

FORMA MATRICIAL DEL MRLM

$$y_i = \beta_1 + \beta_2 x_{2i} + \beta_3 x_{3i} + \dots + \beta_k x_{ki} + u_i$$

$$m = 1 \rightarrow y_1 = \beta_1 + \beta_2 x_{21} + \beta_3 x_{31} + \dots + \beta_k x_{k1} + u_1$$

$$m = 2 \rightarrow y_2 = \beta_1 + \beta_2 x_{22} + \beta_3 x_{32} + \dots + \beta_k x_{k2} + u_2$$

⋮

$$m = N \rightarrow y_N = \beta_1 + \beta_2 x_{2N} + \beta_3 x_{3N} + \dots + \beta_k x_{kN} + u_N$$

$$Y = X \cdot \beta + U$$

$$\begin{array}{c} Y \\ \left[\begin{array}{c} y_1 \\ y_2 \\ \vdots \\ y_N \end{array} \right] \end{array} = \begin{array}{c} X \\ \left[\begin{array}{cccc} 1 & x_{21} & x_{31} & \dots & x_{k1} \\ 1 & x_{22} & x_{32} & \dots & x_{k2} \\ \vdots & \vdots & \vdots & & \vdots \\ 1 & x_{2N} & x_{3N} & \dots & x_{kN} \end{array} \right] \end{array} \begin{array}{c} \beta \\ \left[\begin{array}{c} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_k \end{array} \right] \end{array} + \begin{array}{c} U \\ \left[\begin{array}{c} u_1 \\ u_2 \\ \vdots \\ u_N \end{array} \right] \end{array}$$

$k \equiv n^\circ$ de parámetros (β 's)

$N \equiv n \equiv n^\circ$ de muestras

$$Y = \begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ \dots \\ y_n \end{pmatrix} \quad X = \begin{pmatrix} 1 & x_{21} & x_{31} & \dots & x_{K1} \\ 1 & x_{22} & x_{32} & \dots & x_{K2} \\ 1 & x_{23} & x_{33} & \dots & x_{K3} \\ \dots & & & & \\ 1 & x_{2n} & x_{3n} & \dots & x_{Kn} \end{pmatrix} \quad \beta = \begin{pmatrix} \beta_1 \\ \beta_2 \\ \beta_3 \\ \dots \\ \beta_K \end{pmatrix} \quad U = \begin{pmatrix} u_1 \\ u_2 \\ u_3 \\ \dots \\ u_n \end{pmatrix}$$

REPASO

$$\cdot y_i = \beta_1 + \beta_2 x_{2i} + \dots + \beta_K x_{Ki} + u_i \rightarrow Y = X \cdot \beta + U$$

$$\cdot \hat{y}_i = \hat{\beta}_1 + \hat{\beta}_2 x_{2i} + \dots + \hat{\beta}_K x_{Ki} \rightarrow \hat{Y} = X \cdot \hat{\beta}$$

$$\cdot y_i = \hat{\beta}_1 + \hat{\beta}_2 x_{2i} + \dots + \hat{\beta}_K x_{Ki} + e_i \rightarrow Y = X \cdot \hat{\beta} + e$$

$$\cdot e_i = y_i - \hat{y}_i \rightarrow e = Y - \hat{Y}$$

$$\cdot y_i = \hat{y}_i + e_i \rightarrow Y = \hat{Y} + e$$