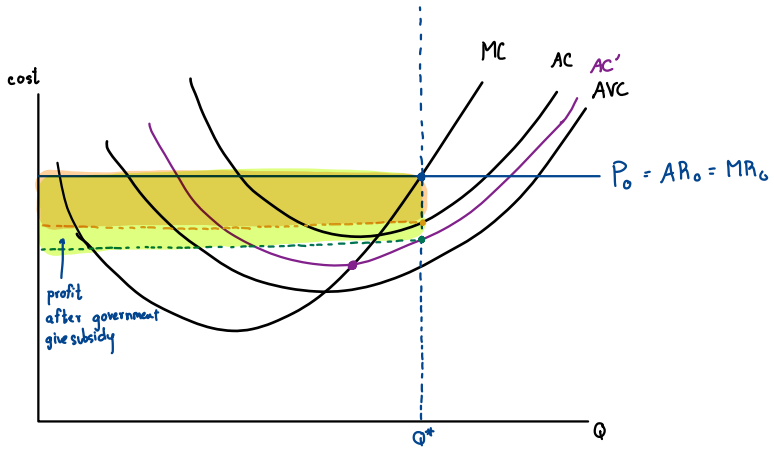
Siwat Treerattanaplan 6304641464

HW#11, Due May 6, 2021 Analyze the case the firm receives subsidy for the following two different cases to find out how the firm's quantity and profit change.
a) The government gives a lump sum subsidy of 20,000 bahts to each firm.
b) Suppose that the firm was producing 1,000 units and the government gives a subsidy of 20 bahts/unit so the total subsidy is also 20,000 bahts if the firm does not change its production of 1,000 units. Do you think, to maximize its profit with the subsidy of 20 bahts/unit, the firm will increase/decrease its production from 1,000 units? Does the firm receive higher profit? Does the firm receive more/less subsidy than 20,000 bahts?

a) - government give lump sump subsidy of 20,000 Baht to each firm

- this means that the total fixed cost of the firm decreased



∴ - Quantity remain at Q^* due to MC and MR

- Profit increase ฿ 20,000

Average Cost

$TC(Q) = (TFC(Q) - 20000) + TVC(Q)$

$\frac{TC(Q)}{Q} = \frac{(TFC(Q) - 20,000)}{Q} + \frac{TVC(Q)}{Q}$

$AC(Q) = AFC(Q) + AVC(Q) - \frac{20,000}{Q}$

∴ This show that AC(Q) decrease by $\frac{20,000}{Q}$

Marginal Cost

$MC(Q) = \frac{d}{dQ} TC(Q) - 20,000$ (1)

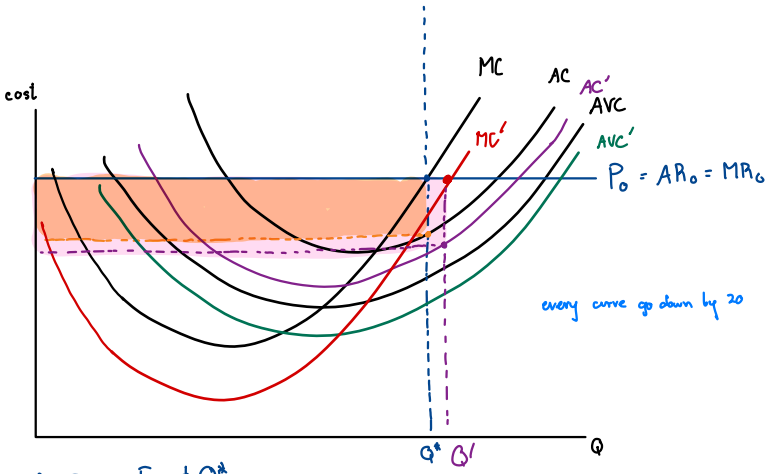
$= \frac{d}{dQ}(TFC(Q) + TVC(Q) - 20,000$

$= \frac{d}{dQ} TVC(Q)$

∴ TVC(Q) unchange = marginal cost unchanged

because $MC(Q) = \frac{d}{dQ} TVC(Q)$

b)



$TC(Q) = TFC(Q) + TVC(Q)$

$TC'(Q) = TFC(Q) + TVC'(Q)$

$= TFC(Q) + TVC(Q) - 20Q$

$AVC'(Q) = AVC(Q) - 20$

$AC'(Q) = AFC(Q) + AVC(Q) - 20 = AC(Q) - 20$

$MC'(Q) = MC(Q) - 20$

Before Tax : Eq at Q^*

1) $MR(Q^*) = MC(Q^*)$
2) slope $MR(Q^*) = 0 <$ slope $MC(Q^*)$

∴ The firm should stop produce at this point because if continue produce in more amount their will be more cost and get less revene.

After Tax : Eq at

1) $MR(Q') = MC(Q')$
2) slope $MR(Q') = 0 <$ slope $MC(Q')$