

NOTES ON USING LESAGE MODELS

LESAGE WEB SITE: www.spatial-econometrics.com

PRELIMINARIES:

- Open class directory: “sys502/matlab”
- File → Set Path → Add with Subfolders → “sys502/matlab/Lesage_7” → Close

PROCEDURE FOR SEM MODEL (My SAR Model)

```
» u = ones(26,1);
» X=[u,x];
» names = strvcat('Blood Group','const','Pale')
» info.lflag = 0; %Full computation of log determinant
» res = sem(y,X,W,info);
» prt(res,names);
```

OUTPUT OF SEM MODEL

```
Dependent Variable = Blood Group
R-squared           = 0.7375
Rbar-squared       = 0.7266
sigma^2            = 2.1259
log-likelihood     = -40.866367
Nobs, Nvars        = 26, 2
# iterations       = 0
min and max rho    = -0.9900, 0.9900
total time in secs = 1.2970
```

No Indet approximation used

Variable	Coefficient	Asymptot t-stat	z-probability
const	28.823975	20.697603	0.000000
pale	1.555392	1.760119	0.078388
lambda	0.788000	7.450881	0.000000

PROCEDURE FOR SAR MODEL (My SP_LAG Model)

```
» u = ones(26,1);
» X=[u,x];
» vnames = strvcat('Blood Group','const','Pale')
» info.lflag = 0; %Full computation of log determinant

» res = sar(y,X,W,info);

» prt(res,vnames);
```

OUTPUT OF SAR MODEL

```
Dependent Variable = Blood Group
R-squared           = 0.7336
Rbar-squared       = 0.7225
sigma^2            = 1.6105
Nobs, Nvars        = 26, 2
log-likelihood      = -36.643481
# of iterations     = 18
min and max rho    = -1.0000, 1.0000
total time in secs = 0.2970
```

No Indet approximation used

Variable	Coefficient	Asymptot t-stat	z-probability
const	7.030062	2.204916	0.027460
pale	2.003214	3.461328	0.000538
rho	0.729977	6.549890	0.000000

PROCEDURE FOR SAC MODEL (Combined Model)

```
» u = ones(26,1);
» X=[u,x];
» vnames = strvcat('Blood Group','const','Pale')
» info.lflag = 0; %Full computation of log determinant
» res = sac(y,X,W,W,info); %Use W for rho and lambda
» prt(res,vnames);
```

OUTPUT OF SAC MODEL

Dependent Variable = Blood Group
R-squared = 0.8471
Rbar-squared = 0.8408
sigma^2 = 1.2380
log-likelihood = -35.39645
Nobs, Nvars = 26, 2
iterations = 39
total time in secs = 0.4840

Variable	Coefficient	Asymptot t-stat	z-probability
const	3.810559	1.456900	0.145144
pale	1.788617	3.712680	0.000205
rho	0.841998	9.041680	0.000000
lambda	-0.491913	-1.697374	0.089626

NESTED TESTS: (Not in LeSage)

$$2*(L_sac - L_sem) = 2*(-35.396 + 40.866) = 10.94$$

$$\rightarrow 1 - \text{chi2cdf}(10.94,1) = .0009 \text{ (very significant)}$$

$$2*(L_sac - L_sar) = 2*(-35.396 + 36.643) = 2.49$$

$$\rightarrow 1 - \text{chi2cdf}(2.49,1) = .1145 \text{ (not significant)}$$