

คำสั่งโปรแกรม GEMPACK ที่ใช้ในการประมวลผลแบบจำลอง CGE

คำสั่ง TABLO INPUT file

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!  
!      Sets  
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SET IND # Industries # (i001-i179) ;  
SET SRC # Sources of commodities # (s1, s2) ;
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!-----  
!  
!      variables  
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Variable (all, j, IND) l(j) # demand for labor by sector j # ;  
Variable (all, j, IND) k(j) # demand for capital by sector j # ;  
Variable (all, j, IND) va(j) # demand for value added by sector j # ;  
Variable w # wage rate # ;  
Variable (all,i,IND) r(i) # rental rate in sector i # ;  
Variable (all,i,IND) d(i) # TFP of sector i # ;  
Variable (all, j, IND) x(j) # total output of sector j # ;  
Variable (all,i, IND)(all,j, IND) x1ij(i,j) # demand for  
intermediate input i by sector j # ;  
Variable (all,i, IND)(all,s,SRC)(all,j, IND) x1isj(i,s,j) # demand  
for intermediate input i from source s by sector j # ;  
Variable (all,i, IND)(all,s,SRC) pis(i,s) # purchaser price of input  
i from source s # ;  
Variable (all,i,IND) p(i) # average price of good i across sources  
# ;  
Variable (all,i, IND)(all,s,SRC) p0is(i,s) # producer price of good  
i from source s # ;
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Variable yH # total household income #;
Variable $trf2$ # Net foriegn transfer to household #;
Variable $trg2$ # Net household transfer to the government #;
Variable ydH # Household disposable income #;
Variable sH # Household saving #;
Variable cH # Household's total consumption #;
Variable $(all,i,IND) x2i(i)$ # demand for good i by household #;
Variable $(all,i,IND)(all,s,SRC) x2is(i,s)$ # demand for good i from source s by household #;
Variable $y1G$ # government revenue from import tax #;
Variable $(all,i,IND) md(i)$ # import quantity of good i #;
Variable $y2G$ # government revenue from personal income tax #;
Variable $y3G$ # Government revenue from corporate income tax #;
Variable $y4G$ # government revenue from indirect tax #;
Variable $(all,i,IND) t1(i)$ # corporate income tax rate on sector i #;
Variable $t2$ # Personal income tax rate #;
Variable $(all,i,IND) tM(i)$ # import tax rate on good i #;
Variable $(all,i,IND) t4(i)$ # indirect tax rate on good i #;
Variable gr # Total government revenue #;
Variable $trf3$ # government revenue from net foriegn transfer #;
Variable $(all,i,IND)(all,s,SRC) x3is(i,s)$ # government demand for good i from source s #;
Variable $z3$ # government consumption level #;
Variable g # total government expenditure #;
Variable sG # Government saving #;
Variable $(all,i,IND) x4i(i)$ # Foriegn demand for good i #;
Variable $(all,i,IND) f4(i)$ # External shock to export demand for good i #;
Variable phi # Exchange rate Baht per US dollar #;
Variable $(all,i,IND) pw(i)$ # world price of good i #;
Variable $(all,i,IND) pie(i)$ # export price of good i in Baht #;
Variable ex # Total export revenue in Baht #;
Variable $(all,i,IND)(all,s,SRC) x5is(i,s)$ # demand for good i from source s for investment #;
Variable im # total import volume #;
Variable $TBAL$ # Trade balance in Baht #;
Variable sF # FDI in Baht #;
Variable sFW # FDI in US dollar #;
Variable BOP # Balance of payment in thousand baht #;
Variable $z5$ # Level of demand for good for capital formation #;
Variable inv # Investment expenditure #;
Variable ls # Supply of Labor #;



Variable (all,i,IND) ks(i) # fixed supply of capital in sector i #;
Variable pid # price index #;
Variable gdp # Gross Domestic Product #;
Variable rgdp # real GDP #;
Variable rw # real wage rate #;

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!
! Dollar values read in from database
!
!-----
!

Coefficient (all, j, IND) LAB(j) # value of labor used by sector j # ;
Coefficient (all, j, IND) CAP(j) # value of capital used by sector j # ;
Coefficient (all,i,IND)(all,s,SRC)(all,j,IND) INT(i,s,j) # value of intermediate input i from source s by sector j # ;
Coefficient TRFH # net transfer from the rest of the world to household #;
COEFFICIENT HHT # Government revenue from Personal income tax # ;
Coefficient HNSAV # Household saving #;
COEFFICIENT TRGH # net household transfer to the government # ;
Coefficient TRFG # net foreign transfer to the government #;
Coefficient (all, j, IND)(all,s,SRC) HHEX(j,s) # Household consumption expenditure on good i from source s # ;
Coefficient (all,i,IND) IMPT(i) # Import tax on good i # ;
Coefficient (all,i,IND) CORPT(i) # Corporate income tax on sector i # ;
Coefficient (all,i,IND) INDT(i) # indirect tax on sector i # ;
Coefficient (all,i,IND)(all,s,SRC) GEX(i,s) # government consumption on good i from source s #;
Coefficient GSAV # Government saving #;
Coefficient (all,i,IND) EXPT(i) # export of good i # ;
Coefficient (all,i,IND)(all,s,SRC) CAPEX(i,s) # Capital formation expenditure on good i from source s #;
Coefficient FDI # Foreign direct investment #;

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! Coefficients

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!

COEFFICIENT (all ,j, IND) SL1(j) # Share of labor in value added of industry j # ;

COEFFICIENT (all ,j, IND) SK1(j) # Share of capital in value added of industry j # ;

COEFFICIENT (all ,i, IND)(all,s, SRC)(all,j,IND) S1isj(i,s,j) # Share of input i from source s in total input i used by sector j # ;

COEFFICIENT (all ,j, IND) SL2(j) # Share of labor income in total household income # ;

COEFFICIENT (all ,j, IND) SK2(j) # Share of capital income in total household income # ;

COEFFICIENT STR2 # Share of net foreign transfer in total household income # ;

COEFFICIENT ITRG2 # Share of net transfer to the government in total household income # ;

COEFFICIENT IC2 # Share of consumption expenditure in household disposable income # ;

COEFFICIENT IS2 # Share of saving in household disposable income # ;

COEFFICIENT HHTAX # Personal income tax rate # ;

COEFFICIENT (all ,j, IND) SC(j) # Share of expenditure on good j in total household consumption expenditure # ;

COEFFICIENT (all ,j, IND)(all,s, SRC) S2(j,s) # Share of good i from source s in household consumption of good i # ;

COEFFICIENT (all ,i, IND) GM(i) # Share of import tax on good i in total import tax revenue # ;

COEFFICIENT (all ,i, IND) G3(i) # Share of corporate income tax on sector i in total corporate income tax revenue # ;

COEFFICIENT (all ,i, IND) G4(i) # Share of indirect tax on sector i in total other indirect tax revenue # ;

COEFFICIENT A1 # Share of import tax in total government revenue # ;
COEFFICIENT A2 # Share of personal income tax in total government revenue # ;

COEFFICIENT A3 # Share corporate income tax in total government revenue # ;

COEFFICIENT A4 # Share of other indirect tax in total government



revenue #;

COEFFICIENT A5 # Share of net foreign transfer in total government revenue #;

COEFFICIENT A6 # Share of net transfer from household in total government revenue #;

COEFFICIENT (all,i,IND)(all,s,SRC) S3(i,s) # Share of government expenditure on good i from source s in total government expenditure on good i #;

COEFFICIENT (all,i,IND)(all,s,SRC) S3is(i,s) # Share of government expenditure on good i from source s in total government expenditure#;

Coefficient ICG # Share of government expenditure on total government revenue #;

Coefficient ISG # Share of government saving on total government revenue #;

Coefficient (all,i,IND) S4(i) # Share of export revenue from good i in total export revenue #;

COEFFICIENT (all,i,IND)(all,j,IND) M1(i,j) # Share of intermediate good i imported by sector j in total import of good i #;

COEFFICIENT (all,i,IND) M2(i) # Share of good i imported by household in total import of good i #;

COEFFICIENT (all,i,IND) M3(i) # Share of good i imported by government in total import of good i #;

COEFFICIENT (all,i,IND) M5(i) # Share of good i imported for capital formation in total import of good i #;

Coefficient (all,i,IND) UM(i) # Share of value of import of good i in total import volume #;

Coefficient (all,i,IND)(all,s,SRC) S5(i,s) # Share of good i from source s in total amount of good i used for capital formation #;

Coefficient (all,i,IND)(all,s,SRC) SI5(i,s) # Share of good i from source s in total capital formation expenditure #;

Coefficient H2 # Share of household saving in national saving #;

Coefficient H3 # Share of government saving in national saving #;

Coefficient H4 # Share of FDI in national saving #;

Coefficient (all,i,IND)(all,j,IND) U1(i,j) # Share of domestic intermediate good i used by sector j in domestic supply of good i #;

Coefficient (all,i,IND) U2(i) # Share of domestic good i used by household in domestic supply of good i #;

Coefficient (all,i,IND) U3(i) # Share of domestic good i used by

government in domestic supply of good i #;
Coefficient (all, i ,IND) U4(i) # Share of export of good i in domestic supply of good i #;
Coefficient (all, i ,IND) U5(i) # Share of domestic good i used for capital formation in domestic supply of good i #;
Coefficient (all, i ,IND) BL(i) # Share of labor in sector i in total supply of labor #;

Coefficient (all, i ,IND)(all, s ,SRC)(all, j ,IND) C1(i , s , j) # Share of good i from source s in total cost of sector j #;
Coefficient (all, i ,IND) CL(i) # Share of labor cost in total cost of sector i #;
Coefficient (all, i ,IND) CK(i) # Share of capital cost in total cost of sector i #;

Coefficient (all, i ,IND)(all, s ,SRC) VIS(i , s) # Share of good i from source s in total supply of good i #;
Coefficient (all, i ,IND) WIS(i) # Share of volume of good i in national production #;

Coefficient NC # Share of household consumption in GDP #;
Coefficient NI # Share of investment in GDP #;
Coefficient NG # Share of government expenditure in GDP #;
Coefficient NEX # Share of export in GDP #;
Coefficient NIM # Share of import in GDP #;

!-----
!
! Parameters
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!
COEFFICIENT(Parameter) (all , j , IND) sigmaf(j) # elasticity of sub btw labor and capital # ;
COEFFICIENT(Parameter) (all , j , IND) sigma(j) # Armington Elasticity # ;
Coefficient(Parameter) (all, i ,IND) epsilon(i) # expenditure elasticity of household demand #;
Coefficient(Parameter) (all, i ,IND)(all, j ,IND) eta(i , j) # own and cross price elasticity of household demand #;
Coefficient(Parameter) (all, i ,IND) gamma(i) # export demand



elasticity of good i #;

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!  
!      File  
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!
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FILE CGE # input-output data for the model # ;

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!-----  
!  
!      Reads from the data base  
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READ INT from FILE CGE HEADER "NH02" ;  
READ LAB from FILE CGE HEADER "NH03" ;  
READ CORPT from FILE CGE HEADER "NH04";  
READ CAP from FILE CGE HEADER "NH05" ;  
READ INDT from File CGE Header "NH06";  
READ IMPT from FILE CGE HEADER "NH07";  
READ HHEX from FILE CGE HEADER "NH08" ;  
Read GEX from File CGE Header "NH09";  
READ EXPT from File CGE Header "NH10";  
READ TRFH from FILE CGE HEADER "NH11";  
READ TRFG from File CGE Header "NH12";  
Read FDI from File CGE Header "NH13";  
READ TRGH from FILE CGE HEADER "NH14";  
READ HHT from FILE CGE HEADER "NH15";  
READ HNSAV from File CGE Header "NH16";  
READ GSAV from File CGE Header "NH17";  
Read CAPEX from File CGE Header "NH18";  
READ sigma from FILE CGE HEADER "NH19";  
READ sigmaf from FILE CGE HEADER "NH20";  
READ epsilon from FILE CGE HEADER "NH21";  
READ eta from FILE CGE HEADER "NH22";  
READ gamma from File CGE Header "NH23";
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!
! *Formulas*
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!

FORMULA (all ,j, IND) SL1(j) = LAB(j) / [LAB(j) + CAP(j)] ;
FORMULA (all ,j, IND) SK1(j) = CAP(j) / [LAB(j) + CAP(j)] ;
Formula (all ,i, IND)(all,s, SRC)(all,j,IND) S1isj(i,s,j) =
INT(i,s,j)/[sum(ss, SRC, INT(i,ss,j))] ;
FORMULA (all ,j, IND) SL2(j) = LAB(j) /
[sum(i,IND,LAB(i))+sum(i,IND,CAP(i))+TRFH] ;
FORMULA (all ,j, IND) SK2(j) = CAP(j) /
[sum(i,IND,LAB(i))+sum(i,IND,CAP(i))+TRFH] ;
FORMULA STR2 = TRFH/[sum(i,IND,LAB(i))+sum(i,IND,CAP(i))+TRFH] ;
FORMULA IC2 =
sum(i,IND,sum(s, SRC, HHEX(i,s)))/[sum(i,IND, LAB(i))+sum(i,IND, CAP(i))
+TRFH-HHT];
FORMULA IS2 = HNSAV/[sum(i,IND,LAB(i))+sum(i,IND,CAP(i))+TRFH-HHT];
FORMULA ITRG2 = TRGH/[sum(i,IND,LAB(i))+sum(i,IND,CAP(i))+TRFH-HHT];
Formula HHTAX = HHT/[sum(i,IND,LAB(i))+sum(i,IND,CAP(i))+TRFH] ;
Formula (all,i,IND) SC(i) =
sum(ss, SRC, HHEX(i,ss))/sum(j,IND,sum(ss, SRC, HHEX(j,ss))) ;
Formula (all,i,IND)(all,s, SRC) S2(i,s) =
HHEX(i,s)/sum(ss, SRC, HHEX(i,ss)) ;
Formula (all,i,IND) GM(i) = IMPT(i)/sum(ii,IND,IMPT(ii)) ;
Formula (all,i,IND) G3(i) = CORPT(i)/sum(ii,IND,CORPT(ii)) ;
Formula (all,i,IND) G4(i) = INDT(i)/sum(ii,IND,INDT(ii)) ;

Formula

A1=sum(i,IND,IMPT(i))/[HHT+sum(ii,IND,IMPT(ii))+sum(ii,IND,CORPT(ii))
+sum(ii,IND,INDT(ii))+TRFG+TRGH] ;

Formula

A2=HHT/[HHT+sum(ii,IND,IMPT(ii))+sum(ii,IND,CORPT(ii))+sum(ii,IND,INDT(ii))+TRFG+TRGH] ;

Formula

A3=sum(ii,IND,CORPT(ii))/[HHT+sum(ii,IND,IMPT(ii))+sum(ii,IND,CORPT(ii))+sum(ii,IND,INDT(ii))+TRFG+TRGH] ;

Formula

A4=sum(ii,IND,INDT(ii))/[HHT+sum(ii,IND,IMPT(ii))+sum(ii,IND,CORPT(ii))+sum(ii,IND,INDT(ii))+TRFG+TRGH] ;

Formula

$A5 = \text{TRFG} / [\text{HHT} + \text{sum}(ii, \text{IND}, \text{IMPT}(ii)) + \text{sum}(ii, \text{IND}, \text{CORPT}(ii)) + \text{sum}(ii, \text{IND}, \text{INDT}(ii)) + \text{TRFG} + \text{TRGH}]$;

Formula

$A6 = \text{TRGH} / [\text{HHT} + \text{sum}(ii, \text{IND}, \text{IMPT}(ii)) + \text{sum}(ii, \text{IND}, \text{CORPT}(ii)) + \text{sum}(ii, \text{IND}, \text{INDT}(ii)) + \text{TRFG} + \text{TRGH}]$;

Formula (all,i,IND)(all,s, SRC) S3(i,s) =

$\text{GEX}(i,s) / \text{sum}(ss, \text{SRC}, \text{GEX}(i,ss))$;

Formula (all,i,IND)(all,s, SRC) S3is(i,s) =

$\text{GEX}(i,s) / \text{sum}(ii, \text{IND}, \text{sum}(ss, \text{SRC}, \text{GEX}(i,ss)))$;

Formula ICG =

$\text{sum}(i, \text{IND}, \text{sum}(s, \text{SRC}, \text{GEX}(i,s))) / [\text{sum}(i, \text{IND}, \text{sum}(s, \text{SRC}, \text{GEX}(i,s))) + \text{GSAV}]$

;

Formula ISG = $\text{GSAV} / [\text{sum}(i, \text{IND}, \text{sum}(s, \text{SRC}, \text{GEX}(i,s))) + \text{GSAV}]$;

Formula (all,i,IND) S4(i) = $\text{EXPT}(i) / \text{sum}(ii, \text{IND}, \text{EXPT}(ii))$;

Formula (all,i,IND)(all,j,IND) M1(i,j) =

$\text{INT}(i, "s2", j) / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s2", jj)) + \text{HHEX}(i, "s2") + \text{GEX}(i, "s2") + \text{CAPEX}(i, "s2")]$;

Formula (all,i,IND) M2(i) =

$\text{HHEX}(i, "s2") / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s2", jj)) + \text{HHEX}(i, "s2") + \text{GEX}(i, "s2") + \text{CAPEX}(i, "s2")]$;

Formula (all,i,IND) M3(i) =

$\text{GEX}(i, "s2") / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s2", jj)) + \text{HHEX}(i, "s2") + \text{GEX}(i, "s2") + \text{CAPEX}(i, "s2")]$;

Formula (all,i,IND) M5(i) =

$\text{CAPEX}(i, "s2") / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s2", jj)) + \text{HHEX}(i, "s2") + \text{GEX}(i, "s2") + \text{CAPEX}(i, "s2")]$;

Formula (all,i,IND) UM(i) =

$[\text{sum}(jj, \text{IND}, \text{INT}(i, "s2", jj)) + \text{HHEX}(i, "s2") + \text{GEX}(i, "s2") + \text{CAPEX}(i, "s2")] /$

$\text{sum}(ii, \text{IND}, [\text{sum}(jj, \text{IND}, \text{INT}(ii, "s2", jj))$

$+ \text{HHEX}(ii, "s2") + \text{GEX}(ii, "s2") +$

$\text{CAPEX}(ii, "s2")]$);

Formula (all,i,IND)(all,s, SRC) S5(i,s) =

$\text{CAPEX}(i,s) / \text{sum}(ss, \text{SRC}, \text{CAPEX}(i,ss))$;

Formula (all,i,IND)(all,s, SRC) SI5(i,s) =

$\text{CAPEX}(i,s) / \text{sum}(ii, \text{IND}, \text{sum}(ss, \text{SRC}, \text{CAPEX}(ii,ss)))$;

Formula H2 = $\text{HNSAV} / [\text{HNSAV} + \text{GSAV} + \text{FDI}]$;

Formula H3 = $\text{GSAV} / [\text{HNSAV} + \text{GSAV} + \text{FDI}]$;

Formula H4 = $\text{FDI} / [\text{HNSAV} + \text{GSAV} + \text{FDI}]$;

Formula (all,i,IND)(all,j,IND) U1(i,j) =

$$\text{INT}(i, "s1", j) / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s1", jj)) + \text{HHEX}(i, "s1") + \text{GEX}(i, "s1") + \text{EXPT}(i) + \text{CAPEX}(i, "s1")];$$
$$\text{Formula (all, i, IND) } U2(i) = \text{HHEX}(i, "s1") / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s1", jj)) + \text{HHEX}(i, "s1") + \text{GEX}(i, "s1") + \text{EXPT}(i) + \text{CAPEX}(i, "s1")];$$
$$\text{Formula (all, i, IND) } U3(i) = \text{GEX}(i, "s1") / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s1", jj)) + \text{HHEX}(i, "s1") + \text{GEX}(i, "s1") + \text{EXPT}(i) + \text{CAPEX}(i, "s1")];$$
$$\text{Formula (all, i, IND) } U4(i) = \text{EXPT}(i) / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s1", jj)) + \text{HHEX}(i, "s1") + \text{GEX}(i, "s1") + \text{EXPT}(i) + \text{CAPEX}(i, "s1")];$$
$$\text{Formula (all, i, IND) } U5(i) = \text{CAPEX}(i, "s1") / [\text{sum}(jj, \text{IND}, \text{INT}(i, "s1", jj)) + \text{HHEX}(i, "s1") + \text{GEX}(i, "s1") + \text{EXPT}(i) + \text{CAPEX}(i, "s1")];$$
$$\text{Formula (all, i, IND) } \text{BL}(i) = \text{LAB}(i) / \text{sum}(ii, \text{IND}, \text{LAB}(ii)) ;$$
$$\text{Formula (all, i, IND)(all, s, SRC)(all, j, IND) } C1(i, s, j) = \text{INT}(i, s, j) / [\text{sum}(ii, \text{IND}, \text{sum}(ss, \text{SRC}, \text{INT}(ii, ss, j))) + \text{sum}(ii, \text{IND}, \text{LAB}(ii)) + \text{sum}(ii, \text{IND}, \text{CAP}(ii))];$$
$$\text{Formula (all, i, IND) } \text{CL}(i) = \text{LAB}(i) / [\text{sum}(ii, \text{IND}, \text{sum}(s, \text{SRC}, \text{INT}(ii, s, i))) + \text{sum}(ii, \text{IND}, \text{LAB}(ii)) + \text{sum}(ii, \text{IND}, \text{CAP}(ii))];$$
$$\text{Formula (all, i, IND) } \text{CK}(i) = \text{CAP}(i) / [\text{sum}(ii, \text{IND}, \text{sum}(s, \text{SRC}, \text{INT}(ii, s, i))) + \text{sum}(ii, \text{IND}, \text{LAB}(ii)) + \text{sum}(ii, \text{IND}, \text{CAP}(ii))];$$
$$\text{Formula (all, i, IND) } \text{VIS}(i, "s1") = [\text{sum}(j, \text{IND}, \text{INT}(i, "s1", j)) + \text{HHEX}(i, "s1") + \text{GEX}(i, "s1") + \text{EXPT}(i) + \text{CAPEX}(i, "s1")] /$$
$$[\text{sum}(ss, \text{SRC}, \text{sum}(j, \text{IND}, \text{INT}(i, ss, j)) + \text{HHEX}(i, ss) + \text{GEX}(i, ss) + \text{EXPT}(i) + \text{CAPEX}(i, ss))];$$
$$\text{Formula (all, i, IND) } \text{VIS}(i, "s2") = [\text{sum}(j, \text{IND}, \text{INT}(i, "s2", j)) + \text{HHEX}(i, "s2") + \text{GEX}(i, "s2") + \text{CAPEX}(i, "s2")] /$$
$$[\text{sum}(ss, \text{SRC}, \text{sum}(j, \text{IND}, \text{INT}(i, ss, j)) + \text{HHEX}(i, ss) + \text{GEX}(i, ss) + \text{EXPT}(i) + \text{CAPEX}(i, ss))];$$
$$\text{Formula (all, i, IND) } \text{WIS}(i) = [\text{sum}(j, \text{IND}, \text{sum}(s, \text{SRC}, \text{INT}(i, s, j))) + \text{sum}(s, \text{SRC}, \text{HHEX}(i, s) + \text{GEX}(i, s) + \text{CAPEX}(i, s)) + \text{EXPT}(i)] /$$
$$\text{sum}(ii, \text{IND}, \text{sum}(j, \text{IND}, \text{sum}(s, \text{SRC}, \text{INT}(ii, s, j))) + \text{sum}(s, \text{SRC}, \text{HHEX}(ii, s) + \text{GEX}(ii, s) + \text{CAPEX}(ii, s)) + \text{EXPT}(ii));$$
$$\text{Formula } \text{NC} = \text{sum}(i, \text{IND}, \text{sum}(s, \text{SRC}, \text{HHEX}(i, s))) /$$

[sum(ii,IND,sum(ss,SRC,HHEX(ii,ss)+GEX(ii,ss)+CAPEX(ii,ss)))+sum(ii,IND,EXPT(ii))-sum(ii,IND,sum(jj,IND,INT(ii,"s2",jj)))-sum(ii,IND,HHEX(ii,"s2")+GEX(ii,"s2")+CAPEX(ii,"s2"))];
Formula NG = sum(i,IND,sum(s,SRC,GEX(i,s)))/

[sum(ii,IND,sum(ss,SRC,HHEX(ii,ss)+GEX(ii,ss)+CAPEX(ii,ss)))+sum(ii,IND,EXPT(ii))-sum(ii,IND,sum(jj,IND,INT(ii,"s2",jj)))-sum(ii,IND,HHEX(ii,"s2")+GEX(ii,"s2")+CAPEX(ii,"s2"))];
Formula NI = sum(i,IND,sum(s,SRC,CAPEX(i,s)))/

[sum(ii,IND,sum(ss,SRC,HHEX(ii,ss)+GEX(ii,ss)+CAPEX(ii,ss)))+sum(ii,IND,EXPT(ii))-sum(ii,IND,sum(jj,IND,INT(ii,"s2",jj)))-sum(ii,IND,HHEX(ii,"s2")+GEX(ii,"s2")+CAPEX(ii,"s2"))];
Formula NEX = sum(i,IND,EXPT(i))/

[sum(ii,IND,sum(ss,SRC,HHEX(ii,ss)+GEX(ii,ss)+CAPEX(ii,ss)))+sum(ii,IND,EXPT(ii))-sum(ii,IND,sum(jj,IND,INT(ii,"s2",jj)))-sum(ii,IND,HHEX(ii,"s2")+GEX(ii,"s2")+CAPEX(ii,"s2"))];
Formula NIM =

[sum(ii,IND,sum(jj,IND,INT(ii,"s2",jj)))+sum(ii,IND,HHEX(ii,"s2")+GEX(ii,"s2")+CAPEX(ii,"s2"))]/

[sum(ii,IND,sum(ss,SRC,HHEX(ii,ss)+GEX(ii,ss)+CAPEX(ii,ss)))+sum(ii,IND,EXPT(ii))-sum(ii,IND,sum(jj,IND,INT(ii,"s2",jj)))-sum(ii,IND,HHEX(ii,"s2")+GEX(ii,"s2")+CAPEX(ii,"s2"))];

!-----
!
! Equations
!
!-----
!

EQUATION E_l ! (1a) ! # Demand for labor by sector j #
(all,j,IND) l(j) = va(j) - sigmaf(j)*[w - SL1(j)*w - SK1(j)*r(j)] - d(j);

EQUATION E_k ! (2a) ! # Demand for capital by sector j #
(all,j,IND) k(j) = va(j) - sigmaf(j)*[r(j) - SL1(j)*w - SK1(j)*r(j)] - d(j);

EQUATION E_va ! (3a) ! # Demand for value added by sector j #

$$(all,j,IND) \quad va(j) = x(j);$$

EQUATION E_x1ij ! (4a) ! # Demand for intermediate input i by sector j #
(all,i,IND) (all,j,IND) x1ij(i,j) = x(j);

EQUATION E_x1isj ! (5a) ! # Demand for intermediate input i from source s by sector j #
(all,i,IND)(all,s,SRC)(all,j,IND) x1isj(i,s,j) = x1ij(i,j) - sigma(i)*[pis(i,s) - SUM(ss, SRC, S1isj(i,ss,j)*pis(i,ss))];

EQUATION E_yH ! (6a) ! # Total household income #
yH = SUM(i,IND,SL2(i)*(w+l(i))) + SUM(i,IND,SK2(i)*(r(i)+k(i))) + STR2*trf2 ;

EQUATION E_ydH ! (7a) ! # household disposable income #
ydH = yH - (HHTAX/(1-HHTAX))*t2 ;

EQUATION E_sH ! (8a) ! # household saving #
ydH = IC2*cH + IS2*sH + ITRG2*trg2 ;

EQUATION E_cH ! (9a) ! # household's total consumption expenditure #
cH = sum(i,IND,SC(i)*[p(i)+x2i(i)]);

Equation E_x2i ! (10a) ! # Household demand for composite good i #
(all,i,IND) x2i(i) = epsilon(i)*cH + sum(j,IND,eta(i,j)*p(j));

Equation E_x2is ! (11a) ! # Household demand for composite good i #
(all,i,IND)(all,s, SRC) x2is(i,s) = x2i(i) - sigma(i)*[p(i) - sum(ss, SRC, S2(i,ss)*pis(i,ss))];

Equation E_y1G ! (12a) ! # Government revenue from import tax #
y1G = sum(i,IND,GM(i)*[tM(i) + p0is(i,"s2") + md(i)]);

Equation E_y2G ! (13a) ! # Government revenue from personal income tax #
y2G = t2 + yH ;

Equation E_y3G !(14a) ! # Government revenue from corporate income tax #
y3G = sum(i,IND,G3(i)*[t1(i) + p0is(i,"s1") + x(i)]);

Equation E_y4G !(17a) ! # Government revenue from other indirect tax #

$$y4G = \text{sum}(i, \text{IND}, G4(i) * [t4(i) + p(i) + x(i)]);$$

Equation E_GR !(18a) ! # Total government revenue #

$$gr = A1*y1G + A2*y2G + A3*y3G + A4*y4G + A5*trf3 + A6*trg2;$$

Equation E_x3is !(19a) ! # Government demand for good i from source s #

$$(\text{all}, i, \text{IND})(\text{all}, s, \text{SRC}) x3is(i, s) = z3 - \text{sigma}(i) * [pis(i, s) - \text{sum}(ss, \text{SRC}, S3(i, ss) * pis(i, ss))];$$

Equation E_g !(20a) ! # Total government expenditure #

$$g = \text{sum}(i, \text{IND}, \text{sum}(s, \text{SRC}, S3is(i, s) * [pis(i, s) + x3is(i, s)]));$$

Equation E_sG !(21a)! # Government saving #

$$gr = \text{ICG} * g + \text{ISG} * sg;$$

Equation E_x4i !(22a)! # Export demand for good i #

$$(\text{all}, i, \text{IND}) x4i(i) = -\text{gamma}(i) * [pie(i) - pW(i) - phi] + f4(i);$$

Equation E_EX !(23a)! # Total export revenue #

$$ex = \text{sum}(i, \text{IND}, S4(i) * [pW(i) + x4i(i) + phi]);$$

Equation E_md !(24a)! # Import value of good i #

$$(\text{all}, i, \text{IND}) md(i) = \text{sum}(j, \text{IND}, M1(i, j) * x1isj(i, "s2", j)) + M2(i) * x2is(i, "s2") + M3(i) * x3is(i, "s2") + M5(i) * x5is(i, "s2");$$

Equation E_im !(25a) ! # total import #

$$im = \text{sum}(i, \text{IND}, \text{UM}(i) * [pW(i) + phi + md(i)]);$$

Equation E_TBAL !(26a)! # Trade Balance #

$$1000 * \text{TBAL} = \text{sum}(i, \text{IND}, \text{EXPT}(i)) * ex - [\text{sum}(i, \text{IND}, \text{sum}(j, \text{IND}, \text{INT}(i, "s2", j))) + \text{sum}(i, \text{IND}, \text{HHEX}(i, "s2") + \text{GEX}(i, "s2") + \text{CAPEX}(i, "s2"))] * im;$$

Equation E_sF !(27a)! # FDI in Baht #

$$sF = sFW + phi;$$

Equation E_BOP !(28a)! # Balance of payment in Baht #

$$1000 * \text{BOP} = \text{TBAL} + \text{TRFH} * \text{trf2} + \text{TRFG} * \text{trf3} + \text{FDI} * sF;$$

Equation E_x5is !(29a)! # Balance of payment in Baht #

$$(all,i,IND)(all,s,src) x5is(i,s) = z5 - \sigma(i)*[pis(i,s) - \sum(ss,src,S5(i,ss)*pis(i,ss))];$$

Equation E_inv *!(30a)!* # Capital formation expenditure #
 $inv = \sum(i,IND, \sum(s,src, SI5(i,s)*[pis(i,s) + x5is(i,s)]));$

Equation E_z5 *!(31a)!* # saving equal to investment #
 $inv = H2*sH + H3*sG + H4*sF ;$

Equation E_x *!(32a)!* # Good i's market clearing conditions #
 $(all,i,IND) x(i) = \sum(j,IND, U1(i,j)*x1isj(i,"s1",j))+U2(i)*x2is(i,"s1")+U3(i)*x3is(i,"s1")+U4(i)*x4i(i)+U5(i)*x5is(i,"s1") ;$

Equation E_w *!(33a)!* # Labor market clearing condition #
 $ls = \sum(i,IND, BL(i)*l(i)) ;$

Equation E_r *!(34a)!* # Capital market clearing conditions #
 $(all,i,IND) ks(i) = k(i) ;$

Equation E_p0is *!(35a)!* # zero profit conditions #
 $(all,i,IND) [p0is(i,"s1")+x(i)-[CORPT(i)/[1-CORPT(i)]]*t1(i)] = \sum(j,IND, \sum(s,src, C1(j,s,i)*[pis(j,s)+x1isj(j,s,i)]))+CL(i)*[w+l(i)]+CK(i)*[r(i)+k(i)] ;$

Equation E_pie *!(36a)!* # Zero profit conditions for export #
 $(all,i,IND) pie(i) = p0is(i,"s1") + t4(i);$

Equation E_37 *!(37a)!* # Zero profit conditions for import #
 $(all,i,IND) p0is(i,"s2") = \phi + pW(i) + tM(i) ;$

Equation E_pis *!(38a)!* # Purchaser price determination #
 $(all,i,IND)(all,s,src) pis(i,s) = p0is(i,s) + t4(i);$

Equation E_p *!(39a)!* # average commodity prices #
 $(all,i,IND) p(i) = \sum(s,src, VIS(i,s)*pis(i,s)) ;$

Equation E_pid *!(40a)!* # price index #
 $pid = \sum(i,IND, WIS(i)*p(i)) ;$

Equation E_gdp *!(41a)!* # nominal GDP #
 $gdp = NC*ch + NI*inv + NG*g + NEX*ex - NIM*im ;$



Equation E_rw *!(43a)!* # real wage rate #
rw = w - pid ;

Equation E_rgdp *!(43a)!* # real GDP #
rgdp = gdp - pid ;

! Updated database !

Update (all,i,IND)(all,s,src)(all,j,IND) INT(i,s,j) =
p0is(i,s)*x1isj(i,s,j) ;
Update (all,j,IND) LAB(j) = w*l(j) ;
Update (all,j,IND) CAP(j) = r(j)*k(j) ;
Update TRFH = trf2 ;
Update HHT = t2*yh ;
Update HNSAV = sH ;
Update TRGH = trg2 ;
Update TRFG = trf3 ;
Update (all, j, IND)(all,s,src) HHEX(j,s) = pis(j,s)*x2is(j,s) ;
Update (all,i,IND) IMPT(i) = tM(i)*p0is(i,"s2")*md(i) ;
Update (all,i,IND) CORPT(i) = t1(i)*p0is(i,"s1")*x(i) ;
Update (all,i,IND) INDT(i) = t4(i)*p(i)*x(i) ;
Update (all,i,IND)(all,s,src) GEX(i,s) = pis(i,s)*x3is(i,s) ;
Update GSAV = sG ;
Update (all,i,IND) EXPT(i) = pie(i)*x4i(i) ;
Update (all,i,IND)(all,s,src) CAPEX(i,s) = pis(i,s)*x5is(i,s) ;
Update FDI = sf ;

คำสั่ง COMMAND file

! Auxiliary files (usually tells which TAB file)

auxiliary files = CGE ;

! Data files

**file CGE = CGE.har ;
updated file CGE = <cmf>.upd ;**

! Closure

**exogenous d trf2 trg2 t1 t2 tM t4 trf3 z3 f4 z5 phi pw ls ks ;
rest endogenous ;**

! Solution method information

**method = euler ;
steps = 1 2 ;**

! Simulation part

! Name of Solution file is inferred from name of Command file.!

**shock ks("i159") = 6.27 ;
verbal description = 6.27 per cent increase in amount of specific
capital of telecommunication.;**

! Options

**extrapolation accuracy file = yes ;
log file = yes ;**

! End of Command file