Universidad Del Quindío

Programa de Economía

Ejercicio (1) - Microeconomía I

Recordemos cómo se plantea un problema de maximización del beneficio, en este caso para el consumidor.

$$\max U(x,y)$$

s.a

$$g(x,y) = m$$

Entonces

$$\mathcal{L} = U(x,y) - \lambda\big(g(x,y) - m\big)$$

$$\begin{aligned} &[x] \qquad \partial_x U = \lambda \partial_x g(x,y) \\ &[y] \qquad \partial_y U = \lambda \partial_y g(x,y) \\ &[\lambda] \quad g(x,y) = m \end{aligned}$$

Mi problema:

$$U = x^\alpha y^\beta$$
$$m = p_x x + p_y y$$

1. Armemos el langrangiano:

$$\mathcal{L} = x^\alpha y^\beta - \lambda[p_x x + p_y y - m]$$

2. C.P.O:

$$\frac{\partial \mathcal{L}}{\partial x} = \alpha x^{\alpha-1} y^\beta - \lambda p_x = 0$$
$$\frac{\partial \mathcal{L}}{\partial y} = \beta x^\alpha y^{\beta-1} - \lambda p_y = 0$$

3. Igualemos λ:

$$\frac{\alpha x^{\alpha-1} y^\beta}{p_x} = \frac{\beta x^\alpha y^{\beta-1}}{p_y}$$
$$\frac{p_x}{p_y} = \frac{\alpha y}{\beta x}]E.E.F$$

4. Despejamos y:

$$y = \frac{\beta p_x x}{\alpha p_y}$$

5. Reemplazamos y en la restricción presupuestaria:

$$m = p_x x + p_y(\frac{\beta p_x x}{\alpha p_y})$$

$$m = p_x x + (\frac{\beta p_x x}{\alpha})$$

$$m = p_x x(1 + \frac{\beta}{\alpha})$$

$$m = p_x x(\frac{\alpha + \beta}{\alpha})$$

6. Óptimo x:

$$x^* = \frac{m\alpha}{(\alpha + \beta)p_x}$$

7. Despejamos x:

$$x = \frac{\alpha p_y y}{\beta p_x}$$

8. Reemplazamos x en la restricción presupuestaria:

$$m = p_x(\frac{\alpha p_y y}{\beta p_x}) + p_y y$$

$$m = (\frac{\alpha p_y y}{\beta}) + p_y y$$

$$m = p_y y(1 + \frac{\alpha}{\beta})$$

$$m = p_y y(\frac{\beta + \alpha}{\beta})$$

9. Despejamos y:

$$y^* = \frac{m\beta}{(\beta + \alpha)p_y}$$