Thursday, April 27, 2017 10:35 AM

NEW CHAPTER

MARKET STRUCTURE
- PERFECTLY COMPETITIVE MARKET — ①
- MONOPOLY (A SOLE SELLER) — ②

PERFECTLY COMPETITIVE MKT ——— MONOPOLY

- MANY BUYERS
- MANY SELLERS
- NON-DIFFERENTIATED PRODUCTS

} BUYERS & SELLERS ARE "PRICE TAKERS"

- FREE ENTRY & FREE EXIT

MANY BUYERS

- A SINGLE SELLER (A MONOPOLIST)
- PRODUCTS W/O SUBSTITUTES

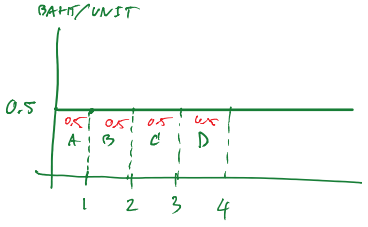
} HE IS A PRICE MAKER.

- BARRIERS TO ENTRY
  - PATENTS
  - COPYRIGHTS
  - CONCESSION (สัมปทาน)
  - CONTROL OF MAJOR INPUTS USED
  - NATURAL MONOPOLY (ECONOMY OF SCALE)

PERFECTLY COMPETITIVE MKT

LET'S START W/ 3 KEY TERMS ;

- TOTAL REVENUE (TR) = PRICE (P) × QUANTITY SOLD (Q)
- AVERAGE REVENUE (AR) = $\frac{TR}{Q} = \frac{P \times Q}{Q} = P$
- MARGINAL REVENUE (MR) = $\frac{\Delta TR}{\Delta Q}$



$P = 0.5 = MR = AR$

$Q=1$, $TR_1 = 0.5$ (AREA A)

$Q=2$, $TR_2 = P \times Q = 0.5 \cdot 2 = 1$ BAHT (AREA A+B)

Ex $q_1 = 1 \rightarrow AR_1 = \frac{TR_1}{q_1} = \frac{0.5}{1} = 0.5$

$q_2 = 2 \rightarrow AR_2 = \frac{TR_2}{q_2} = \frac{1}{2} = 0.5$

Q : HOW MANY UNITS OF OUTPUT (Q) A COMPETITIVE FIRM SHOULD PRODUCE IF IT AIMS AT MAXIMIZING PROFITS ?

A : IT SHOULD PRODUCE AT THE QUANTITY WHERE MARGINAL REVENUE (MR) EQUALS TO MARGINAL COST (MC).

LET'S SEE WHY ?

CONSIDER PROFIT (π) = TOTAL REVENUE (TR) − TOTAL COST (TC)

IN SHORT $\pi(q) = TR(q) - TC(q)$

FIRST-ORDER NECESSARY CONDITION (F.O.N.C) ;

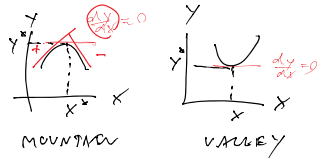
$\frac{d\pi(q)}{dq} = 0$

$\frac{d\pi(q)}{dq} = \frac{dTR(q)}{dq} - \frac{dTC(q)}{dq} = 0$

$= MR(q) - MC(q) = 0$

$\frac{d(\text{SLOPE})}{dx} = \frac{d(\frac{dy}{dx})}{dx} < 0$

$Y = f(X)$



$= MR(q) - MC(q) \geq 0$

$$\boxed{MR(q) = MC(q)}$$

HOWEVER, F.O.MC DOES NOT ENSURE THE MAX. YOU MAY INSTEAD GET MINIMUM! AS A RESULT, YOU NEED SECOND-ORDER SUFFICIENT CONDITION FOR ENSURING THAT YOU REALLY GET THE q^* WHERE IT IS AT MAX!

$$\frac{d\left(\frac{d\pi}{dq}\right)}{dq} < 0$$

$$\frac{d\left(\frac{d\pi}{dq}\right)}{dq} = \frac{d\,MR(q)}{dq} - \frac{d\,MC(q)}{dq} < 0$$

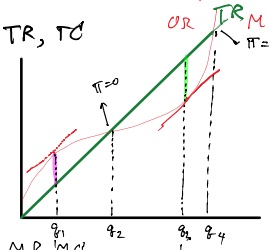
$$= 0 - \frac{d\,MC(q)}{dq} < 0$$

$$= \left(\frac{d\,MC(q)}{dq}\right) > 0$$

SLOPE OF MC CURVE MUST BE POSITIVE.

OR MC CURVE MUST BE ON A RISING PART.

(RM/DAY) TR, TC

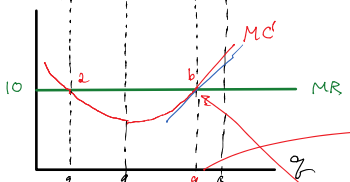


$\frac{dTC}{dq}$ = MC = SLOPE OF TC!

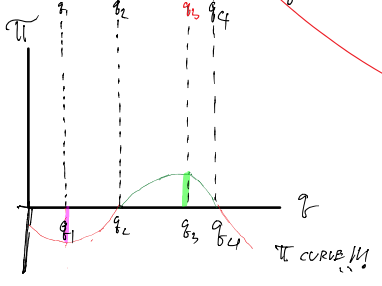
SLOPE OF TR = $\frac{\Delta TR}{\Delta q}$ = MR!

- q_3 IS A PROFIT-MAXIMISING OUTPUT LEVEL
- GREATEST LOSSES OCCUR AT q_1
- AT q_2 AND q_4, $\pi = 0$.

(RM/UNIT) MR, MC



- AT q_1 AND AT q_3, SLOPE OF TC = SLOPE OF TR ↳ MC = MR

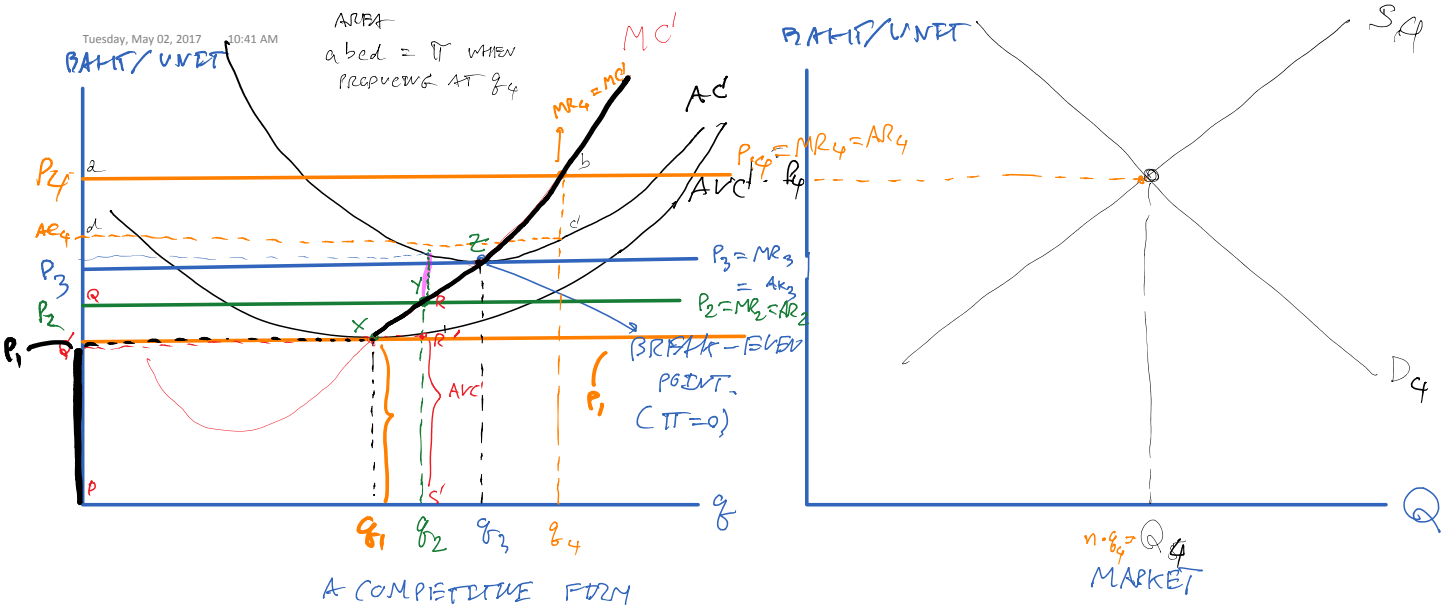


π CURVE!!!

→ FULFILS FONC & SOSC!

→ $MR(q_3) = MC(q_3)$

→ SLOPE OF MC "EVALUATED AT $q = q_3$" IS "POSITIVE"



IF TR > VC', THEN THE FIRM SHOULD CONTINUE TO PRODUCE

(PQRS) (PQ'R'S')

AT P_1, TR = VC'. THE FIRM CAN STILL PRODUCE BUT IF PRICE GOES BELOW P_1, THE FIRM SHOULD SHUT DOWN.

NOW, SUMMARIZE ...

IF $P = P_4$, $q^* = q_4$

IF $P = P_3$, $q^* = q_3$

IF $P = P_2$, $q^* = q_2$

IF $P = P_1$, $q^* = q_1$

AC' = AFC' + AVC'

SUPPLY CURVE FOR A COMPETITIVE FIRM STARTS FROM THE BOTTOM OF AVC' CURVE.

Q: IN FACING LOSSES, SHOULD THE FIRM CONTINUE TO PRODUCE OR SHUTDOWN?

↳ = STOP PRODUCING "FOR A WHILE" AND RESTART THE PRODUCTION AGAIN WHEN BUSINESS/MARKET CONDITION IMPROVES.

A: THE FIRM SHOULD CONTINUE TO PRODUCE IF ...

Π WHEN CONTINUE TO PRODUCE ≥ Π WHEN IT SHUTDOWNS

$\Pi_{q>0}$ ≥ $\Pi_{q=0}$

TR − FC − VC ≥ $0^{=TR} - FC - 0^{=VC}$

$$TR - FC - VC \geq 0 - FC - 0$$

("q=0")

$$TR - VC \geq 0$$

$$TR \geq VC$$

IN OTHER WORD, **THE FIRM SHOULD SHUTDOWN IF $TR < VC$.**

("SHUTDOWN RULE")

EX: $TR = 300{,}000$ BAHT/MONTH

$FC = 200{,}000$ "

$VC = 200{,}000$ "

IF CONTINUE

$\pi = TR - FC - VC$

$= 300K - 200K - 200K$

$= -100{,}000$ BAHT/MONTH

IF SHUTDOWN

$\pi = 0 - 200{,}000 - 0$

$= -200{,}000$ BAHT/MONTH

WHEN YOU CONTINUE, $TR = 300{,}000$

- PAY ALL $VC = 200{,}000$ BAHT
- PAY SOME PART OF $FC = 100{,}000$ BAHT

THAT'S WHY LOSSES GET LOWER WHEN YOU CONTINUE TO PRODUCE.

ANOTHER VERSION OF SHUTDOWN RULE

SHUTDOWN IF $TR < VC$

$$\frac{TR}{q} < \frac{VC}{q}$$

$$\frac{P \cdot q}{q} < AVC$$

$$P < AVC$$

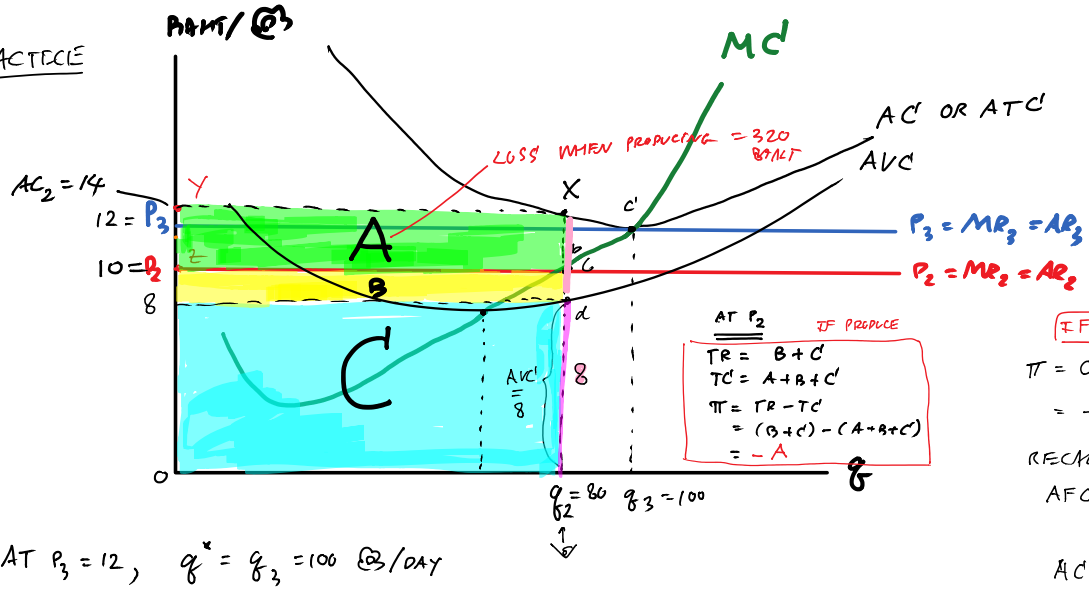
(VARIABLE COST / UNIT)

PUT IT DIFFERENTLY, CONTINUE IF $P \geq AVC$.

BAHT/@

MC

PRACTICE



$TC = FC + VC$
$= AFC \cdot q + AVC \cdot q$
$= 6 \cdot 80 + 8 \cdot 80$
$= 480 + 640$ ($A+B$ and C)
$= 1120\ (A+B+C)$

IF SHUTDOWN
$\pi = 0 - FC - 0$
$= -FC$ = AREA A+B = $6 \cdot 80 = 480$ BAHT/DAY

RECALL THAT
$AFC = \frac{FC}{q} \rightarrow FC = AFC \cdot q$

$AC = AFC + AVC$
14 6 + 8

AT $P_3 = 12$, $q^* = q_3 = 100$ UNIT/DAY

AS $P = 12 = AC$, THEN π PER UNIT $= 0$ AND TOTAL PROFIT $= 0$.

TOTAL REVENUE $= P_3 \cdot q_3 = 12 \cdot 100 = 1200$ BAHT. (AREA $0\,P_3\,c'\,q_3$)

TOTAL COST(TC) $= AC \cdot q_3 = 12 \cdot 100 = 1200$ BAHT (AREA $0\,P_3\,c'\,q_3$) } =

NOTE $AC = \frac{TC}{q} \Rightarrow TC = AC \cdot q$.

AT $P_2 = 10$, $q_2 = 80$. SO $TR_2 = P_2 q_2 = 10 \cdot 80 = 800$ BAHT/DAY

($0\,P_2\,b\,q_2$, 80)

$TC_2 = AC_2 \cdot q_2 = 14 \cdot 80 = 1{,}120$

NOTE $AC_2 = \frac{TC_2}{q_2} \Rightarrow TC_2 = AC_2 \cdot q_2$

$\pi_2 = TR_2 - TC_2 = 800 - 1{,}120$
$= -320$ BAHT/DAY

Y, X, 4, Z, 80, b

CHECK W/ SHUTDOWN RULE

IF THE FIRM SHOULD CONTINUE TO PRODUCE WHEN $P = P_2 \rightarrow q = q_2 = 80$.

ANOTHER WAY TO CALCULATE

$\pi = (P - AC) q$ — PROFIT PER COOKIE

HERE $\pi_2 = (P_2 - AC_2) \cdot q_2$
$= (10 - 14) \cdot 80$
$= -4 \cdot 80$
$= -320$ BAHT/DAY

X, 4, b

OR

SHUTDOWN IF $TR < VC$ — (1)

OR

SHUTDOWN IF $P < AVC$ OR $\frac{VC}{q}$ — (2)

LET'S SEE AT $P = P_2$ WHAT IS TR, VC, AVC, P?

AT $P = P_2$, $P > AVC$ OR $P < AVC$?