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var km kn cm cn hm hn sm sn k i y lamda1 lamda2 lamda3 lamda4 lamda5;
varexo epsilon epsilon;
parameters a b e beta delta eta rho theta sigmam sigman;
e = 0.8; beta = 0.99; delta = 0.025; eta = 0.08; rho = 0.95;
a = 0.2759; b = 0.5695; theta = 0.36; sigmam = 0.007; sigman = 0.007;
model;
a*b*exp(cm)^(e-1)/(a*exp(cm)^e+(1-a)*exp(cn)^e)-lamda2=0;
(1-a)*b*exp(cn)^(e-1)/(a*exp(cm)^e+(1-a)*exp(cn)^e)+lamda5=0;
lamda3-lamda4*theta*exp(sm)*exp(km(-1))^(theta-1)*exp(hm)^(1-theta);
lamda3-lamda5*eta*exp(sn)*exp(kn(-1))^(eta-1)*exp(hn)^(1-eta);
(1-b)/(1-exp(hm)-exp(hn))+lamda4*(1-theta)*exp(sm)*exp(km(-1))^theta*exp(hm)^(-theta)=0;
(1-b)/(1-exp(hm)-exp(hn))+lamda5*(1-eta)*exp(sn)*exp(kn)^eta*exp(hn)^(-eta)=0;
lamda1(-1)-lamda1*(1-delta)+lamda3=0;
lamda2-lamda1=0; lamda2+lamda4=0;
exp(k)=(1-delta)*exp(k(-1))+exp(i);
exp(y)=exp(i)+exp(cm); exp(k)=exp(km)+exp(kn);
exp(y)=exp(sm)*exp(km(-1))^theta*exp(hm)^(1-theta);
exp(cn)=exp(sn)*exp(kn(-1))^theta*exp(hn)^(1-theta);
sm = rho*sm(-1) + epsilon; sn = rho*sn(-1) + epsilon;
end;
initval;
hm = log(0.33); hn = log(0.28); sm = 0; sn = 0;
km = 3.6373; kn = 1.6060; k = 3.7676; i = 0.0717;
y = 0.5999; cm = -0.2909; cn = -1.0426;
end;

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shocks;
var epsilon = sigmam^2;
var epsilon = sigman^2;
corr epsilon,epsilon = 2/3;
end;
steady;
resid;
stoch_simul(hp_filter=1600, order=1, irf=40);
dynamsave('Hwsimulation.mat');

km = log((1/theta*(1/beta-1+delta))^(1/(theta-1)));
kn = log(eta*(1-theta)*exp(km)*exp(hn)/theta/(1-eta)/exp(hm));
k = log(exp(km)+exp(kn));
i = log(delta*exp(k));
y = log(exp(sm)*exp(km)^theta*exp(hm)^(1-theta));
cn = log(exp(sn)*exp(kn)^eta*exp(hn)^(1-eta));
cm = log(exp(y)-exp(i));
a =
exp(cn)^(e-1)*(1-eta)*(exp(kn)/exp(hn))^eta/(exp(cn)^(e-1)*(1-eta)*(exp(kn)/exp(hn))^eta+
exp(cm)^(e-1)*(1-theta)*(exp(km)/exp(hm))^theta);
b =
1/(a*(1-theta)*exp(y)*exp(cm)^(e-1)*(1-exp(hm)-exp(hn))/exp(hm)/(a*exp(cm)^e+(1-a)*exp(cn)
^e)+1);

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