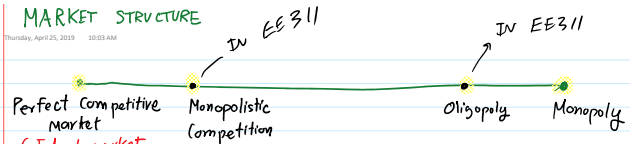
MARKET STRUCTURE

Thursday, April 25, 2019 10:03 AM

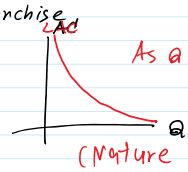


(Ideal market as a benchmark)

① many many buyers & many many sellers (i.e., atomic buyers & atomic sellers) ⟷ ① Single sellers (= Monopolist) & many buyers

② Identical products (= homogeneous products = non-differentiated products) ⟷ ② unique product w/ no close substitutes

③ Free entry / Free exit ⟷ ③ Barriers to entry come from
- being an owner of major inputs used to produce the product.
- Concession (สัมปทาน)
- Patents / copyrights / Franchise
- Economies of scale :



As Q rises, LAC ↓ ☺

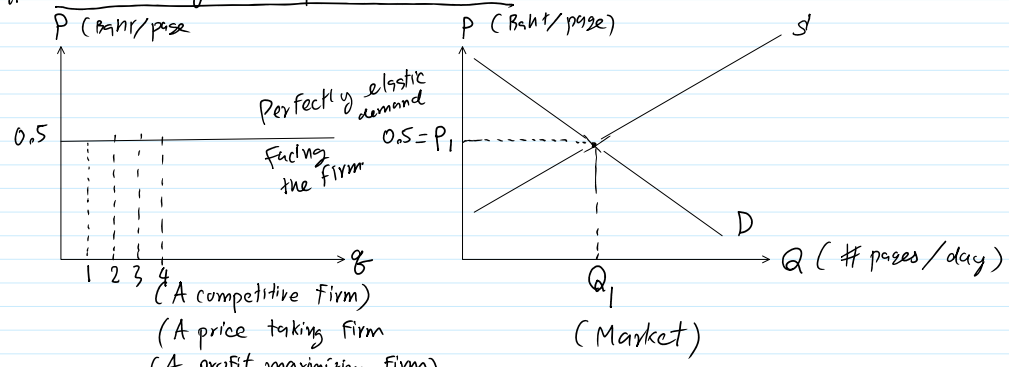
(Mature Monopoly)

④ Perfect information about # sellers, # buyers, # price, # products

① + ② implies that buyers are "price takers" & sellers are "price takers"
(take price "as given" and make decision)
for buyers → purchase decision
for sellers → output decision

① + ② + ③ implies that monopolist is a price maker or price setter: he can "set" price that is charged on buyers! or he can "set" quantity he would like to supply to a market.

Perfectly Competitive Market



At p = 0.5, the Firm can sell at any q it wishes to sell.

If p > 0.5, the Firm will lose all sales! (why?)

If p < 0.5, the Firm's quantity demanded will get extremely large

Consider a competitive firm in a perfect competitive market.

P	Q	TR (Baht/day)	MR	AR
10	1	10	-	10/1 = 10
10	2	20	10	20/2 = 10
10	3	30	10	30/3 = 10
10	4	40	10	40/4 = 10
10	5	50	10	50/5 = 10
10	6	60	10	60/6 = 10

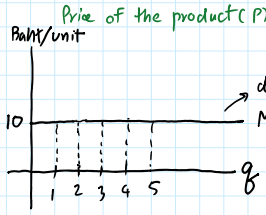
Suppose P = 10 baht/unit

- Total Revenue (TR) = $P \times Q$
- Average revenue (AR) = $\frac{TR}{Q}$
- Marginal revenue (MR) = $\frac{\Delta TR}{\Delta Q}$

We observe that, in perfect competitive market,

$$P = MR = AR \quad (= 10 \text{ baht/unit of cookie})$$

Price of the product (P) is equal to marginal revenue (MR) and also equal to average revenue (AR)



Note: In monopoly structure, $MR \neq P$!!! (we will see when we talk about monopoly next week)

Profit Maximization

This Firm (this guy) must make 2 decisions:

① Output decision: how many unit of output (q) he should produce so that his profit is maximized?

② Shutdown decision: If his firm is running losses, i.e., $TR < TC$, should he continue to produce OR should he "shutdown"?

⇒ stop producing for a while and wait until market condition gets better and come back to produce again.

OUTPUT DECION

Recall that $\pi(q) = TR(q) - TC(q)$ —①

Find q^* (profit maximizing output level)

To maximize π, we differentiate profit function with respect to output (q) and then set it equal to zero:

$$\frac{d\pi(q)}{dq} = 0 \quad \text{(First order condition)}$$

$$\frac{d\pi(q)}{dq} = \frac{dTR(q)}{dq} - \frac{dTC(q)}{dq} = 0 \qquad \left[\frac{\Delta\pi}{\Delta q} = \frac{\Delta TR}{\Delta q} - \frac{\Delta TC}{\Delta q} = 0\right]$$

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

So, $MR(q) = MC(q)$

The output that gives the highest amount of profit is the output level that "equates" MR and MC!

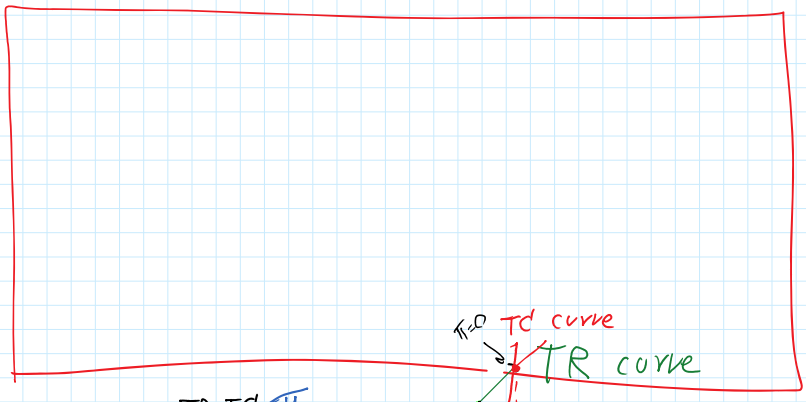
Moreover, in perfectly competitive market, we know that $MR = P$.

Then we can also say that the profit maximizing rule

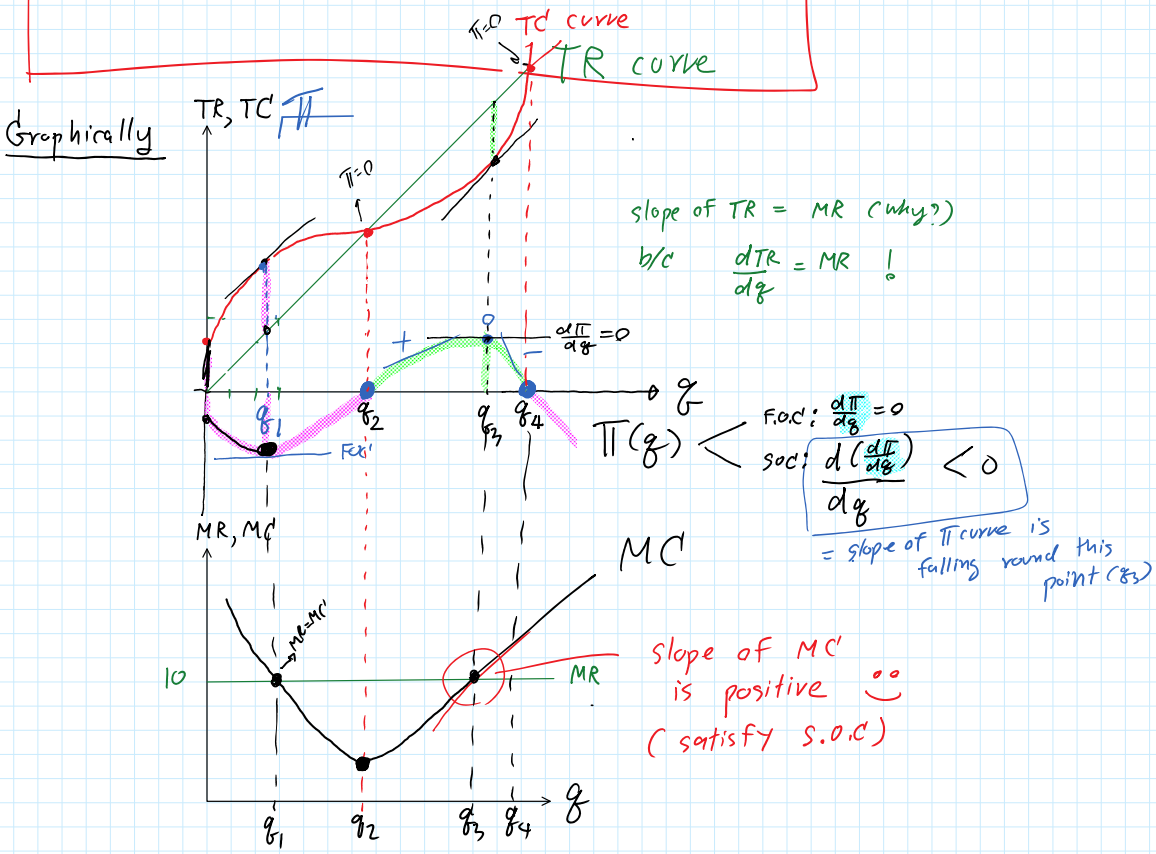
Moreover, in perfectly competitive market, we know that $MR = P$.

Then we can also say that the profit maximizing rule is $\boxed{MR = MC = P}$ for a firm in this mkt structure.

In textbooks, you may see $\boxed{MR = MC}$ or $\boxed{P = MC}$



Graphically



Fact#1 Slope of TR reflects MR.

$\frac{dTR}{dq} = MR$.

In the diagram slope of TR is constant and that means MR is constant (horizontal MR curve)

Fact#2
- when $q \uparrow$, TC $\uparrow$
- when $q = 0$, TC is positive since we have to pay FC. (observe that TC curve has a positive intercept which is equal to amount of FC he must pay.)
- Moreover, TC first increases at decreasing rate and then increases at increasing rate.

Fact3 at q_1, slope of TR = slope of TC'

$MR = MC'$

at q_2, slope of TC' is the lowest. That means MC must bottom out here at $q = q_2$

at q_3, again, slope of TR = slope of TC'

$MR = MC'$ again here

*** [observe that MC' cuts with MR twice, First at q_1 second at q_3.] ***

Fact#4 From TR - TC' diagram,

q_3 is the profit maximizing output as it is the place that vertical gap between TR and TC' is the biggest !!!

Fact#5 From MR - MC' diagram, where should he produce to maximize his profit?

Recall that F.O.C' is $\boxed{MR = MC'}$

The problem here is there are two levels, q_1 and q_3 that $MR = MC'$, Which one then?

The F.O.C' is necessary but not sufficient to make the decision. We do need second order condition (S.O.C') which is ...

From F.O.C. $\frac{d\pi}{dq} = MR - MC' = 0$

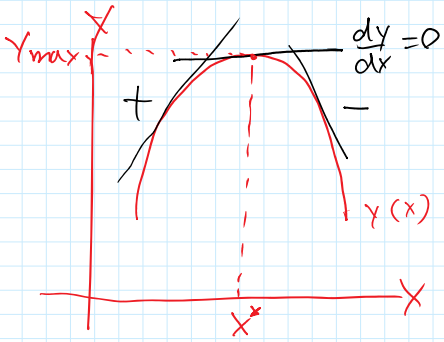
S.O.C': $\frac{d\left(\frac{d\pi}{dq}\right)}{dq} = \frac{dMR}{dq} - \frac{dMC'}{dq} < 0$ (For maximum)

$\therefore = 0 - \frac{dMC'}{dq} < 0$

$= \boxed{\frac{dMC'}{dq} > 0}$

Slope of MC' — MC must be on rising part!!!

of MC



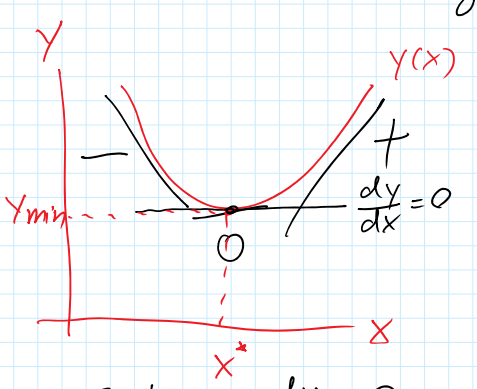
F.O.C': $\frac{dy}{dx} = 0$

S.O.C: $\frac{d\left(\frac{dy}{dx}\right)}{dx} < 0$

$\equiv \frac{d(\text{slope})}{dx}$

change in slope

MC must be on rising part...



F.O.C: $\frac{dy}{dx} = 0$

S.O.C: $\frac{d\left(\frac{dy}{dx}\right)}{dx} > 0$

$\equiv \frac{d(\text{slope})}{dx}$

(change in slope)