

\$TITLE: M5-3.GMS reading from and writing to EXCEL

\$ontext

*demonstrate reading and writing from/to excel
here we read in from file M5.XLS, data is found in
sheet2, range (rng) from cell B3 to cell E9
be sure that this file M5.GMS is in the project directory.*

"echo" output is written to a file M5.XLS sheet 2 cell B12

Results of regression are written to sheet 3

\$offtext

SETS	I	observations	/I1*I6/
	J	dep and ind var	/J1*J3/
	K(J)	set of independent variables	/J2*J3/
	L	intercept	/L1/;

PARAMETERS

Y0(I)
X0(I,K);

PARAMETERS

BENCH(I,J);

```
$CALL GDXXRW M5.xls par=BENCH rng=sheet2!B3:E9
$GDXIN M5.gdx
$LOAD BENCH
$GDXIN
```

```
DISPLAY BENCH;
```

```
Execute_Unload 'M5.gdx' BENCH
```

```
execute 'gdxxrw.exe M5.gdx par=BENCH rng=SHEET2!B12';
```

```
Y0(I) = BENCH(I, "J1");
```

```
X0(I,K) = BENCH(I, K);
```

```
DISPLAY Y0, X0;
```

VARIABLES

ALPHA	intercept
BETA(K)	slope coefficients (elasticities since estimated in logs)
DEV	sum of squared deviations
YHAT(I)	fitted values of the dependent variable;

EQUATIONS

OBJECTIVE	objective function = sum of squared residuals
EYHAT(I)	equation for the fitted values of Y (log linear)
CRS	constraint constant returns: sum of slope coefficients = 1;

```
OBJECTIVE..  DEV =E= SUM(I, (YHAT(I) - Y0(I))*(YHAT(I) - Y0(I)));  
EYHAT(I)..  LOG(YHAT(I)) =E= ALPHA + SUM(K, BETA(K)*LOG(X0(I,K)));  
CRS..       SUM(K, BETA(K)) =E= 1;
```

** model OLS: unconstrained OLS*

```
MODEL OLS /OBJECTIVE, EYHAT/;
```

```
ALPHA.L    = 1;  
BETA.L(K)  = 1;  
YHAT.L(I)  = 2;
```

```
SOLVE OLS USING NLP MINIMIZING DEV;
```

** model OLSC: constrained least squares, imposes CRS*

```
MODEL OLSC /ALL/;
```

```
SOLVE OLSC USING NLP MINIMIZING DEV;
```

** process output to get observed and fitted values of Y*

PARAMETER

```
RESULTSA(L, *)  
RESULTSS(K, *)  
RESULTSF(I, *);
```

```
RESULTSA(L, "INTERCEPT") = ALPHA.L;  
RESULTSS(K, "SLOPES") = BETA.L(K);
```

```
RESULTSF(I, "YHAT") = YHAT.L(I);  
RESULTSF(I, "Y0") = Y0(I);
```

DISPLAY RESULTSA, RESULTSS, RESULTSF;

Execute_Unload 'M5.gdx' RESULTSA

execute 'gdxxrw.exe M5.gdx par=RESULTSA rng=SHEET3!B3'

Execute_Unload 'M5.gdx' RESULTSS

execute 'gdxxrw.exe M5.gdx par=RESULTSS rng=SHEET3!B6'

Execute_Unload 'M5.gdx' RESULTSF

execute 'gdxxrw.exe M5.gdx par=RESULTSF rng=SHEET3!B10'