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Ejercicio 1. Demuestra que el segundo problema de optimización para $Var(\xi_2)$ tiene solución cuando el multiplicador de lagrange λ_2 es eigenvalor de la matriz de covarianza de $X=(X_1,\ldots,X_n)$.

Segundo problema de optimización
Max Var
$$(\hat{\xi}_s) = b_2 \xi_{s,v} b_2^{tr}$$

sa. $b_2 \cdot b_2^{tr} = 1$
 $b_1 \cdot b_2^{tr} = 0$

b2= (b21, b22, ..., b2n) Matriz de covarianza

X tiene 2 componentes princip.
$$X = \begin{pmatrix} \lambda_1 \\ \lambda_2 \end{pmatrix}$$

$$S = \begin{bmatrix} Var(\lambda_1) & Cov(\lambda_1, \lambda_2) \\ Cov(\lambda_2, \lambda_1) & Var(\lambda_2) \end{bmatrix}$$

Dado que bib2tr=0 -> covarianzo=0

$$S = \begin{bmatrix} Var(\lambda_1) & 0 \\ 0 & Var(\lambda_2) \end{bmatrix}$$

Función Lograngiana

· bz es eigenvector de S y 22 es eigenvalor

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