Autoregresión de vectores (VAR)
y_1 : Volumen (%)
y_2 : Precio (rendimiento %)
Sistema de dos ecuciones endógenas
$y_{1t} = c_1 + \beta_{11} y_{1t-1} + \beta_{12} y_{2t-1} + \varepsilon_{1t}$
$y_{2t} = c_2 + \beta_{21} y_{1t-1} + \beta_{22} y_{2t-1} + \varepsilon_{2t}$
No relación entre ε_{1t} y ε_{2t}
1) Estimación individual, ecuación por ecuación
2) Quién afecta a quién?
$H_0 : \beta_{12} = 0$
$H_0 : \beta_{21} = 0$
3) Del error estándar estimado de la regresión y_{1t} realiza lo siguiente:
a) Shocks
$\widehat{y_{1T+1}} = \widehat{\sigma}_1, \widehat{y_{2T+1}} = 0$
$\widehat{y_{1T+2}} = c_1 + \beta_{11}(\widehat{y_{1T+1}}) + \beta_{12}(0)$
$\widehat{y_{2T+2}} = c_2 + \beta_{21}\widehat{y_{1T+1}} + \beta_{22}(0)$
$\widehat{y_{1T+3}} = c_1 + \beta_{11}\widehat{y_{1T+2}} + \beta_{12}\widehat{y_{2T+2}}$
$\widehat{y_{2T+3}} = c_2 + \beta_{21}\widehat{y_{1T+2}} + \beta_{22}\widehat{y_{2T+2}}$
...
$\widehat{y_{1T+10}} = c_1 + \beta_{11}\widehat{y_{1T+9}} + \beta_{12}\widehat{y_{2T+9}}$
$\widehat{y_{2T+10}} = c_2 + \beta_{21}\widehat{y_{1T+9}} + \beta_{22}\widehat{y_{2T+9}}$
b) Shocks
$\widehat{y_{1T+1}} = 0, \widehat{y_{2T+1}} = \widehat{\sigma}_2$
$\widehat{y_{1T+2}} = c_1 + \beta_{11}(0) + \beta_{12}(\widehat{y_{2T+1}})$
$\widehat{y_{2T+2}} = c_2 + \beta_{21}(0) + \beta_{22}(\widehat{y_{2T+1}})$
$\widehat{y_{1T+3}} = c_1 + \beta_{11}(\widehat{y_{1T+2}}) + \beta_{12}(\widehat{y_{2T+2}})$
$\widehat{y_{2T+3}} = c_2 + \beta_{21}(\widehat{y_{1T+2}}) + \beta_{22}(\widehat{y_{2T+2}})$
...
$\widehat{y_{1T+10}} = c_1 + \beta_{11}(\widehat{y_{1T+9}}) + \beta_{12}(\widehat{y_{2T+9}})$
$\widehat{y_{2T+10}} = c_2 + \beta_{21}(\widehat{y_{1T+9}}) + \beta_{22}(\widehat{y_{2T+9}})$
4) Grafica los 4 resultados anteriors y analiza cuál
efecto cruzado es mayor?
5) Repite el 3 y 4
a) $\widehat{y_{1T}} = 1, \widehat{y_{2T}} = 0$
b) $\widehat{y_{1T}} = 0, \widehat{y_{2T}} = 1$
Segunda parte de la práctica:
$y_{1t} = c_1 + \beta_{11} y_{1t-1} + \beta_{12} y_{2t-1} + \delta_{11} y_{1t-2} + \delta_{12} y_{2t-2} + \varepsilon_{1t}$
$y_{2t} = c_2 + \beta_{21} y_{1t-1} + \beta_{22} y_{2t-1} + \delta_{21} y_{1t-2} + \delta_{22} y_{2t-2} + \varepsilon_{2t}$
Repetir el ej. anterior
$H_0 : \beta_{12} = \delta_{12} = 0$
$H_0 : \beta_{21} = \delta_{21} = 0$
Para los ejemplo de shocks se tiene:
$\widehat{y_{1T+1}} = \widehat{\sigma}_1, \widehat{y_{2T+1}} = 0$
$\widehat{y_{1T+2}} = c_1 + \beta_{11}\widehat{y_{1T+1}} + \beta_{12}(0) + \delta_{11} y_{1T} + \delta_{12} y_{2T}$
$\widehat{y_{2T+2}} = c_2 + \beta_{21}\widehat{y_{1T+1}} + \beta_{22}(0) + \delta_{21} y_{1T} + \delta_{22} y_{2T}$
$\widehat{y_{1T+3}} = c_1 + \beta_{11}\widehat{y_{1T+2}} + \beta_{12}(\widehat{y_{2T+2}}) + \delta_{11}\widehat{y_{1T+1}} + \delta_{12}(0)$

$\widehat{y_{2T+3}} = c_2 + \beta_{21}\widehat{y_{1T+2}} + \beta_{22}(\widehat{y_{2T+2}}) + \delta_{21}\widehat{y_{1T+1}} + \delta_{22}(0)$
$\widehat{y_{1T+4}} = c_1 + \beta_{11}\widehat{y_{1T+3}} + \beta_{12}(\widehat{y_{2T+3}}) + \delta_{11}\widehat{y_{1T+2}} + \delta_{12}\widehat{y_{2T+2}}$
$\widehat{y_{2T+4}} = c_2 + \beta_{21}\widehat{y_{1T+3}} + \beta_{22}(\widehat{y_{2T+3}}) + \delta_{21}\widehat{y_{1T+2}} + \delta_{22}\widehat{y_{2T+2}}...$
Hasta $T + 10$
b) $\widehat{y_{1T+1}} = 0, \widehat{y_{2T+1}} = \widehat{\sigma}_2$
Tercera parte de la práctica:
$y_{1t} = c_1 + \beta_{11}y_{1t-1} + \beta_{12}y_{2t-1} + ... + \delta_{11}y_{1t-5} + \delta_{12}y_{2t-5} + \varepsilon_{1t}$
$y_{2t} = c_2 + \beta_{21}y_{1t-1} + \beta_{22}y_{2t-1} + ... + \delta_{21}y_{1t-5} + \delta_{22}y_{2t-5} + \varepsilon_{2t}$
Como afecta un shock aleatorio de una variable endógena a la otra?