

Extreme Example of OLS vs SAR

True Model:

$$y = \beta_0 + \beta_1 x + u, \quad u = \rho W u + \varepsilon, \quad \varepsilon \sim N(0, \sigma^2)$$

$[\beta_0 = 10, \beta_1 = 2, \sigma = 5, \rho = .9, W = \text{contiguities}]$

OLS Estimation:

R-square = 0.305			

VAR	COEFF	t-VAL	P-VAL
const	70.292966	3.388295	0.001638
x	-4.864506	-2.808886	0.005807

SAR Estimation:

Pseudo R-square = 0.046			

VAR	COEFF	Z-VAL	P-VAL
const	-33.685789	-0.486565	0.626567
x	4.503530	1.024198	0.305742
rho	0.960283	41.979349	0.000000

