Dottorato di Ricerca in Economia Politica, XVIII ciclo

Microeconomics: production and cost functions

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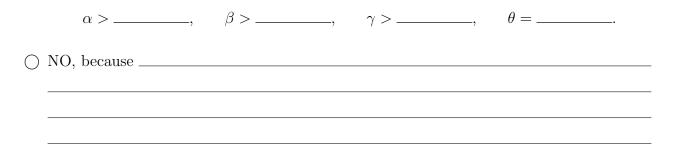
Consider the cost function

 $\ln \mathcal{C}(y, w, r) = (\alpha \ln y + \beta \ln w + \gamma \ln r)^{\theta},$

where y is the production (output), while w and r are the costs of inputs, namely the salary and and the cost of capital.

1. Is it possible to assign specific values to all parameters in order to obtain a translogarithmic cost function?

 \bigcirc YES, the parameters should be



- 2. Set $\theta = 1$ and prove that the above function exhibits constant return to scale when $\alpha = 1$
- 3. Set $\theta = 1$ and tick the cases where the $[\ln C(y, w, r)]$ cannot be a cost function:

 $\bigcirc \quad \alpha > 1, \qquad \bigcirc \quad \beta + \gamma > 1, \qquad \bigcirc \quad \gamma = 1.5 \qquad \bigcirc \quad \beta + \gamma < 0.5 \qquad \bigcirc \quad \alpha = 0.01$

4. Set $\theta = 1$ and tick the conditions that must be respected for being $[\ln C(y, w, r)]$ a cost function

 $\bigcirc \quad \beta = 1, \qquad \bigcirc \quad \gamma + \beta = 1 \qquad \bigcirc \alpha = 1$

5. Set $\theta = 1$. Given $[\ln C(y, w, r)]$, compute C(y, w, r). Assume perfect competion, with p the price of the output. Write the profit function.

 $\pi(p, y, w, r) =$

6. Which restriction on parameters must be set in order to have a profit maximising plan?

Restriction: =_____

7. Write the maximum profit function, $\pi(p, w, r)$.

 $\pi(p, w, r) =$

8. Compute the elasticity of profits to price.

 $\varepsilon_{\pi,p} =$ _____.