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# **Choice of Inputs by the Firm - Marginal Products and the Least-Cost Rule**



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# Marginal Products and the Least-Cost Rule

- Every firm must decide how to produce its output.
- Should electricity be produced with oil or coal?
- Should cars be assembled in the United States or Mexico?
- We now complete the link between production and cost by using the marginal product concept to illustrate how firms select the least-cost combinations of inputs.



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## Continued

- In our analysis, we will rely on the fundamental assumption that firms minimize their costs of production.
- This cost-minimization assumption actually makes good sense not only for perfectly competitive firms but for monopolists or even non-profit organizations like colleges or hospitals.
- It simply states that the firm should strive to produce its output at the lowest possible cost and thereby have the maximum amount of revenue left over for profits or for other objectives.



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# Least-cost rule

To produce a given level of output at least cost, a firm should buy inputs until it has equalized the marginal product per dollar spent on each input.

This implies that

$$\frac{\text{Marginal product of } L}{\text{Price of } L} = \frac{\text{marginal product of } A}{\text{price of } A} = \dots$$



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# Substitution rule

- If the price of one factor falls while all other factor prices remain the same, firms will profit by substituting the now-cheaper factor for the other factors until the marginal products per dollar are equal for all inputs.



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