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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.

- The government gives a lump sum subsidy of 20,000 bahts to each firm.
- 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?

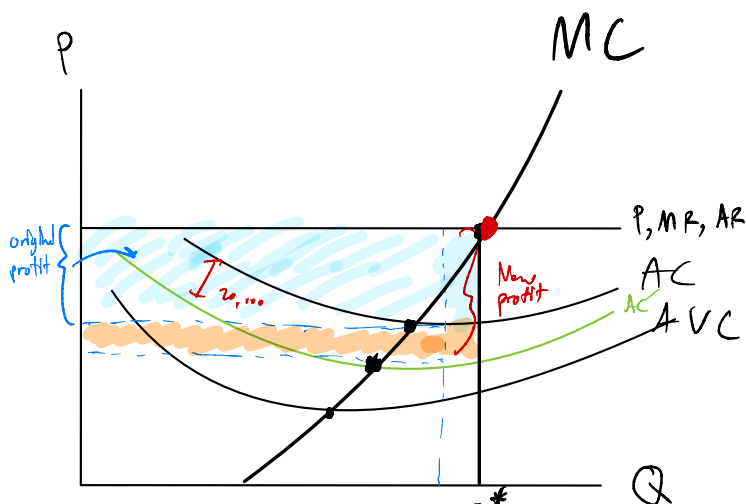
a) The government gives a lump sum subsidy 20,000 bahts
that means TFC decreases 20,000 bahts.

$$AFC = \frac{TVC}{Q}$$

$$AFC' = \frac{TVC}{Q} - \frac{20,000}{Q}$$

MC not changed

because TVC not change,
and MC is slope of TVC,



Firm's quantity stay same

because doesn't changed for
MC and MR.

Firm's profit will changed

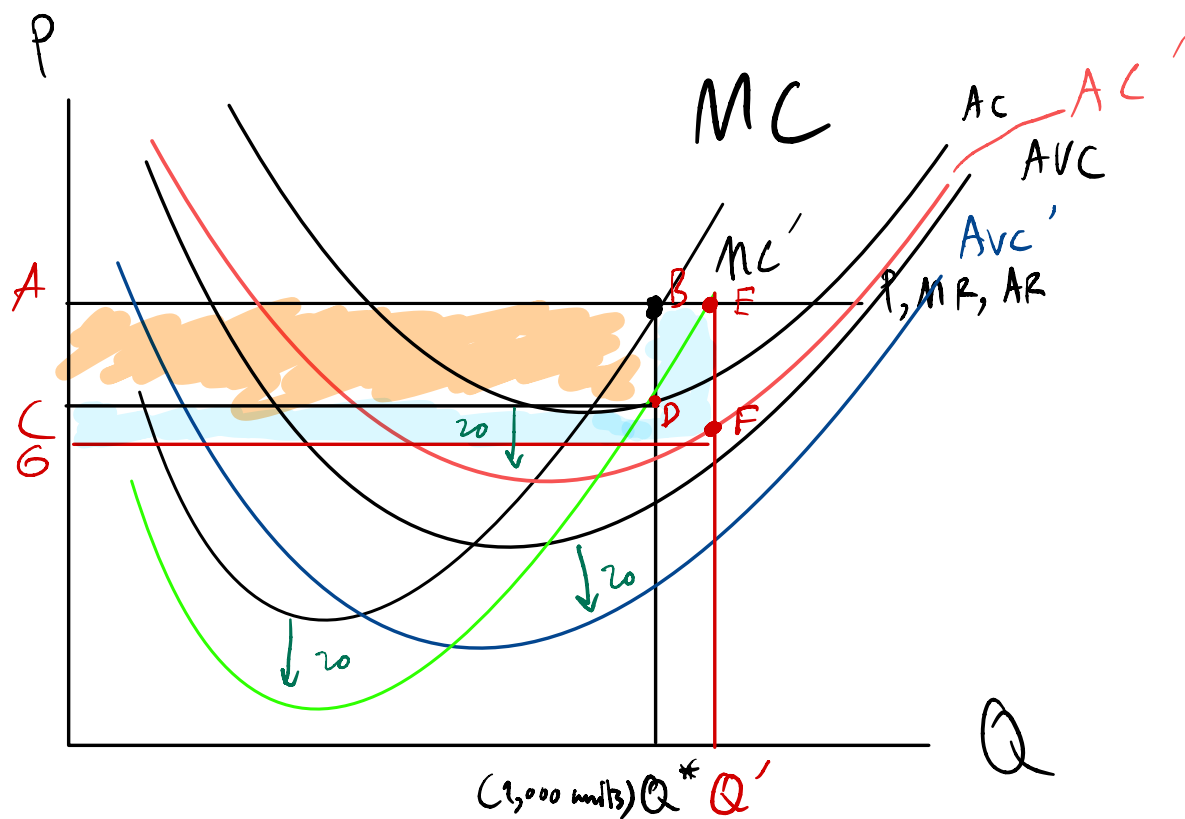
because have new AC

that decreased 20,000 for TFC
that makes firm's profit 20,000 more
than original.

Q^* is the best quantity that maximized
the profit before subsidy since MR and MC
are not changed for the subsidy

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The area of $\square ABCD$ is an original profit

The area of $\square AEFB$ is a new profit

before subsidy Eq. is at Q^*

because direct to the conditions.

$$1.) MR(Q^*) = MC(Q^*)$$

$$2.) \text{slope } MR(Q^*) = 0 < \text{slope } MC(Q^*)$$

after subsidy Eq. is at Q'

because direct to the conditions.

$$1.) MR(Q') = MC(Q')$$

$$2.) \text{slope } MR(Q') = 0 < \text{slope } MC(Q')$$

∴ To maximize its profit, the firm will increase its production

to Q' and gain higher profit. The firm will also receive subsidy more than 20,000 baht.