```
var c           //consumption
    mc          //real marginal costs
    i           //Nominal Interest rate
    rd          //Deposit interest rate
    rl          //Loan granting rate
    PI          //Inflation
    rk          //rental rate of capital
    x           //investment
    w           //real wage
    A           //AR(1) technology process
    y           //aggregate output
    n           //aggregate labor
    k           //capital
    m           //monetary base
    mb          //nominal money growth
    l           //loan

    or          //oil revenues
    tao         //Legal reserve rate
    g           //government expenditure
    fr          //foreign reserves (net foreign assets) of the central bank
    ndf         //national development fund
    dc          //domestic credit
    d           //deposit
    mh
    mb1
  gy_obs
  gor_obs
  gg_obs
  gc_obs
  gk_obs;

varexo epsA epstao epsor epsg nu epsmb1;

predetermined_variables k;

parameters betta       //discount factor
           psin        //
           psim        //
           delta1       //depreciation rate
           alppha      //capital share
           rhoA        //autocorrelation technology shocks
           theta       //elasticity of substitution between goods varieties
           phi         //degree of nominal price rigidity
           Lambda
           alphab
           PIbar
           rhomb
           rhog
           rhotao
           rhoor
           roa
           ybar
           mbbar
           LambdaPI
```

```
            Lambday
            omega
            phiPI
            phiy
            phimb1;


psin        =4.77;                      //bahrami and rafei (1393)
psim        =0.24;                      //bahrami and rafei (1393)
theta       =5.83;                      //bahrami and rafei (1393)
phi         =3.15;                      //bahrami and rafei (1393)
delta1      =0.04;
betta       =0.9622;                    //tavakolian (1394, spring)
alppha      =0.42;                      //tavakolian (1394, spring)
rhoA        =0.9;                       //tavakolian (1394, spring)
rhoor       =0.2862;                    //tavakolian (1394, spring)
rhomb       =0.79;                      //tavakolian (1394, spring)
rhog        =0.8;                       //
Lambda      =1;
PIbar       =1.15;
rhotao      =0.99;                      //parvin, ebrahimi and ahmadian (1393)
alphab      =0.92;                      //parvin, shakeri and ahmadian (1393)
LambdaPI    =-1.07;                     //tavakolian (1394, spring)
Lambday     =-2.35;                     //tavakolian (1394, spring)
omega       =0.8;                       //tavakolian (1394, spring)
roa         =0.12;
mbbar       =PIbar;
phiPI       =0.147;                     //parvin, ebrahimi and ahmadian (1393)
phiy        =1.051;                     //parvin, ebrahimi and ahmadian (1393)
phimb1      =0.694;                     //parvin, ebrahimi and ahmadian (1393)

model;

//1. Labor supply
w=psin*c;
//2.Demand for real money balance
c*(psim/mh)=i/(1+i);
//3. Euler equation
betta*(1+i)/PI(+1)=c(+1)/c;
//4.Fisher equation
(1+i)/PI(+1)=rk(+1)+(1-delta1);
//5.
(1+rd)/PI(+1)=rk(+1)+(1-delta1);
//6.Law of motion for capital
k(+1)=x+(1-delta1)*k;
//7.production function
y=A*(n^(1-alppha))*(k^alppha);
//8.marginal cost
mc=(1/A)*(w/(1-alppha))^(1-alppha)*((rk*(1+Lambda))/alppha)^alppha;
//9.labour to Capital Services Input ratio
w/rk=((1-alppha)*(1+Lambda)*k)/(alppha*n);
//10.Phillips curve
(1-theta)*y-phi*((PI/PIbar)-1)*y+betta*phi*(c/c(+1))*((PI(+1)/PIbar)-
1)*(PI(+1)/PIbar)*y(+1)+theta*mc*y=0;
//11.loan to firm
```

```
l=(1+Lambda)*rk*k+w*n;
//12.Bank Balance Sheet
l=(1-Lambda+roa)*(mb1+d);
//13
mb1=(PI^phiPI)*(y^phiy)*(mb1(-1)^phimb1)*exp(epsmb1);
//14.Bank profit margin
(1+rd)=(1-Lambda+roa)*(alphab*(1+rl)-tao*(1-alphab));
//15.Monetary Base (Central Bank Balance Sheet)
m=dc+fr;
//16.Foreign reserves (net foreign assets) of the central bank
fr=(fr(-1)/PI)+omega*or;
//17.National Development Fund
ndf=(ndf(-1)/PI)+(1-omega)*or;
//18.Monetary policy reaction function
(mb/mbbar)=(mb(-1)/mbbar)^rhomb*((PI/PIbar)^LambdaPI*(y/ybar)^Lambday)^(1-
rhomb)*exp(nu);

//19.nominal money growth
mb=(m/m(-1))*PI;
//20.Market clearing
y=c+x+g+(phi*y/2)*((PI/PIbar)-1);
//21
m=mh+d;

//exogenous processes
//22. Neutral technology
A=A(-1)^rhoA*exp(epsA);
//23.Legal reserve rate
tao=tao(-1)^rhotao*exp(epstao);
//24.Oil revenues
or=or(-1)^rhoor*exp(epsor);
//25.government expenditure
g=g(-1)^rhog*exp(epsg);

gy_obs=y/y(-1);
gor_obs=or/or(-1);
gg_obs=g/g(-1);
gc_obs=c/c(-1);
gk_obs=k/k(-1);
end;

shocks;
var epsA;
stderr 0.01;
var epstao;
stderr 0.01;
var epsor;
stderr 0.01;
var epsg;
stderr 0.01;
var nu;
stderr 0.01;
var epsmb1;
stderr 0.01;
end;
```

```
//steady;
//stoch_simul(order=1,irf=40) y c x g m n k w l d PI i rk rl rd;

//resid(1);
//check;
//model_diagnostics;


// OBSERVABLE VARIABLES

varobs   gy_obs gg_obs gor_obs   gc_obs gk_obs;



estimated_params;
rhomb  ,          beta_pdf,      0.5,      0.05;
rhoA,             beta_pdf,      0.9,      0.05;
phi,              gamma_pdf,     3.15,     0.05;
theta,            gamma_pdf,     5.83,     0.05;
betta,            beta_pdf,      0.9622,   0.01;
alppha,           beta_pdf,      0.42,     0.02;
rhog,             beta_pdf,      0.8,      0.1;
psin,             gamma_pdf,     4.77,     0.05;
psim,             gamma_pdf,     0.24,     0.05;
rhoor,            beta_pdf,      0.8,      0.1;
Lambda,           beta_pdf,      0.5,      0.1;
//rhotao,           beta_pdf,     0.99,     0.01;
//alphab,           beta_pdf,     0.92,     0.1;
roa,              beta_pdf,      0.12,     0.1;
LambdaPI,         normal_pdf,   -1.07,     0.05;
Lambday,          normal_pdf,   -2.35,     0.17;
//omega,            beta_pdf,      0.8,      0.05;
phiPI,            normal_pdf,    0.147,    0.05;
phiy,             normal_pdf,    1.051,    0.05;
phimb1,           beta_pdf,      0.694,    0.05;

stderr epsA,       inv_gamma_pdf, 0.01, inf;
stderr epsor,      inv_gamma_pdf, 0.01, inf;
stderr epsg,       inv_gamma_pdf, 0.01, inf;
stderr nu,         inv_gamma_pdf, 0.01, inf;
//stderr epstao,      inv_gamma_pdf, 0.01, inf;
stderr epsmb1,     inv_gamma_pdf, 0.01, inf;

end;

// THE ESTIMATION BLOCK

estimation(datafile=data_bank, mh_jscale =0.3, mh_replic=5000, mh_nblocks=5,
mode_compute=6,diffuse_filter, mode_check,order=1,bayesian_irf,irf=20) y c x g m n k
w l mh d PI i rk rl rd;
//identification;

//stoch_simul(order=1,irf=40) y c x g m n k w l d PI i rk rl rd;
```