

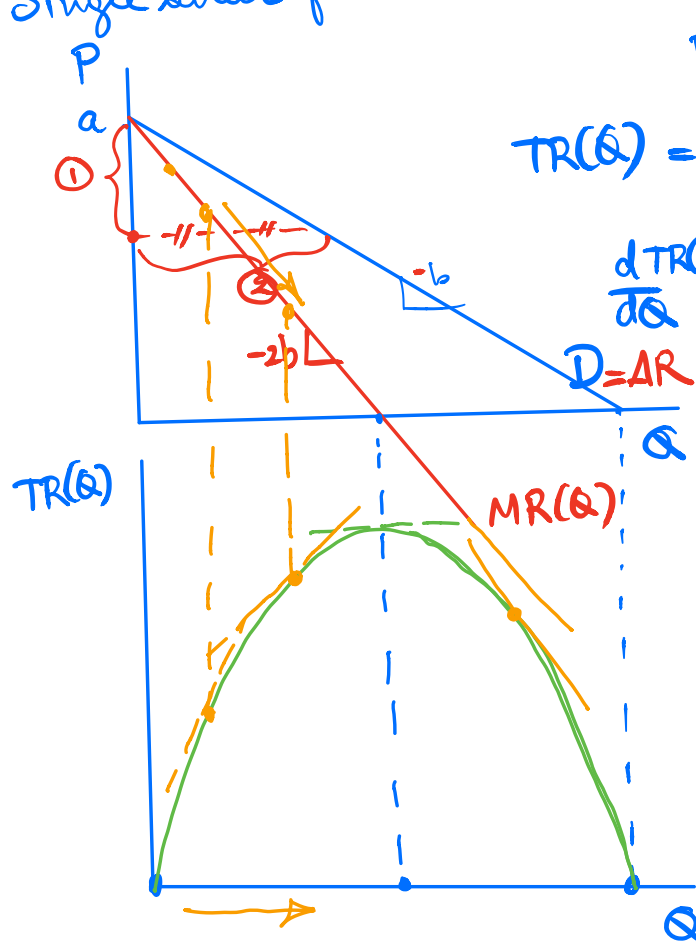
Monopoly. - Single seller - many buyers
 - product is significantly different from others
 (no close substitutes.)

Reasons for monopoly.

Barriers
to entry

- 1) Ownership of technology, patent, raw materials.
- 2) License (sole licensee from the government.)
- 3) Large Investment.
- 4) Economies of Scale.

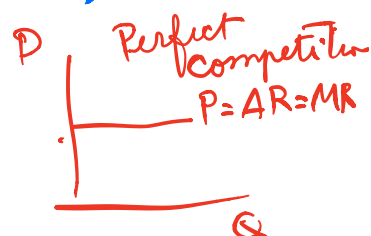
- Single seller face the market demand $D: P = a - bQ$.



$$P = AR(Q) = a - bQ$$

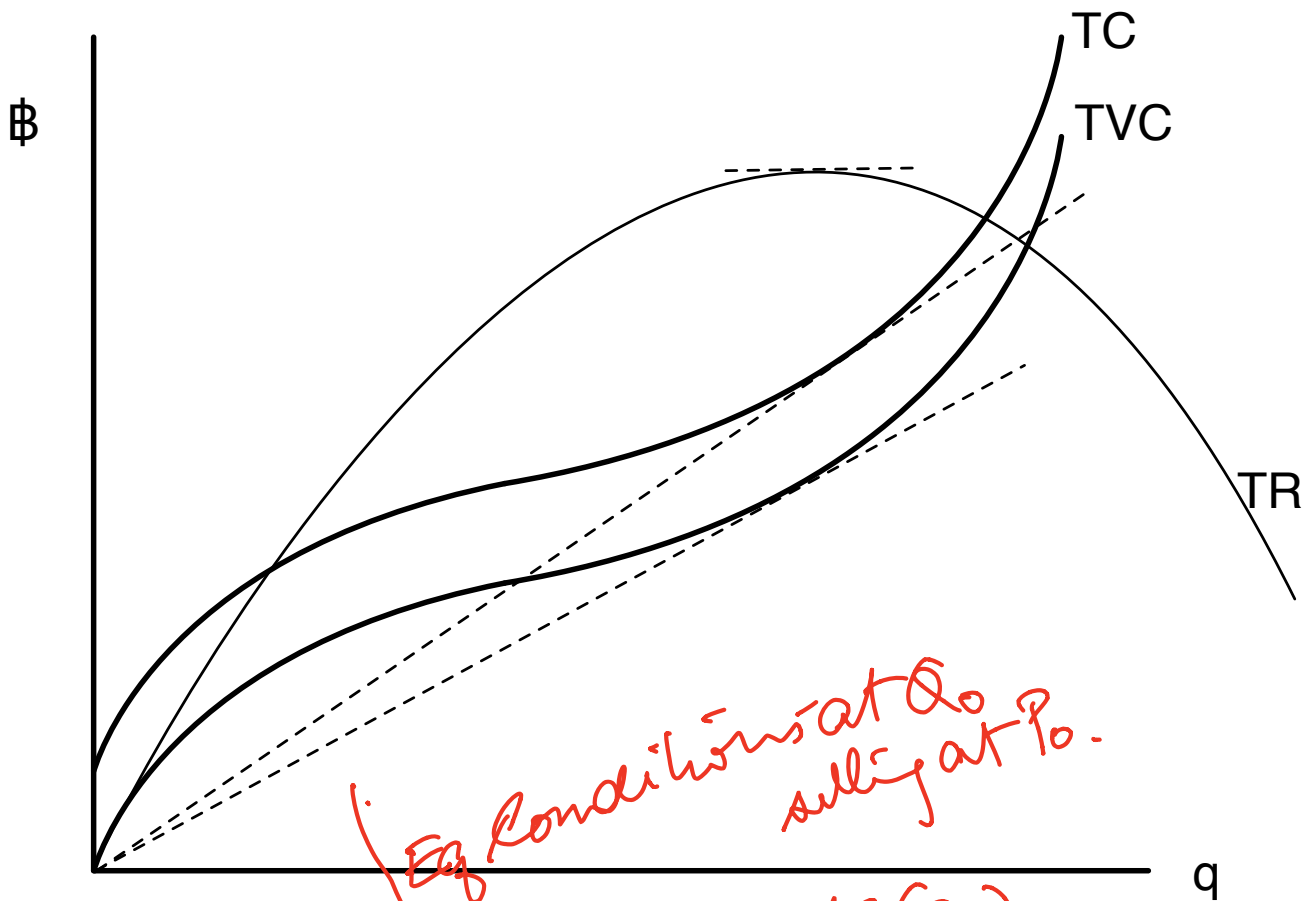
$$TR(Q) = Q \cdot AR(Q) = Q(a - bQ) = aQ - bQ^2$$

$$\frac{dTR(Q)}{dQ} = MR(Q) = a - 2bQ$$



$$\therefore TR(Q) = aQ - bQ^2$$

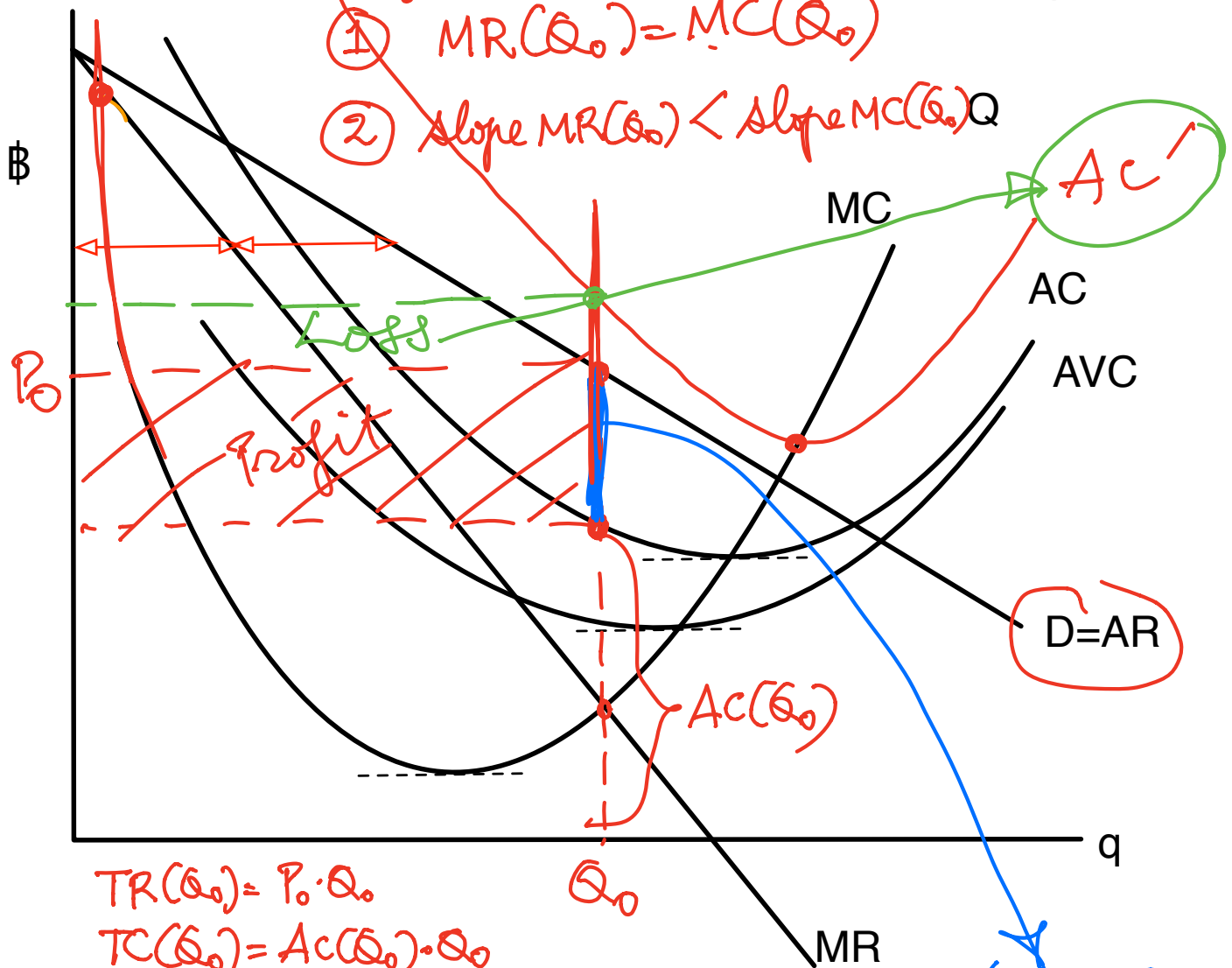
Monopoly Equilibrium in Short Run



Eq conditions at Q_0 selling at P_0 .

① $MR(Q_0) = MC(Q_0)$

② $\text{slope } MR(Q_0) < \text{slope } MC(Q_0)$

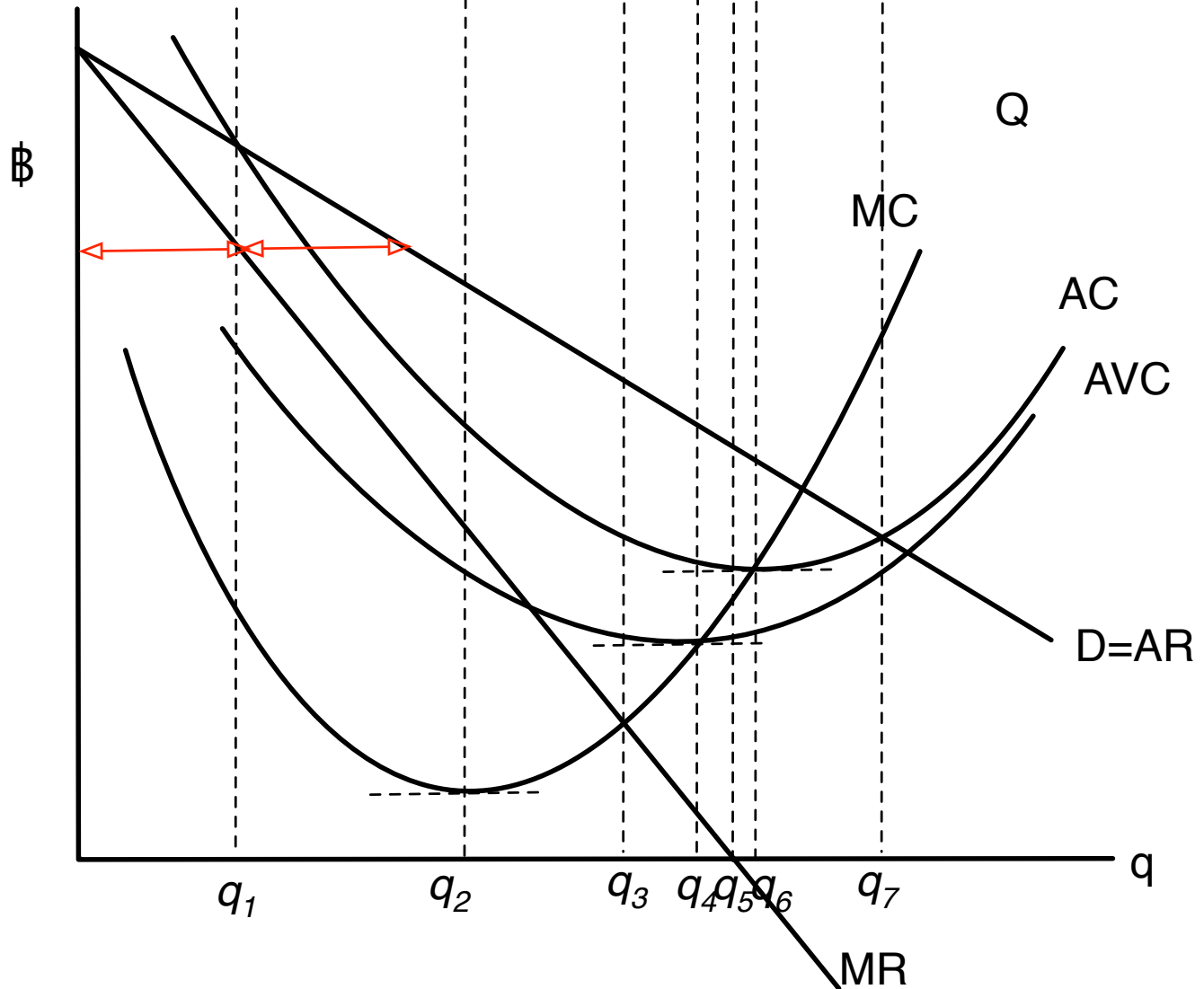
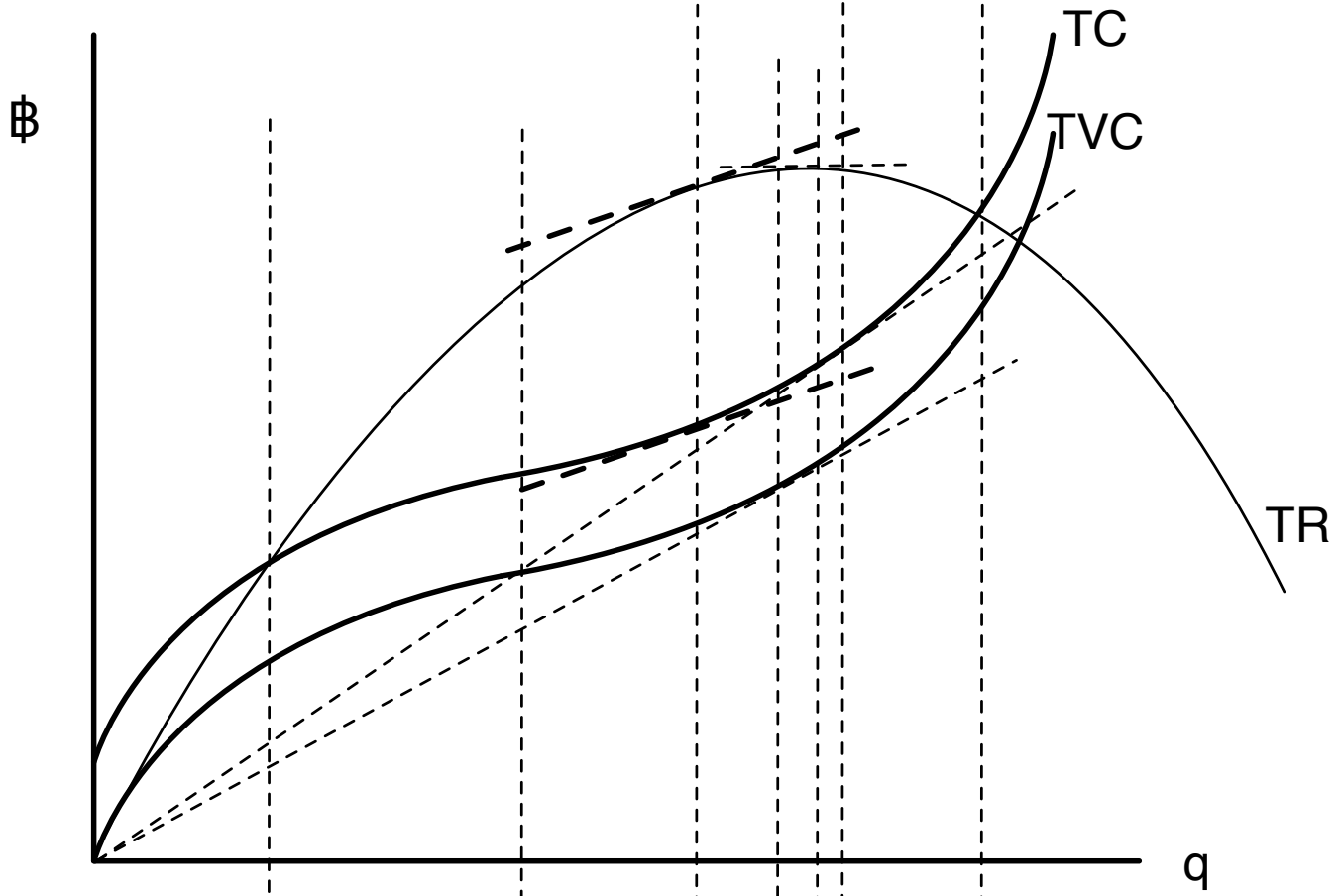


$TR(Q_0) = P_0 \cdot Q_0$

$TC(Q_0) = AC(Q_0) \cdot Q_0$

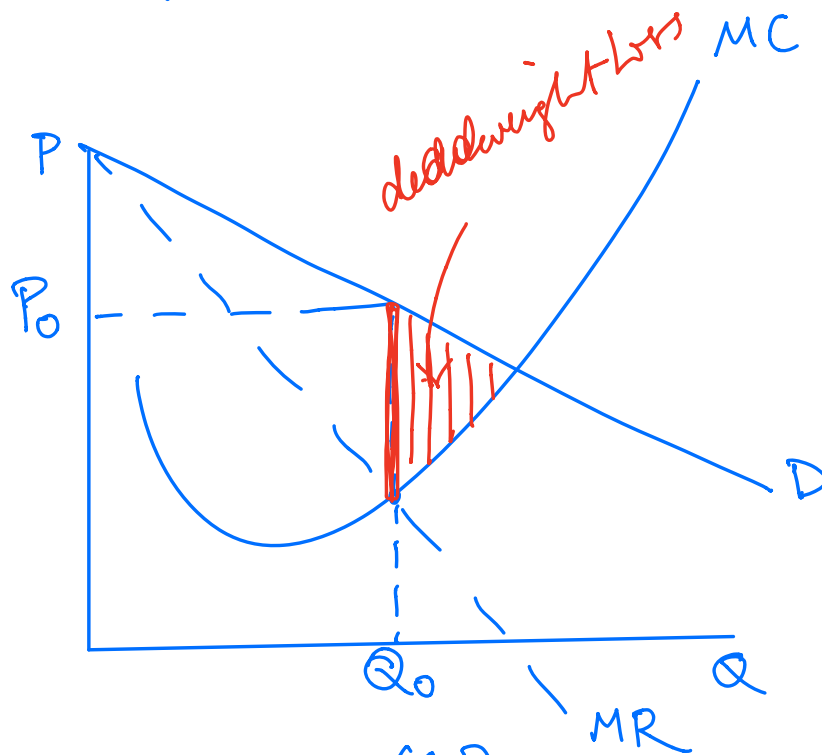
$\pi(Q_0) = TR(Q_0) - TC(Q_0) = P_0 \cdot Q_0 - AC(Q_0) \cdot Q_0 = (P_0 - AC(Q_0)) \cdot Q_0$

Monopoly Equilibrium in Short Run



Monopoly can make a loss if the cost is very high or the demand is low.

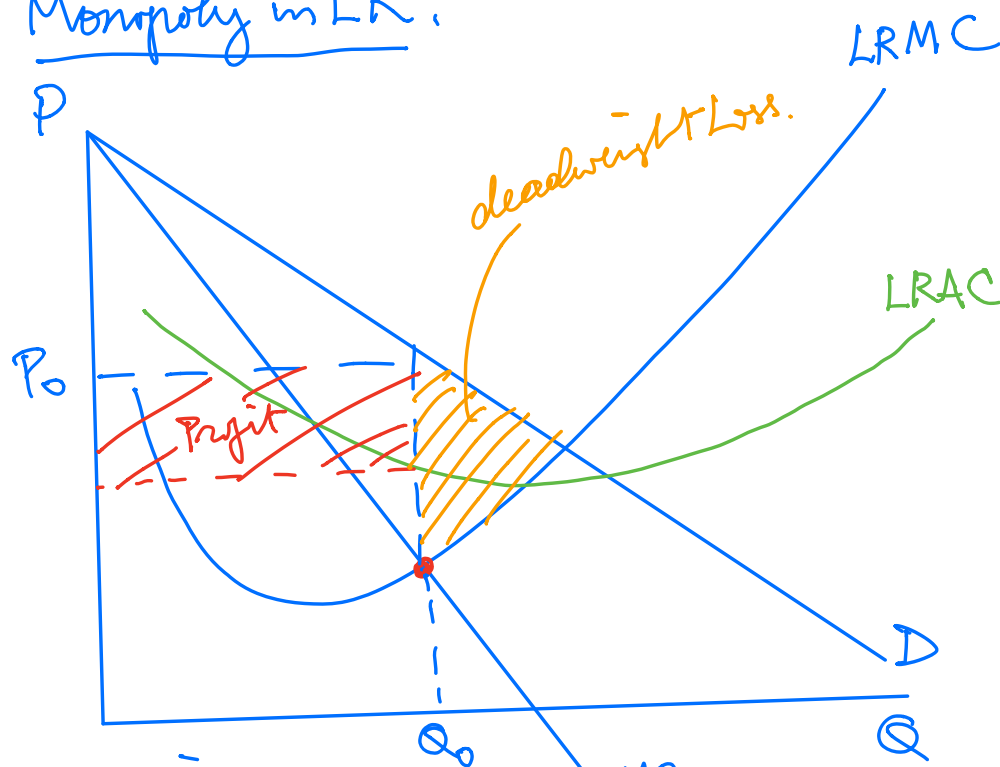
In monopoly, there is no supply curve



At Q_0 , $P_0 > MC(Q_0)$

value of the last unit sold
> cost of making the last unit.

Monopoly in LR.



Equilibrium at Q_0 at price P_0

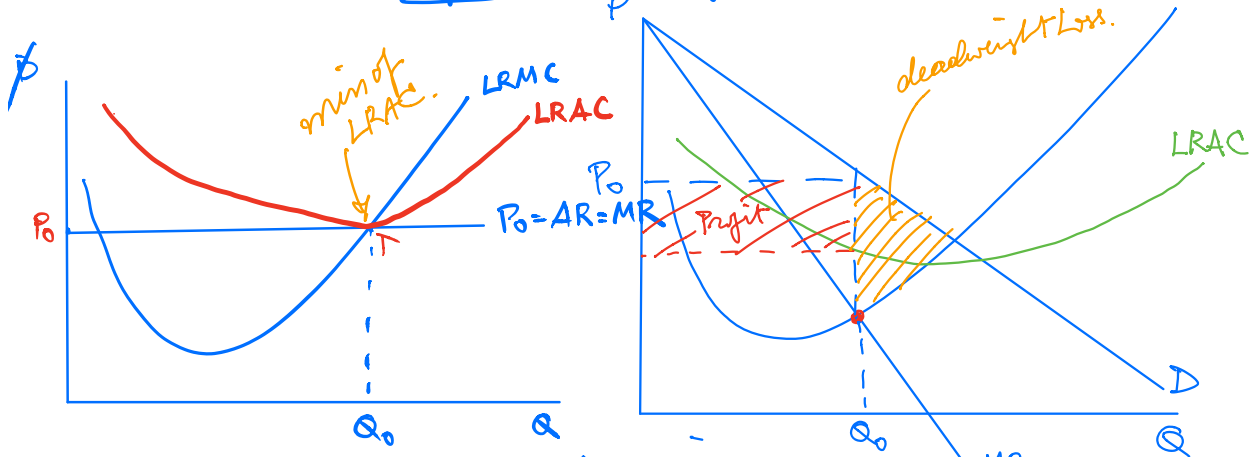
- 1) $MR(Q_0) = LRMC(Q_0)$
- 2) $\text{slope } MR(Q_0) < \text{slope } LRMC(Q_0)$

The firm receive Excess profit if LR cost already include opp cost of the monopoly.

— Monopoly can keep Excess profit because of barrier to entry.

— at Q_0 , $P_0 > LRMC(Q_0) \Rightarrow \text{Deadweight Loss}$

Comparison of Perfect Competition and Monopoly



① Normal profit

① Excess Profit. at MR .

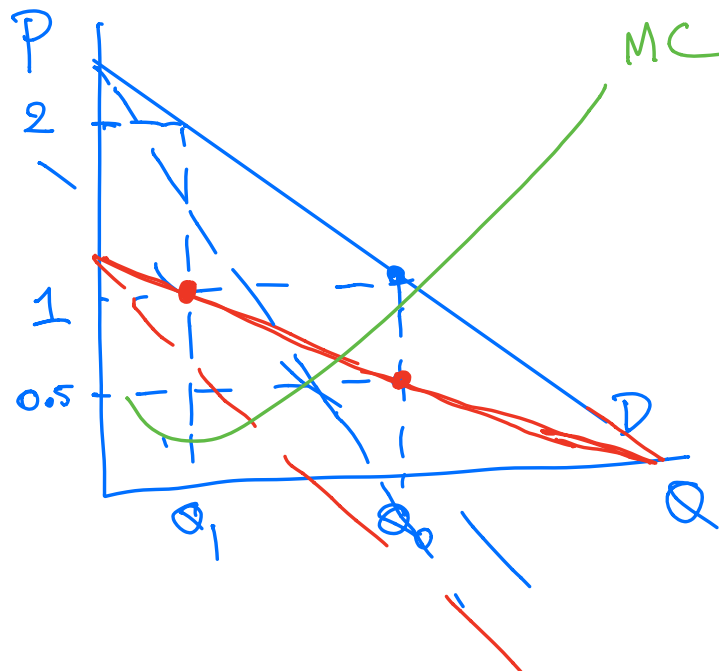
② $P_0 = LRMC(Q_0)$ - no deadweight Loss.
(Efficiency of resource distribution)

② $P_0 > LRMC(Q_0)$ there is deadweight Loss.

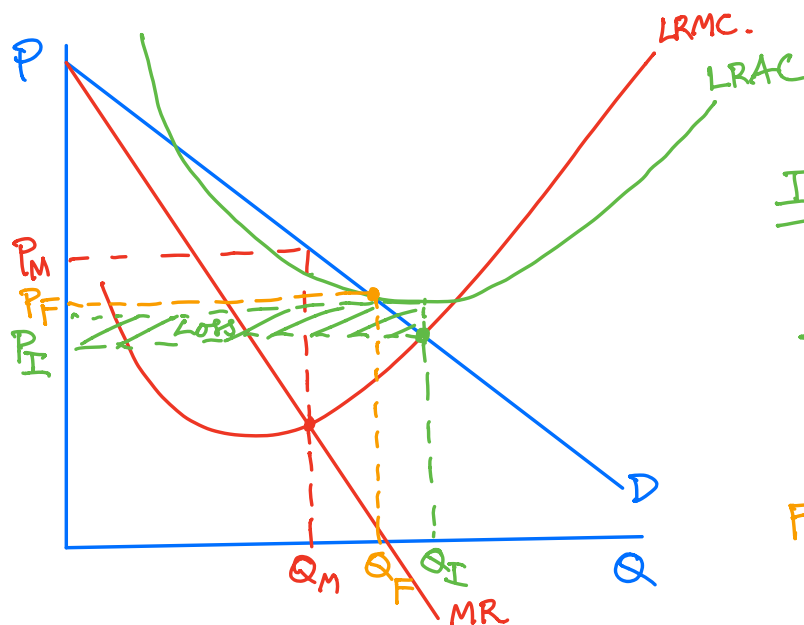
③ $LRAC(Q_0)$ is min.

③ $LRAC$ is not min at Q_0 .

50% Share Revenue to the Government.



Regulated Monopoly - to force the monopoly to produce more to lessen the deadweight loss.



(Q_M, P_M) is the point where the monopoly maximizes profit.

Ideal Price P_I (at Q_I)
 set the price $P_I = LRMC(Q_I)$
 - no deadweight loss.
 - but the monopoly might be making a loss.

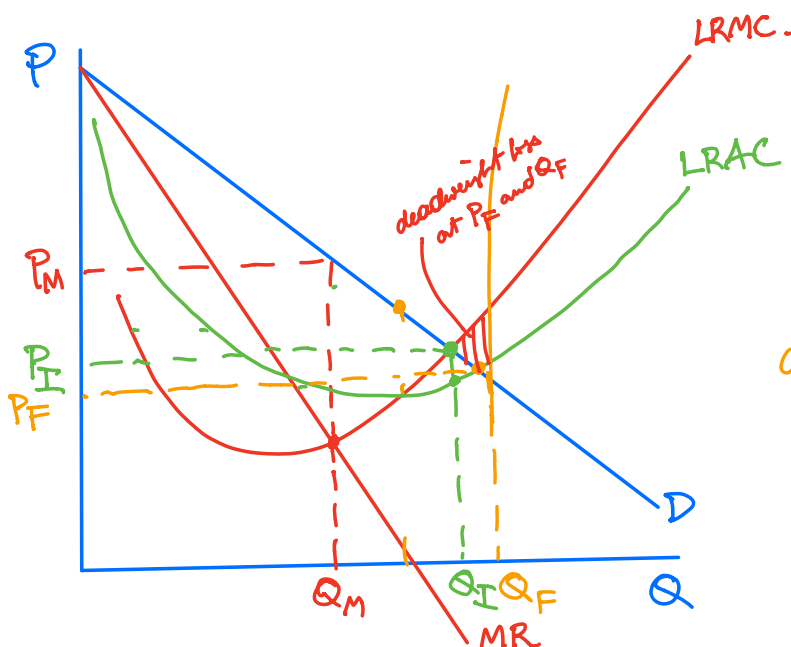
Fair Price P_F (at Q_F)
 - Profit = 0 at

$$P_F = LRAC(Q_F)$$

But there is still deadweight loss at P_F because

$$P_F > LRMC(Q_F)$$

Here, $P_F > P_I$



At P_I , we have profit.

$$P_F = LRAC(Q_F)$$

$$P_F < P_I$$

at fair price P_F and quantity Q_F

$$\text{at } Q_F, P_F < LRMC(Q_F)$$

Natural Monopoly - Economies of Scale.

- LRAC decreasing $\Rightarrow$ Economies of scale.

