

ECON 5103 Unit 5, Video 3  
Cost minimization

Cost minimization: A firm is producing a specified level of production using the least expensive combination of inputs.

Cost-minimizing rule for a Cobb-Douglas production function: A firm with a Cobb-Douglas production function is employing the cost-minimizing combination of inputs IF and ONLY IF

$$\frac{\text{MPL}}{\text{wage per worker}} = \frac{\text{MPK}}{\text{cost per unit of capital}}$$

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Recall from the last video we had a fake firm with production function  $Q = K^{.8} L^{.7}$

We calculated that  $\text{MPL} = 5.686$  units of output, and  $\text{MPK} = 12.996$  units of output.

Now let's add this information:

wage per worker: \$10  
cost per unit of capital: \$8

Is it ~~true~~ true?

$$\frac{\text{MPL}}{\text{wage}} \stackrel{?}{=} \frac{\text{MPK}}{\text{cost of capital}}$$

less      more

$$\frac{5.686}{10} \stackrel{?}{=} \frac{12.996}{8}$$

No!!!

This means that firm is not producing its output in the least expensive way.

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