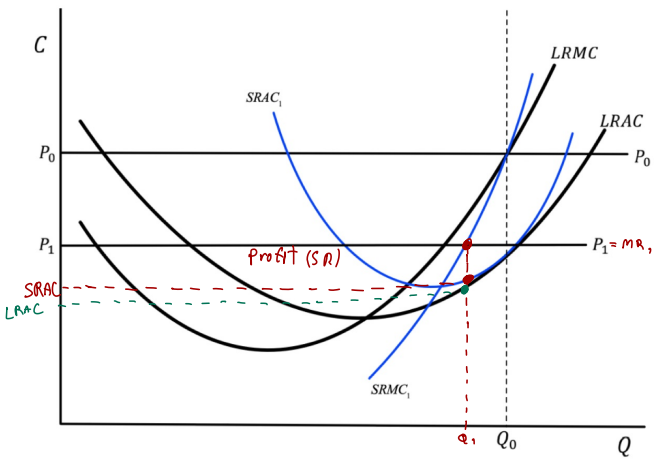
(2.b)

$\pi_{SR} = (P_1 - SRAC_1) \times Q_1$

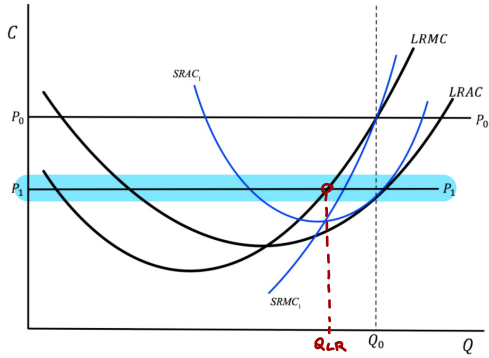
$\therefore \pi_{LR} > \pi_{SR} \neq$

$\pi_{LR} = (P_1 - LRAC) \times Q_1$

* since $LRAC < SRAC$

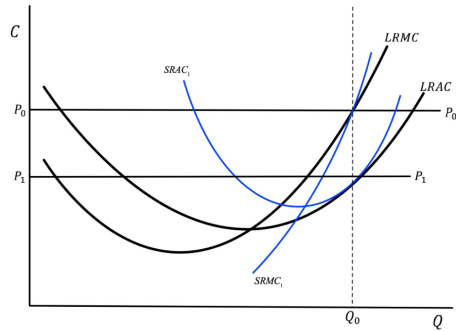


(2.c) LR equilibrium at P_1 : $P_1 = LRMC$



Ans Q_{LR} is Q_{LR} is Q^* at long run P_1

LR-equilibrium: $P_{LR}^* = LRMC = \min LRAC$



Ans Q^* when no new seller enter.

(3.a) $Q_m^* = 10$ million doses.

$P_m^* = \$80$ per doses.

(3.b) $\pi = (80 - 65) \times 10 = \150 million

(3.c) $Q_m^* = 18$ million doses

$P_f^* = \$50$ per doses.

(3.d) when Government need $Q^* = 20$ million dose, monopoly faces loss since $ATC > P_2^*$

\therefore Government must subsidize that loss in order to create incentive for monopoly to produce

\therefore subsidize = $(ATC - P) \times Q^*$

$$= (48 - 40) \times 20$$

$$= \$160 \text{ million}$$