

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?

HW*11

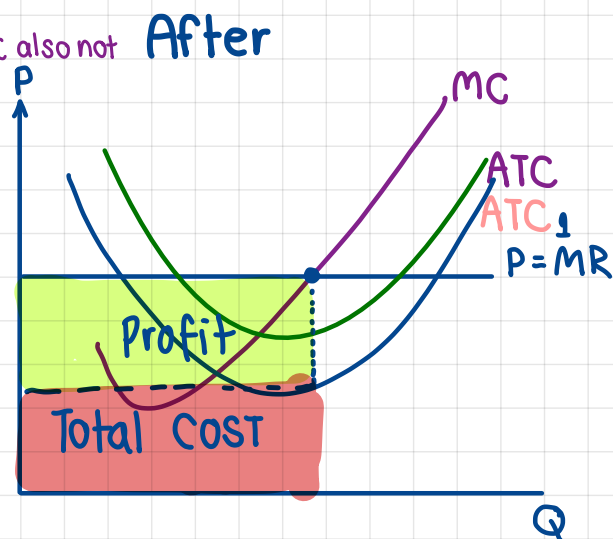
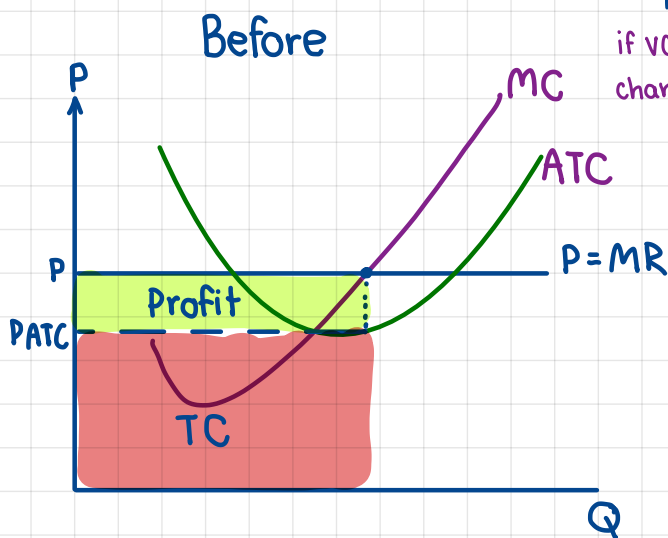
$$MC = \frac{d}{dQ} (TC)$$

a) government subsidy 20,000

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

$$MC = TVC$$

if VC not change, MC also not change.



When there is a subsidy it lowers fixed cost

$$\hookrightarrow TC = TFC - 20000 + TVC$$

$$ATC = \frac{TC}{Q} \text{ therefore if}$$

$$\frac{TC}{Q} \downarrow = ATC \downarrow \text{ also lowered}$$

But VC stay the same so MC will not change.

therefore, firm won't reduce their quantity as their ATC ↓ which means they earn more profit but TR stay the same.

b) firm produce 1000 units
with 20 bath/unit subsidy = 20000
it's a subsidy on VC

$$\text{so } TC = TFC + (TVC - 20000)$$

$$MC = TVC$$

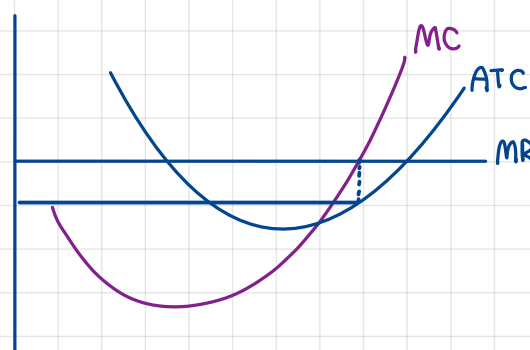
if TVC ↓ MC ↓

$$AVC = \frac{TVC}{Q} \text{ makes } AVC \downarrow$$

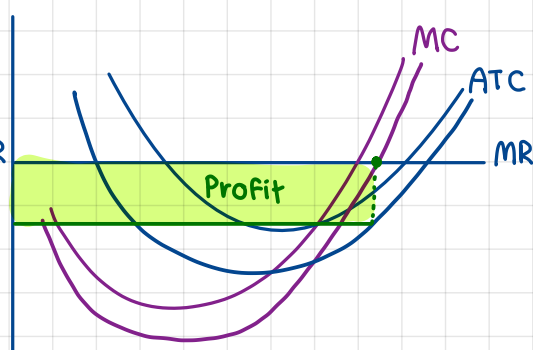
$$ATC \downarrow = AFC + AVC \downarrow$$

therefore,

Before



After



① Firm will change their quantity as
 $MC \downarrow$ therefore the new profit
maximizing point is $MC_2 = MR$.
which means firm will increase quantity
until $P = MC_2$.

$ATC \downarrow$ which means $TC \downarrow$ and Profit $\uparrow$

As firm increase their Q to $P = MC_2$
quantity is higher, which means higher
subsidy.