附錄 4：預測期間之外生變數資料與預測程式

```
option ps=500;
dm 'output;clear;log;clear;';
DATA FDATA1;
INPUT YEAR YU T2 IU M GC GWC DGNK DGWK GK;
CARDS;
1944  5177.801  0.050  0.0711  2722.230   820.118  203.087  389.987  20.108  2612.334
1995  5359.024  0.045  0.079   2994.453   904.629  269.087  430.626  22.119  3025.108
1996  5546.590  0.045  0.083   3293.898   989.695  335.087  475.499  24.331  3480.959
1997  5740.721  0.045  0.083   3623.288  1075.333  401.087  525.049  26.764  3984.395
1998  5941.646  0.045  0.083   3985.617  1161.561  467.087  579.761  29.440  4540.381
1999  6149.603  0.045  0.083   4384.179  1248.395  533.087  640.174  32.384  5154.403
2000  6364.839  0.045  0.083   4822.597  1335.845  599.087  706.881  35.623  5832.517
;

TITLE 'DATA:    FDATA1';
PROC PRINT;
RUN;

DATA FDATA2;
INPUT AA X BB    RR DD DPPE DEEE DUM1 DUM2;
CARDS;
0.86366  0.59005  0.029131  0.38082  0.045058  0.034655    0.044710  1 1
0.86366  0.59005  0.029131  0.38082  0.047310  0.034767  −0.003983  1 1
0.86366  0.59005  0.029131  0.38082  0.049676  0.034842  −0.019728  1 1
0.86366  0.59005  0.029131  0.38082  0.052160  0.034893  −0.014349  1 1
0.86366  0.59005  0.029131  0.38082  0.054768  0.034928  −0.011577  1 1
0.86366  0.59005  0.029131  0.38082  0.057506  0.034951  −0.010167  1 1
0.86366  0.59005  0.029131  0.38082  0.060381  0.034967  −0.009453  1 1
;

TITLE 'DATA:    FDATA2';
PROC PRINT;
RUN;

DATA FDATA3;
```

```
INPUT RU PF E D T1 T3 SD GS Q;
CARDS;
0.043560  1.3614  26.457   0.097  0.043387  0.32333   0  −393.996  −12.7155
0.031831  1.4090  26.1341  0.087  0.044626  0.32317   0  −396.726  −12.8801
0.040811  1.4584  25.9478  0.077  0.045721  0.32280   0  −408.749  −13.6202
0.043517  1.5094  25.8307  0.067  0.046733  0.32228   0  −424.604  −14.2613
0.044837  1.5622  25.7485  0.057  0.047699  0.32163   0  −422.039  −14.9195
0.045476  1.6169  25.6839  0.047  0.048639  0.32089   0  −460.126  −15.5748
0.045830  1.6735  25.6283  0.037  0.049563  0.32007   0  −478.482  −16.2305
;

TITLE 'DATA:    FDATA3';
PROC PRINT;
RUN;

DATA FDATA4;
INPUT P  U  W;
CARDS;
1.2581   0.014712  0.837512
1.3022   0.015007  0.879387
1.3478   0.015307  0.923356
1.3949   0.015613  0.969524
1.4438   0.015925  1.018000
1.4943   0.016244  1.068900
1.5466   0.016569  1.122346
;

TITLE 'DATA:    FDATA4';
PROC PRINT;
RUN;

DATA FCSTDATA;
SET FDATA1;
SET FDATA2;
SET FDATA3;
RUN;
```

```
TITLE 'DATA;    FCSTDATA';
PROC PRINT;
RUN;

DATA CFCST1;
update CSERECO FCSTDATA;
by year;
RUN;

DATA CFCST;
set cfcst1 ;
  DPF=DIF(PF) ;
  DPFP=DPF/LAG(PF) ;
  BD=DIF(B) ;
  DE=DIF(E) ;
  DEE= DE/LAG(E) ;
  DF=DIF(F) ;
  DI=DIF(I) ;
  DII= DI/LAG(I) ;
  DK=DIF(K) ;
  DKD=DD * LAG(K) ;
  DKF=DIF(KF) ;
  DM=DIF(M) ;
  DMM=DM/LAG(M) ;
  DP=DIF(P) ;
  DPP= DP/LAG(P) ;
  DRU=DIF(RU) ;
  DRR= DRU/LAG(RU) ;
  DIF=I-IU ;
  MP= M/P ;
  BP= B/P ;
  EKFP=E * KF/P ;
  A= K +(E * KF+M+B)/P ;
  DGK=DGWK+ DGNK ;
  GNC=GC- GWC ;
  GN=DGNK+ GNC ;
  GW=DGWK+ GWC ;
  G=GN+ GW ;
```

```
  WP=AA * X *(L * *(X-1))*(K * * BB)*(GK * * RR);
  RK=AA * BB *(L * * X)*(K * *(BB-1))*(GK * * RR);
  U= 1 - Y/YF;
  R= I -DPPE;
  RIP=RK - IE + DPPE;
  W=WP * P;
  T=PT/P;
  TB=EX - IM;
  PY=P * Y;
  YD=Y-T + (I * B + IU * E * KF)/P -(EKFP + MP + BP)* DPP -EKFP *
       DRR - BP * DII - EKFP * DEE
RUN;

RUN;
TITLE 'DATA:    CFCST';
PROC PRINT;
RUN;


option ps=500;
dm 'log;clear;output;clear;';

proc model DATA=cfcst;

ENDOGENOUS
  A CC DB DF DP R RK T W Y
  YD YF C DK EX IM L I IE KF
  B BP DE DEE DGK DI DIF DII DKF DM
  DMM DPP DRR DRU EKFP F G GC GN GW
  K MP P PT RIP TB U WP DKD PY;

EXOGENOUS
  AA BB D DD DEEE DGNK DGWK DPPE E GK
  GNC GS GWC IU M PF Q RR RU SD
  T1 T2 T3 X YU  ;

  IE = (-K +641.319+6490.18 * I+1659.87 * RU+0.620844 * Y+0.46274 * A
       +17.3978 * E+219.369 * DEEE+578.671 * DPPE)/(1569.39);
```

```
I  =  (-BP+368.852+32.1693 * IE-259.828 * RU+0.621876 * Y
      -0.236154 * A+7.1215 * E-206.972 * DEEE+384.731 * DPPE)/
      (1915.81);
KF  =  (546.734+616.934 * I+79.8222 * IE+457.275 * RU-0.182008 * Y+0.
      072129 * A-18.182 * E-330.94 * DEEE-890.925 * DPPE)* P/E;
A=K+(E * KF+M+B)/P;
CC=M-E * F;
DB=(P * G+I * B+IU * E * D+E * DF-P * T-DM-IU * E * F-GS;
DF=(P * EX-P * IM+E * IU * F-E * DKF+E * IU * KF-E * IU * D
    +E * Q)/E;
DP=(0.14703-7.9514 * U+DPPE)* LAG(P);
R=I-DPPE;
RK=AA * BB *(L * * X)*(K * *(BB-1))*(GK * * RR);
T=(T1 *(P * Y+I * B+IU * E * KF)+T2 *(P * IM) +T3 *(P * C))/P;
W=(AA * X *(L * *(X-1))*(K * * BB)*(GK * * RR))* P;
Y=C+DK+GNC+GWC+DGNK+DGWK+EX-IM+DKD+SD;
YD=Y-T+(I * B+IU * E * KF)/P-(EKFP+MP+BP)* DPP
   -(EKFP * DRR)-(BP * DII)-(EKFP * DEE)+GWC;
YF=AA *(L * * X)*(K * * BB)*(GK * * RR);
B=LAG(B)+DB;
BP=B/P;
DE=DIF(E);
DEE=DE/LAG(E);
DGK=DGWK+DGNK;
DI=DIF(I);
DIF=I-IU;
DII=DI/LAG(I);
DKF=DIF(KF);
DKD=DD * LAG(K);
DM=DIF(M);
DMM=DM/LAG(M);
DPP=DP/LAG(P);
DRR=DRU/LAG(RU);
DRU=DIF(RU);
DKFP=E * KF/P;
F=LAG(F)+DF;
G=GN+ GW;
GC=GNC+ GWC;
```

```
  GN=DGNK+ GNC;
  GW=DGWK+ GWC;
  K=LAG(K)+DK;
  MP=M/P;
  P=LAG(P)+DP;
  PT=P * T;
  RIP=RK-IE+DPPE;
  TB=EX-IM;
  U=1-(Y/YF);
  WP=W/P;
  PY=P * Y;

  INCLUDE   DK_r1   C_mod   IM_r2   EX_r2   L_r1   ;

id year;

range year 1993 2000;

SOLVE
  A B BP C CC DB DE DEE DF DGK
  DI DIF DII DK DKD DKF DM DMM DP DPP
  DRR DRU EKFP EX F G GC GN GW I
  IE IM K KF L MP P PT PY R
  RIP RK T TB U W WP Y YD YF
  / solveprint converge=0.001 maxiter=200
          maxsubiter=50 theil
out=predeco  outpredict;


run;
quit;
```