

## نموذج MPSGE للمثال التطبيقي

- فيما يلي استعراض لتعريف، تغيير وحل النموذج في GAMS باستخدام MPSGE:

\$Title CGE Model in MPSGE Formulation

### SETS

G Global Set of SAM accounts  
/ AGR, MAN, LAB, CAP, HH-U, HH-R /  
C(G) Commodities / AGR, MAN /  
F(G) Factors / LAB, CAP /  
H(G) Household / HH-U, HH-R /;  
ALIAS (G,GG), (C,CC), (F,FF);

### PARAMETERS

FD0(F,C) Benchmark factor demand  
beta(C,H) Household consumption shares  
HD0(C,H) Benchmark household consumption  
FS0(F,H) Benchmark factor supplies  
Q0(C) Benchmark output levels  
HW0(H) Benchmark household expenditure  
P0(C) Initial commodity prices  
PF0(F) Initial factor prices  
PW0(H) Initial consumer prices;

\* SAM and parameter calibration:

Table SAM (\*, \*) A Hypothetical Rectangular SAM

	AGR	MAN	HH-U	HH-R
AGR	100		-40	-60
MAN		140	-100	-40
LAB	-70	-60	50	80
CAP	-30	-80	90	20

P0(C) =1; PF0(F) =1; PW0(H) = 1;

$$Q0(C) = SAM(C,C) / P0(C);$$

$$FD0(F,C) = -SAM(F,C) / PF0(F);$$

$$HD0(C,H) = -SAM(C,H) / P0(C);$$

$$FS0(F,H) = SAM(F,H) / PF0(F);$$

$$HW0(H) = \text{Sum}(C, HD0(C,H) / PW0(H));$$

$$\text{alpha}(F,C) = FD0(F,C) / \text{Sum}(FF, FD0(FF,C));$$

$$\text{beta}(C,H) = HD0(C,H)*P0(C) / \text{Sum}(CC, HD0(CC,H)*P0(CC));$$

\$ONTEXT

\$MODEL: CGE\_MPSGE

\$SECTORS:

Q(C) ! Activity levels

W(H) ! Welfare index

\$COMMODITIES:

PW(H) ! Consumer price index

PF(F) ! Factor prices

P(C) ! Commodity prices

\$CONSUMERS:

YH(H) ! Household income

\$PROD: Q(C) S : 1

Q: P(C) Q : Q0(C)

I : PF(F) Q : FD0(F,C)

\$PROD: W(H) S : 1

Q: PW(H) Q : HW0(H)

I : P(C) Q : HD0(C,H)

\$DEMAND: YH(H)

D: PW(H) Q : HW0(H)

E : PF(F) Q : FS0(F,H)

\$OFFTEXT

\$Sysinclude mpsgeset CGE\_MPSGE

\$INCLUDE CGE\_MPSGE.GEN

\*Replicate Benchmark Equilibrium

CGE\_MPSGE.ITERLIM = 0;

Solve CGE\_MPSGE using MCP;

\* Policy simulations and reports:

SET	SC	Scenarios
	/ Base	Base simulation
	Stock	25 percent growth in capital supply
	Labor	25 percent growth in labor supply;

PARAMETERS

SCFact(F,H,SC)	Scenario factor supply
REPP(C,SC)	Simulation commodity price
REPQ(C,SC)	Simulation commodity output
REPF(F,SC)	Simulation factor price
REPHC(C,H,SC)	Simulation consumer demand;
SCFact(F,H,SC) = FS0(F,H);	
SCFact("CAP",H,"Stock") = 1.25*FS0("CAP",H);	
SCFact("LAB",H,"Labor") = 1.25*FS0("LAB",H);	

\* Set numeraire to deflate prices in the model

PW.FX("HH-U") = 1;

\* Relax the iteration limit:

CGE\_mcp.iterlim = 1000;

\* Loop and solve simulation scenarios:

Loop (SC,

FS0(F,H) = SCFact(F,H,SC);

Solve CGE\_mcp using mcp;

REPP(C,SC) = P.L(C);

REPQ(C,SC) = Q0(C)\*Q.L(C);

REPF(F,SC) = PF.L(F);

REPHC(C,H,SC) = beta(C,H)\*HW0(H)\*W.L(H)\*PW.L(H) / P.L(C);

);

Option REPHC : 3 : 1 : 1

Display REPP, REPQ, REPF, REPHC;