Estimated Dynamic Optimization (EDO) Model

Gary Young (editor)

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Chapter 1

EDO model packages

The Estimated Dynamic Optimization (EDO) Model is available from the Federal Reserve Board of Governors website:

The model package zip file (link below) contains the following files:

- A readme file with basic instructions.
- Dynare mod files to run two versions of the EDO model, one with variables in levels and the other with variables in log deviations from steady state. Both versions include the nonlinear equations derived from household and firm optimization problems. The version in levels more closely follows the derivations described in the article "Unemployment During the Great Recession in the EDO Model of the U.S. Economy", while the version in log deviations facilitates the reporting of simulation results. These programs solve the model, report some basic model statistics, and run some basic impulse response simulations.

Notice that the edo (zip) is actually contained in the "EDO variable listing (ZIP)" link and the mentioned "variable listing zip file" doesn't seem to be available anywhere:

The variable listing zip file (link below) contains an HTML representation of the EDO model, showing linkages between variables, parameters, and equations.

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EDO variable listing (ZIP)

NOTE: The programs for simulating the EDO model are written for use with the Dynare software package. The Dynare package can be downloaded without cost at www.dynare.org While Dynare itself is free, it requires the installation of either Matlab or Octave. Matlab is a commercial product available at www.mathworks.com. Octave is free-ware, and is available at www.gnu.org/software/octave

Dynare and octave were available in The Ubuntu Software Center for my computer. From the readme file, to execute the model:

5) Run the command "dynare linearized" or "dynare Dynare_edo" from the Matlab/Octave command line to run the two model versions

The model fails for me and when googling for the error "dynare linearized trans_A undefined" we get

At the moment, Octave 4 is not supported yet. See https://github.com/DynareTeam/dynare/issues/1113

at "Trans_A Matrix error" and "Make Dynare compatible with Octave 4.0 #1113".

Appendices

Appendix A

Original Files

A.1 Dynare_edo_mod

9 $\langle srcedo/Dynare.edo.mod 9 \rangle \equiv$

var RC RK WC WK YC YK MCC MCK KC KK PKB R L QK HC HSC HK HSK UHC UHSC UHK UHSK empC HrC & DIFFREALEGDP_obs DIFFREALEC_obs DIFFREALEIK_obs DIFFREALECD_obs DIFFREALECH_obs DIFF

varexo eHG eXiL eLpref eR eMUZK eMUZM ePMKC ePMKK eEFFECH eEFFECD eEFFK eB eSTAR;

parameters

h r_inf r_y r_dy phi_pc phi_H phi_wc phi_ic phi_cd phi_ech gam_pc gam_wc gam_ic gam_icd rho_R r rho_EFFECD rho_HG rho_EFFECH tp2 ONE MUZMSS MUZKSS r_dinf rpr phi_u rho_MUZK rho_MUZM pbeta de theta_k theta_wc theta_wk g_y a_ks s_AS gam_h gam_ech s_k s_ecdc eta_cnn eta_cd eta_ch icoef mu_ betarl MUZCSS RCSS RKSS WCSS WKSS YCSS YKSS MCCSS MCKSS KCSS KKSS LSS HCSS HKSS QKSS MUCSS MUKSS AHSS ECDSS KCDSS QCDSS RCDSS ECHSS KCHSS QCHSS RCHSS UKSS UCSS USS MUKSShabit MUCSS INFCNASS INFCORSS INFC10SS RT2SS beta_0 beta_2 beta_ PYSS AA DD RR eta_cd_eta_cnn eta_ch_eta_cnn Rnr ycbi_ykb hc_hk HSS ycbi ykb YYSS s_k_ecd s_c_ech s_k_eik s_yc sig_HG sig_XiL sig_lpref sig_R sig_MUZK sig_MUZM sig_PMKC sig_PMKK sig_EFFECH sig_EFFECD sig_E HSKSS HSCSS HrCSS HrKSS A_HC sigman sigmah A_HK xsi_NC xsi_HrC xsi_NK xsi_HrK rho_XiL rho_lpref empCSS empKSS HrSCSS empSCSS empSKSS UHCSS UHKSS UHSCSS UHSKSS unempSS DIFFREALEDPSS DIFFREALECHSS DIFFREALEIKSS DIFFREALEIKSS RL1SS RL2SS RL3SS RL4SS RL5SS RL6SS RL7SS DIFFREALEIKSS_obs DIFFREALECSS_obs DIFFREALECDSS_obs DIFFREALECDSS_obs DIFFREALECDSS_obs RSS_obs RT2SS_obs unempSS_obs;

```
//estimated_params;
h = 0.715162417869797;
```

```
r_inf
             = 1.46344163969035;
r_y
              = 0.263123294207851;
             = 3.54471453295450;
phi_pc
phi_H
             = 3.22894079106560;
             = 5.49395755514723;
phi_wc
phi_ic
             = 0.253308786976374;
             = 0.470089385005009;
phi_cd
             = 9.13986886546163;
phi_ech
             = 0.314488926051065;
gam_pc
             = -0.230018833252054;
gam_wc
             = 39.4075260618789;
sigman
sigmah
             = 21.8859803402692;
             = 0.833200065745674;
rho_R
rho_XiL
rho_XiL = 0.263567746111198;
rho_lpref = 0.979092048897712;
             = 0.895267027146152;
rho_B
          = 0.909187927454138;
rho_STAR
rho_EFFK
             = 0.937829274540004;
             = -0.240286975088701;
rho_EFFECD
             = 0.582395471123139;
rho_HG
             = 0.877235725078934;
rho_EFFECH
             = 0.000307314910763576;
tp2
sig_HG
sig_HG = 0.579315931803017;
sig_XiL = 2.49313873916751;
sig_lpref = 5.66476748114241;
sig_R
             = 0.124100461010359;
sig_MUZK
             = 0.936167718269030;
             = 0.597390920898135;
sig_MUZM
sig_PMKC
             = 0.451830653200989;
sig_PMKK
             = 0.685376191952156;
sig_EFFECH
             = 0.514704527091087;
             = 9.11199585973990;
sig_EFFECD
              = 0.402779878811407;
sig_EFFK
               = 0.295232712196573;
sig_B
sig_STAR
               = 0.104877885500673;
//end_estimated_params;
//calibrated_params;
r_dy = 0;
ONE = 1;
MUZKSS = 1.009250;
MUZMSS = 1.001000;
gam_ic = 1.0;
gam_icd = 1.0;
r_dinf = 0;
rpr = 0.965;
```

```
phi_u = 1;
rho_MUZK = 0;
rho_MUZM = 0;
pbeta = 0.99862;
delta_ = 0.03;
h_cd = 0.0;
h_ch = 0.0;
delta\_cd = 0.055;
delta_ch = 0.0035;
alpha_ = 0.26;
theta_c = 7;
theta_k = 7;
unempSS = .06;
g_y = 0.0;
a_ks = 0.2;
s_AS = 0.2;
gam_h = 1;
gam_ech = 1;
icoef = 3;
betarl = .958;
//end_calibrated_params;
//free_params;
//A_HC;
//A_HK;
//xsi_NC;
//xsi_HrC;
//xsi_NK;
//xsi_HrK;
//theta_wc;
//theta_wk;
//infkbar;
//infcbar;
//infwcbar;
//infwkbar;
//Pybar;
//Yybar;
//mu_yc;
//mu_yk;
//s_k;
//s_ecdc;
//eta_cnn;
//eta_cd;
//eta_ch;
//mu_;
//end_free_params;
```

```
//calibrated ME
//***************
//MODEL BLOCK
//****************
RC-MCC*YC/UC/KC(-1)*alpha_*MUK=0;
RK-MCK*YK/UK/KK(-1)*alpha_*MUK=0;
WC-MCC*YC/HC*(1-alpha_)=0;
WK-MCK*YK/HK*(1-alpha_)=0;
YC-(UC*KC(-1)/MUK)^alpha_*(HC)^(1-alpha_)=0;
YK-(UK*KK(-1)/MUK)^alpha_*(HK)^(1-alpha_)=0;
MCC*YC*theta_c-(theta_c-1)*YC-100*phi_pc*(INFC-gam_pc*INFC(-1)-(1-gam_pc)*INFCSS)*INI
MCK*YK*theta_k/PKB-(theta_k-1)*YK-100*phi_pc*(INFK-gam_pc*INFK(-1)-(1-gam_pc)*INFKSS
 QK-beta_*(1/EFFK)*(((1-delta_)*QK(+1)+RC(+1)*UC(+1))*L(+1)/MUK(+1)/L)=0; \\
 QK-beta_*(1/EFFK)*(((1-delta_)*QK(+1)+RK(+1)*UK(+1))*L(+1)/MUK(+1)/L)=0; \\
L-betas*R/rpr/INFC(+1)/MUC(+1)*L(+1)=0;
ln(R/RSS) - rho_R*ln(R(-1)/RSS) - (1-rho_R)*(r_inf*ln(INFCNA/INFCNASS) + r_dinf*(ln(INFCNASS) + r_dinf*(ln(INFCN
L-eta_cnn/(EC-h*EC(-1)/MUC)+eta_cnn*beta_*h/(MUC(+1)*EC(+1)-h*EC)=0;
KK-(1-delta_)*KK(-1)/MUK+KC-(1-delta_)*KC(-1)/MUK-1*EIK+mu_*((UK^(1+1/phi_u)-1)/(1+1/phi_u)-1)
// labor block
// TOTAL LABOR INPUT (called "L" in the paper, I kept the "H" notation of the original
-100+UHC*theta_wc-(theta_wc-1)*WC-100*phi_wc*(INFWC-gam_wc*INFWC(-1)-(1-gam_wc)*INFWC
UHSC-WC+phi_H/10*(HSC/HSK-gam_h*HSC(-1)/HSK(-1)-(1-gam_h)*HSCSS/HSKSS);//+100*eXiL=0
-100+UHK*theta_wk-(theta_wk-1)*WK-100*phi_wc*(INFWK-gam_wc*INFWK(-1)-(1-gam_wc)*INFW
\label{eq:continuous} $$ $UHSK-WK-phi_H/10*(HSC/HSK-gam_h*HSC(-1)/HSK(-1)-(1-gam_h)*HSCSS/HSKSS);//+100*eXiL=0. $$ $$ $(-1)^2/HSK(-1)^2/HSK(-1)^2/HSKSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSK(-1)^2/HSK(-1)^2/HSKSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSK(-1)^2/HSKSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSK(-1)^2/HSKSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSK(-1)^2/HSKSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSK(-1)^2/HSKSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSKSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSKSS/HSKSSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSKSS/HSKSSS/HSKSS);//+100*eXiL=0. $$ $(-1)^2/HSKSS/HSKSS/HSKSSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKSS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS/HSKS
 UHC*L*Lpref-A_HC*((1+sigman)/(1+sigman)/(1+sigman)))*(HC)^{(-1+(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/
 UHSC*L*Lpref-A_HC*((1+sigman)/(1+sigman/(1+sigmah)))*(HSC)^{(-1+(1+sigman)/(1+sigman/(1+sigman))} \\
 UHK*L*Lpref-A_HK*((1+sigman)/(1+sigman)/(1+sigman)))*(HK)^{(-1+(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)}) \\
 UHSK*L*Lpref-A_HK*((1+sigman)/(1+sigman/(1+sigmah)))*(HSK)^{-1+(1+sigman)/(1+sigman/(1+sigmah))} \\
empC-((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(-1/(1+sigmah+sigman))*HC^(1/(1+sigman/(1+sigman))
HrC-((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*empC^(sigman/(1+sigmah))=0;
empK-((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(-1/(1+sigmah+sigman))*HK^(1/(1+sigman/(1+sigman))
HrK-((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*empK^(sigman/(1+sigmah))=0;
\verb|empSC-((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(-1/(1+sigmah+sigman))* HSC^(1/(1+sigman/(1+sigman))* HSC^(1/(1+sigman))* HSC^(1/
HrSC-((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*empSC^(sigman/(1+sigmah))=0;
empSK-((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(-1/(1+sigmah+sigman))*HSK^(1/(1+sigman/(1+sigman))
HrSK-((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*empSK^(sigman/(1+sigmah))=0;
unemp-(empSC+empSK-(empC+empK))/(empSC+empSK)=0;
PKB-(1-100*phi_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic)*EIKSS)/(KC(-1)+KK(-1))*MUK)*QK-beta_ic*(EIK-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*EIK(-1)-(1-gam_ic*
YC-EC-ECH-0.2*YCSS*HG=0;
```

```
ln(INFWC)-ln(WC)+ln(WC(-1))-ln(MUC)-ln(INFC)=0;
ln(INFWK)-ln(WK)+ln(WK(-1))-ln(MUC)-ln(INFC)=0;
ln(INFK)-ln(INFC)-ln(PKB)+ln(PKB(-1))+ln(MUK)-ln(MUC)=0;
YK-EIK-ECD-0.2*YKSS*HG=0;
ln(DIFFNORMGDP) - (1-s_k)*(ln(YC)-ln(YC(-1))) - s_k*(ln(YK)-ln(YK(-1))) = 0;
ln(NORMINFGDP)-s_k*(ln(PKB)-ln(PKB(-1)))=0;
ln(DIFFREALGDP)-ln(DIFFNORMGDP)-(1-s_k)*ln(MUC)-s_k*ln(MUK)=0;
ln(DIFFREALEC) - ln(EC) + ln(EC(-1)) - ln(MUC) = 0;
ln(DIFFREALEIK) - ln(EIK) + ln(EIK(-1)) - ln(MUK) = 0;
// Identities
ln(DIFFREALW)-HCSS/AHSS*(ln(INFWC))-HKSS/AHSS*(ln(INFWK))+ln(INFC)=0;
// XXXXXXXXXXXXXXXXXXXXXX
// Aggregate hours equals agg hours in each sector
AH-HC-HK=0;
ln(INFGDP) - ln(INFC) - ln(YC*MUC/YC(-1)) + ln(DIFFREALGDP) - ln((1+PKB*YK/YC)/(1+PKB(-1)*YK(-1)/YC(-1)) + ln(INFGDP) - 
ln(INFCNA)-(1-s_ecdc)*ln(INFC)-s_ecdc*ln(INFK)=0;
ln(INFCOR)-(1-s_ecdc)*ln(INFC)-s_ecdc*ln(INFK)=0;
ln(GAP)-(1-s_k)*ln(YC/YCSS)-s_k*ln(YK/YKSS)=0;
ln(INFC10)-betarl*ln(INFC10(+1))-(1-betarl)*ln(INFCOR)=0;
// See Section 8: Data Identities
// new equations
// Durable Block
KD-(1-delta_cd)*KD(-1)/MUK-ECD=0;
 L*RCD-eta\_cd/(KD(-1)/MUK-h\_cd*LAGKD(-1)/(MUK(-1)*MUK)) + beta\_*eta\_cd*h\_cd/(KD-h\_cd*KD(-1)/MUK) = (A_{1})/(A_{2})/(A_{1})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(A_{2})/(
QCD-beta_*(1/EFFECD)*L(+1)/L/MUK(+1)*(RCD(+1)+(1-delta_cd)*QCD(+1))=0;
PKB-QCD*(1-100*phi_cd*(ECD-gam_icd*ECD(-1)-(1-gam_icd)*ECDSS)/KD(-1)*MUK) - beta_*(1/EFFECD)*10
// Housing Block
L*RCH-eta_ch/(KCH(-1)/MUC-h_ch*LAGKCH(-1)/(MUC*MUC(-1)))+beta_*eta_ch*h_ch/(KCH-h_ch*KCH(-1)/MUC+MUC(-1))
\label{eq:QCH-beta} $$QCH-beta_*(1/EFFECH)*L(+1)/L/MUC(+1)*(RCH(+1)+(1-delta_ch)*QCH(+1))=0;
1*ECH+(1-delta_ch)*KCH(-1)/MUC-KCH=0;
1-QCH*(1-100*phi_ech*(ECH-gam_ech*ECH(-1)-(1-gam_ech)*ECHSS)/KCH(-1)*MUC) - beta_*(1/EFFECH)*10
ln(KD(-1))-ln(LAGKD)=0;
ln(KCH(-1))-ln(LAGKCH)=0;
RK-QK*mu_*UK^(1/phi_u)=0;
RC-QK*mu_*UC^(1/phi_u)=0;
ln(DIFFREALECH) - ln(MUC) - ln(ECH) + ln(ECH(-1)) = 0;
ln(DIFFREALECD) - ln(MUK) - ln(ECD) + ln(ECD(-1)) = 0;
ln(betas/beta_)-rho_B*ln(betas(-1)/beta_)-eB=0;
```

```
ln(XiL)-rho_XiL*ln(XiL(-1))-eXiL=0;
ln(Lpref)-rho_lpref*ln(Lpref(-1))-eLpref=0;
ln(EFFK)-rho_EFFK*ln(EFFK(-1))-eEFFK=0;
ln(MUZK/MUZKSS)-eMUZK=0;
ln(MUZM/MUZMSS)-eMUZM=0;
ln(HG)-rho_HG*ln(HG(-1))-eHG=0;
ln(MUC)-ln(MUZM)-alpha_*ln(MUZK)=0;
ln(MUK)-ln(MUZM)-ln(MUZK)=0;
ln(EFFECD)-rho_EFFECD*ln(EFFECD(-1))-eEFFECD=0;
ln(EFFECH)-rho_EFFECH*ln(EFFECH(-1))-eEFFECH=0;
ln(STAR)-rho_STAR*ln(STAR(-1))-eSTAR=0;
ln(RL1) - ln(R(+1))=0;
ln(RL2) - ln(RL1(+1))=0;
ln(RL3) - ln(RL2(+1))=0;
ln(RL4) - ln(RL3(+1))=0;
ln(RL5) - ln(RL4(+1))=0;
ln(RL6) - ln(RL5(+1)) = 0;
ln(RL7) - ln(RL6(+1))=0;
ln(RT2) - tp2 - 0.125*(ln(R) + ln(RL1) + ln(RL2) + ln(RL3) + ln(RL4) + ln(RL5) + ln(ln(RL5) + ln(RL5) + 
//measurement_equations;
ln(DIFFREALGDP_obs/DIFFREALGDPSS_obs) = ln(DIFFREALGDP/DIFFREALGDPSS);
ln(DIFFREALEC_obs/DIFFREALECSS_obs) = ln(DIFFREALEC/DIFFREALECSS);
ln(DIFFREALEIK_obs/DIFFREALEIKSS_obs) = ln(DIFFREALEIK/DIFFREALEIKSS);
ln(DIFFREALECD_obs/DIFFREALECDSS_obs) = ln(DIFFREALECD/DIFFREALECDSS);
ln(DIFFREALECH_obs/DIFFREALECHSS_obs) = ln(DIFFREALECH/DIFFREALECHSS);
ln(DIFFREALW_obs/DIFFREALWSS_obs) = ln(DIFFREALW/DIFFREALWSS);
ln(AH_obs)
                                                                                    = ln(AH/AHSS);
ln(INFCNA_obs/INFCNASS_obs)
                                                                                    = ln(INFCNA/INFCNASS);
ln(INFCOR_obs/INFCORSS_obs)
                                                                                    = ln(INFCOR/INFCORSS);
ln(INFK_obs/INFKSS_obs)
                                                                                    = ln(INFK/INFKSS);
ln(R_obs/RSS_obs)
                                                                                    = ln(R/RSS);
ln(RT2_obs/RT2SS_obs)
                                                                                    = ln(RT2/RT2SS);
ln(unemp_obs/unempSS_obs)
                                                                                    = ln(unemp/unempSS);
//end_measurement_equations;
end;
varobs DIFFREALEGDP_obs DIFFREALEC_obs DIFFREALECK_obs DIFFREALECH_obs
shocks;
var eHG;
stderr sig_HG;
var eXiL;
stderr sig_XiL;
var eLpref;
stderr sig_lpref;
```

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```
var eR;
stderr sig_R;
var eMUZK;
stderr sig_MUZK;
var eMUZM;
stderr sig_MUZM;
var ePMKC;
stderr sig_PMKC;
var ePMKK;
stderr sig_PMKK;
var eEFFECH;
stderr sig_EFFECH;
var eEFFECD;
stderr sig_EFFECD;
var eEFFK;
stderr sig_EFFK;
var eB;
stderr sig_B;
var eSTAR;
stderr sig_STAR;
var DIFFREALGDP_obs;
stderr 0.3;
var DIFFREALEC_obs;
stderr 0.1;
var DIFFREALEIK_obs;
stderr 1.5;
var DIFFREALECD_obs;
stderr 1.5;
var DIFFREALECH_obs;
stderr 1.5;
var DIFFREALW_obs;
stderr 0.3;
var AH_obs;
stderr 0.3;
var INFCNA_obs;
stderr 0.5;
var INFCOR_obs;
stderr 0.05;
var INFK_obs;
stderr 0.2;
var RT2_obs;
stderr 0.1;
var unemp_obs;
stderr 4;
```

```
end;
steady;
estimated_params;
                 , .673
h
                                    -1
                                                    , 1
                                                            , uniform_pdf
                                                                              ,,,-1
                 , 1.461
                                    -999
                                                     999
                                                                              , 1.5000
r_inf
                                                            , normal_pdf
                 , 0.214
                                    -999
                                                     999
                                                            , normal_pdf
                                                                               0.125
r_y
                                    0
                                                     999
phi_pc
                 , 3.126
                                                            , gamma_pdf
                                                                               4.0000
                 . 4.064
                                    0
                                                     999
                                                                              , 4.0000
phi_H
                                                            , gamma_pdf
phi_wc
                 , 5.119
                                    0
                                                     999
                                                            , gamma_pdf
                                                                               4.0000
phi_ic
                 , .325
                                    0
                                                     999
                                                            , gamma_pdf
                                                                               4.0000
phi_cd
                 , .651
                                    0
                                                     999
                                                            , gamma_pdf
                                                                               4.0000
                                                    , 999
                 , 10.948
                                    0
                                                                              , 4.0000
phi_ech
                                                            , gamma_pdf
                                  , -999
                 , 0.386
                                                     999
                                                            , normal_pdf
                                                                               0.000
gam_pc
                 , 0.213
                                    -999
                                                     999
                                                             , normal_pdf
                                                                               0.000
gam_wc
                 , 1.25
                                                     999
                                                            , gamma_pdf
                                                                               1.25
sigman
                 , 10
                                    0
                                                     999
                                                             , gamma_pdf
                                                                               10
sigmah
                 , 0.654
                                                    , 1
                                                                               0.5
rho_R
                                                             , normal_pdf
                 , 0.654
                                                             , normal_pdf
                                                                               0.5
rho_XiL
                                    -1
                                                     1
                 , 0.954
                                                    , 1
rho_lpref
                                    -1
                                                             , normal_pdf
                                                                               0.5
rho_B
                 , 0.825
                                    -1
                                                    , 1
                                                            , normal_pdf
                                                                               0
                 , 0.825
                                                    , 1
rho_STAR
                                    -1
                                                            , normal_pdf
                                                                               0
                                    -1
rho_EFFK
                 , 0.850
                                                    , 1
                                                            , normal_pdf
                                                                               0
                 , .230
                                                    , 1
rho_EFFECD
                                    -1
                                                            , normal_pdf
                                                                               0
                 , 0.596
                                    0
                                                    , 1
rho_HG
                                                            , beta_pdf
                                                                               0.5
                                    -1
                                                    , 1
rho_EFFECH
                 , 0.844
                                                            , normal_pdf
                                                                               0
                                                    , 999
tp2
                 , 0.001
                                  , -999
                                                            , normal_pdf
                                                                               0.0
                 , .745
stderr eHG
                                   , 0.0001
                                                    , 999
                                                             , inv_gamma_pdf , 1.772454
stderr eXiL
                 , 3.621
                                    0.0001
                                                     999
                                                              inv_gamma_pdf , 1.772454
                                                     999
stderr eLpref
                 , 1.621
                                    0.0001
                                                             , inv_gamma_pdf , 1.772454
stderr eR
                 , 0.165
                                    0.0001
                                                     999
                                                              inv_gamma_pdf , 0.354491
                 , .834
stderr eMUZK
                                    0.0001
                                                     999
                                                            , inv_gamma_pdf , 0.443113
                                                              inv_gamma_pdf , 0.443113
stderr eMUZM
                 , .484
                                    0.0001
                                                     999
                 , .391
                                  , 0.0001
                                                             , inv_gamma_pdf , 0.354491
stderr ePMKC
                                                     999
                 , .552
                                  , 0.0001
                                                     999
stderr ePMKK
                                                            , inv_gamma_pdf , 0.354491
                                  , 0.0001
                                                            , inv_gamma_pdf , 1.772454
stderr eEFFECH
                , .526
                                                     999
stderr eEFFECD
                 , 13.349
                                                     999
                                                              inv_gamma_pdf , 1.772454
                                    0.0001
                 , .499
stderr eEFFK
                                    0.0001
                                                     999
                                                             , inv_gamma_pdf , 1.772454
stderr eB
                 , 0.5
                                    0.0001
                                                     999
                                                            , inv_gamma_pdf , 1.772454
                 , 0.05
stderr eSTAR
                                  , 0.0001
                                                     999
                                                            , inv_gamma_pdf , 0.354491
end;
```

options_.order = 1;

```
options_.jacobian_flag = 1;
options_.nonlin = 1;
stoch_simul(order=1,irf=40,nograph);
```

This code is written to file ${\tt srcedo/Dynare.edo.mod}$.

A.2 Dynare_edo_steadystate.m

```
18
      \langle srcedo/Dynare.edo.steadystate.m \ 18 \rangle \equiv
       function [ys,check] = unlinearized_edo_steadystate(ys,exe)
                global M_
       check = 0;
       NumberofParameters=M_.param_nbr;
       for i=1:NumberofParameters
            paramname=deblank(M_.param_names(i,:));
            eval([paramname ' =M_.params(' int2str(i) ');']);
       end:
       %start_steady_state;
       beta_0 = pbeta;
       beta_2 = pbeta*rpr; % s.s. funds rate premium
       beta_ = beta_2;
       MUZCSS=1;
       ONE=1;
       USS=1;
       MUKSS=MUZKSS*MUZMSS;
       MUCSS=MUZKSS^alpha_*MUZMSS;
       MUKSShabit=MUKSS;
       MUCSShabit=MUCSS;
       PKBSS=theta_k/(theta_k-1)*(theta_c-1)/theta_c;
       PYSS=1;
       MCCSS=(theta_c-1)/theta_c;
       MCKSS=(theta_k-1)/theta_k;
       RKSS=MUKSS/beta_2-(1-delta_);
       RCSS=MUKSS/beta_2-(1-delta_);
       RCHSS=MUCSS/beta_2-(1-delta_ch); % Housing sector
       RCDSS=MUKSS/beta_2-(1-delta_cd); % Durable sector
       USS=1;
       mu_=RCSS;
       AA=alpha_/RKSS*MCKSS;
       DD = 0.135;
       RR = 0.075;
       eta_cnn=1;
       eta_cd_eta_cnn=DD/((MUKSShabit-beta_2*h_cd)/(1-beta_2*h/MUCSShabit)*(1-h/MUCSShabit)
       eta_ch_eta_cnn=RR/((MUCSShabit-beta_2*h_ch)/(1-beta_2*h/MUCSShabit)*(1-h/MUCSShabit)
       eta_ch=eta_ch_eta_cnn;
       eta_cd=eta_cd_eta_cnn;
       DD=eta_cd_eta_cnn*(MUKSShabit-beta_2*h_cd)/(1-beta_2*h/MUCSShabit)*(1-h/MUCSShabit)/
```

RR=eta_ch_eta_cnn*(MUCSShabit-beta_2*h_ch)/(1-beta_2*h/MUCSShabit)*(1-h/MUCSShabit)/

```
Rnr=(1-(1-delta_)/MUKSS)*AA*MUKSS;
ycbi_ykb=((1-s_AS)-Rnr)/((DD*(1-s_AS)/(1+RR))+Rnr);
hc_hk=ycbi_ykb*(RCSS*MCKSS/(RKSS*MCCSS))^(alpha_/(1-alpha_));
HSS=0.25;
AHSS=HSS;
HKSS=HSS/(1+hc_hk);
HCSS=HSS-HKSS;
HrCSS=1/3;
HrKSS=1/3;
empCSS=HCSS/HrCSS;
empKSS=HKSS/HrKSS;
ycbi=HCSS*(AA)^(alpha_/(1-alpha_));
ykb=HKSS*(AA)^(alpha_/(1-alpha_));
YCSS=ycbi;
YKSS=ykb;
KCSS=AA*ycbi*MUKSS;
KKSS=AA*ykb*MUKSS;
ECHSS=RR/(1+RR)*ycbi*(1-s_AS);
ECSS=1/(1+RR)*ycbi*(1-s_AS);
ECDSS=DD*PKBSS*ECSS;
EIKSS=(1-(1-delta_)/MUKSS)*(KCSS+KKSS);
KCDSS=ECDSS/(1-(1-delta_cd)/MUKSS);
KCHSS=ECHSS/(1-(1-delta_ch)/MUCSS);
YYSS=(YCSS+YKSS*PKBSS)/PYSS;
s_k_ecd=ECDSS/YKSS;
s_c_ech=ECHSS/YCSS;
s_k_eik=EIKSS/YKSS;
s_{yc} = (YCSS/YYSS);
s_ecdc=PKBSS*ECDSS/(ECSS+PKBSS*ECDSS+(MUCSS/beta_2-1+delta_ch)*KCHSS);
INFCNASS=exp(.02/4);
INFCSS = INFCNASS*((MUZCSS/MUZKSS)^(1-alpha_))^(-s_ecdc);
INFCORSS=INFCNASS;
INFKSS=INFCSS*(MUZCSS/MUZKSS)^(1-alpha_);
INFWCSS=INFCSS*MUZKSS^alpha_*MUZMSS;
INFWKSS=INFWCSS;
RSS=INFCSS/beta_0*MUCSS;
RT2SS=exp(tp2)*RSS;
INFC10SS = INFCNASS;
IMPHSSS = RCHSS*KCHSS;
s_k=PKBSS*YKSS/YYSS;
INFGDPSS=INFCSS^(YCSS/YYSS)*INFKSS^(YKSS*PKBSS/(YYSS));
LSS=eta_cnn/(ECSS*(1-h/MUCSShabit))-eta_cnn*beta_2*h/(ECSS*(MUCSShabit-h));
WCSS=MCCSS*(1-alpha_)*YCSS/HCSS;
WKSS=MCKSS*(1-alpha_)*YKSS/HKSS;
xsiN_xsiH_C = ((HrCSS/empCSS)^(1+sigmah))/(1+1/sigmah);
xsiN_xsiH_K = ((HrKSS/empKSS)^(1+sigmah))/(1+1/sigmah);
```

```
gC = (1/(1+sigman) + 1/sigmah)*(xsiN_xsiH_C*(1+sigmah)/sigmah)^(-(1+sigman)/(1+sigman))
markup_xsiN_C = (HCSS^((1+sigmah)*(1+sigman)/(1+sigmah+sigman)-1))*gC/(LSS*WCSS);
gK = (1/(1+sigman) + 1/sigmah)*(xsiN_xsiH_K*(1+sigmah)/sigmah)^(-(1+sigman)/(1+sigman))
markup_xsiN_K = (HKSS^((1+sigmah)*(1+sigman)/(1+sigmah+sigman)-1))*gK/(LSS*WKSS);
markup_w = (1-unempSS)^((1+sigmah+sigman)/(1+sigmah) - 1 - sigman);
theta_wc = markup_w/(markup_w -1); theta_wk = theta_wc;
A_{HC=LSS*(theta_wc-1)/theta_wc*WCSS/(((1+sigman)/(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah)/(1+sigmah)*HCSS^(-1+(1+sigmah)/(1+sigmah)/(1+sigmah)/(1+sigmah)*HCSS^(-1+(1+sigmah)/(1+sigmah)/
A_{HK}=LSS*(theta_wk-1)/theta_wk*WKSS/(((1+sigman)/(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS
xsi_NC=A_HC/((1/(1+sigman)+1/sigmah)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^si
xsi_NK=A_HK/((1/(1+sigman)+1/sigmah)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman+sigmah)*(HKSS^sigman+sigmah)*(HKSS^sigman+sigmah)*(HKSS^sigman+sigmah)*(HKSS^sigman+sigmah)*(HKSS^sigman+sigmah)*(HKSS^sigman+sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^sigmah)*(HKSS^si
xsi_HrC=xsi_NC*(1+sigmah)/sigmah*(HCSS^sigman/HrCSS^(1+sigman+sigmah));
xsi_HrK=xsi_NK*(1+sigmah)/sigmah*(HKSS^sigman/HrKSS^(1+sigman+sigmah));
 UHCSS=A_HC*((1+sigman)/(1+sigman)/(1+sigman)))*HCSS^(-1+(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigm
 UHKSS=A_HK*((1+sigman)/(1+sigman)/(1+sigman)))*HKSS^(-1+(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigm
HSCSS = (WCSS * LSS / (A_HC * ((1+sigman)/(1+sigman/(1+sigmah)))))^{(1/(-1+(1+sigman)/(1+sigman))})
HSKSS=(WKSS*LSS/(A_HK*((1+sigman)/(1+sigman/(1+sigmah)))))^(1/(-1+(1+sigman)/(1+sigman)))
 empSCSS=((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(-1/(1+sigmah+sigman))*HSCSS^(1/(1+sigman,
 empSKSS=((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(-1/(1+sigmah+sigman))*HSKSS^(1/(1+sigman,
HrSCSS=HSCSS/empSCSS;
HrSKSS=HSKSS/empSKSS;
 \label{eq:uhscss} $$ UHSCSS=A_HC*((1+sigman)/(1+sigman/(1+sigman)))*HSCSS^(-1+(1+sigman)/(1+sigman/(1+sigman))). $$
 UHSKSS=A_HK*((1+sigman)/(1+sigman/(1+sigmah)))*HSKSS^{-1}+(1+sigman)/(1+sigman/(1+sigman))*HSKSS^{-1}+(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+si
unempSS=(empSCSS+empSKSS-(empCSS+empKSS))/(empSCSS+empSKSS);
QKSS=1;
QCDSS=1;
QCHSS=1;
UCSS=1;
UKSS=1;
XiBSS=1;
XiDSS=1;
XiHSS=1;
RL1SS=RSS;
RL2SS=RSS;
RL3SS=RSS;
RL4SS=RSS;
RL5SS=RSS;
RL6SS=RSS;
RL7SS=RSS;
DIFFREALECSS =exp( log(MUCSS));
DIFFREALEIKSS =exp( log(MUKSS));
DIFFREALECDSS =exp( log(MUKSS));
DIFFREALECHSS =exp( log(MUCSS));
DIFFREALWSS =exp( log(MUCSS) );
DIFFREALGDPSS =exp( (1-s_k)*log(MUCSS)+(s_k)*log(MUKSS));
%end_steady_state;
```

```
%trends;
DIFFREALGDPSS_obs=(1-s_k)*log(MUCSS)*100+(s_k)*log(MUKSS)*100;
DIFFREALECSS_obs=log(MUCSS)*100;
DIFFREALEIKSS_obs=log(MUKSS)*100;
DIFFREALECDSS_obs=log(MUKSS)*100;
DIFFREALECHSS_obs=log(MUCSS)*100;
DIFFREALWSS_obs=log(MUCSS)*100;
INFCNASS_obs=(1-s_ecdc)*log(INFCSS)*100+s_ecdc*log(INFKSS)*100;
INFCORSS_obs=(1-s_ecdc)*log(INFCSS)*100+s_ecdc*log(INFKSS)*100;
INFKSS_obs=log(INFCSS)*100-log(MUKSS)*100+log(MUCSS)*100;
RSS_obs=log(RSS)*100;
RT2SS_obs=log(RT2SS)*100;
unempSS_obs=100*log(unempSS);
%end_trends;
for i=1:NumberofParameters
    paramname=deblank(M_.param_names(i,:));
    eval(['M_.params(' int2str(i) ')=' paramname ';']);
end;
ys = [
RCSS
RKSS
WCSS
WKSS
YCSS
YKSS
MCCSS
MCKSS
KCSS
KKSS
PKBSS
RSS
LSS
QKSS
HCSS
HSCSS
HKSS
HSKSS
UHCSS
UHSCSS
```

UHKSS

UHSKSS

empCSS

HrCSS

empKSS

HrKSS

empSCSS

HrSCSS

empSKSS

HrSKSS

unempSS

EIKSS

ECSS

INFWCSS

INFWKSS

INFCSS

INFKSS

ONE

ONE

DIFFREALGDPSS

DIFFREALECSS

DIFFREALEIKSS

DIFFREALWSS

AHSS

INFGDPSS

INFCNASS

INFCORSS

ONE

ONE

INFC10SS

ECDSS

KCDSS

RCDSS

QCDSS

KCHSS

RCHSS

ECHSS

QCHSS

KCDSS

KCHSS

USS

USS

DIFFREALECHSS

DIFFREALECDSS

beta_

ONE

ONE ONE MUZKSS MUZMSS ONE MUCSS MUKSS ONE ONE ONE RL1SS RL2SS **RL3SS** RL4SS RL5SS RL6SS RL7SS RT2SS DIFFREALGDPSS_obs DIFFREALECSS_obs DIFFREALEIKSS_obs DIFFREALECDSS_obs DIFFREALECHSS_obs DIFFREALWSS_obs ONE INFCNASS_obs INFCORSS_obs INFKSS_obs RSS_obs RT2SS_obs unempSS_obs

This code is written to file srcedo/Dynare.edo.steadystate.m.

A.3 linearized.mod

 $\langle srcedo/linearized.mod 24 \rangle \equiv$

Var RC RK WC WK YC YK MCC MCK KC KK PKB R L QK HC HSC HK HSK UHC UHSC UHK UHSK en DIFFREALEGDP_obs DIFFREALEC_obs DIFFREALEIK_obs DIFFREALECD_obs DIFFREALECH_obs DIFFREALECH_

varexo eHG eXiL eLpref eR eMUZK eMUZM ePMKC ePMKK eEFFECH eEFFECD eEFFK eB eSTAR;

parameters

h r_inf r_y r_dy phi_pc phi_H phi_wc phi_ic phi_cd phi_ech gam_pc gam_wc gam_ic gam_rho_EFFECD rho_HG rho_EFFECH tp2 ONE MUZMSS MUZKSS r_dinf rpr phi_u rho_MUZK rho_MUZK rho_EFFECD rho_HG rho_EFFECH tp2 ONE MUZMSS MUZKSS r_dinf rpr phi_u rho_MUZK rho_MUZK rho_MUZK theta_k theta_wc theta_wk g_y a_ks s_AS gam_h gam_ech s_k s_ecdc eta_cnn eta_cd eta_icoef mu_ betarl MUZCSS RCSS RKSS WCSS WKSS YCSS YKSS MCCSS MCKSS KCSS KKSS LSS HCSS MUCSS MUKSS MUKSS MUKSS AHSS ECDSS KCDSS QCDSS RCDSS ECHSS KCHSS QCHSS RCHSS UKSS UCSS USS MUKSSI INFCNASS INFCORSS INFC10SS RT2SS beta_0 beta_2 beta_ PYSS AA DD RR eta_cd_eta_cnn eta_ch_eta_cnn Rnr ycbi_ykb hc_hk HSS ycbi ykb YYSS s_k_ecd s_c_ech s_sig_HG sig_XiL sig_lpref sig_R sig_MUZK sig_MUZM sig_PMKC sig_PMKK sig_EFFECH sig_EI HSKSS HSCSS HrCSS HrKSS A_HC sigman sigmah A_HK xsi_NC xsi_HrC xsi_NK xsi_HrK rho_Xil empCSS empKSS HrSKSS HrSCSS empSCSS empSKSS UHCSS UHKSS UHSCSS UHSKSS unempSS DIFFREALECHSS DIFFREALEIKSS DIFFREALECSS_obs DIFFREALEIKSS_obs DIFFREALECDSS_obs DIFFREALECDSS_obs DIFFREALECDSS_obs DIFFREALECDSS_obs DIFFREALECDSS_obs DIFFREALECDSS_obs RSS_obs RT2SS_obs unempSS_obs;

//estimated_params;

```
= 0.715162417869797;
r_inf
              = 1.46344163969035;
              = 0.263123294207851;
r_y
              = 3.54471453295450;
phi_pc
               = 3.22894079106560;
phi_H
phi_wc
              = 5.49395755514723;
              = 0.253308786976374;
phi_ic
phi_cd
               = 0.470089385005009;
               = 9.13986886546163;
phi_ech
               = 0.314488926051065;
gam_pc
              = -0.230018833252054;
gam_wc
               = 39.4075260618789;
sigman
               = 21.8859803402692;
sigmah
rho_R
               = 0.833200065745674;
rho_XiL
              = 0.263567746111198;
rho_lpref
               = 0.979092048897712;
rho_B
               = 0.895267027146152;
```

June 26, 2016

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frbusEDO.nw
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```
rho_STAR
                = 0.909187927454138;
rho_EFFK
               = 0.937829274540004;
rho_EFFECD
               = -0.240286975088701;
{\tt rho\_HG}
               = 0.582395471123139;
rho_EFFECH
               = 0.877235725078934;
tp2
               = 0.000307314910763576;
sig_HG = 0.5/931593160001.
sig_XiL = 2.49313873916751;
sig_lpref = 5.66476748114241;
               = 0.579315931803017;
               = 0.124100461010359;
sig_R
sig_MUZK
               = 0.936167718269030;
sig_MUZM
               = 0.597390920898135;
sig_PMKC
                = 0.451830653200989;
sig_PMKK
                = 0.685376191952156;
sig_EFFECH = 0.514704527091087;
sig_EFFECD = 9.11199585973990;
sig_EFFK
                 = 0.402779878811407;
sig_B
                 = 0.295232712196573;
                 = 0.104877885500673;
sig_STAR
//end_estimated_params;
//calibrated_params;
r_dy = 0;
ONE = 1;
MUZKSS = 1.009250;
MUZMSS = 1.001000;
gam_ic = 1.0;
gam_icd = 1.0;
r_dinf = 0;
rpr = 0.965;
phi_u = 1;
rho_MUZK = 0;
rho_MUZM = 0;
pbeta = 0.99862;
delta_ = 0.03;
h_cd = 0.0;
h_ch = 0.0;
delta_cd = 0.055;
delta_ch = 0.0035;
alpha_ = 0.26;
theta_c = 7;
theta_k = 7;
unempSS = .06;
g_y = 0.0;
a_ks = 0.2;
s_AS = 0.2;
```

 $gam_h = 1;$

```
gam_ech = 1;
icoef = 3;
betarl = .958;
//end_calibrated_params;
//free_params;
//A_HC;
//A_HK;
//xsi_NC;
//xsi_HrC;
//xsi_NK;
//xsi_HrK;
//theta_wc;
//theta_wk;
//infkbar;
//infcbar;
//infwcbar;
//infwkbar;
//Pybar;
//Yybar;
//mu_yc;
//mu_yk;
//s_k;
//s_ecdc;
//eta_cnn;
//eta_cd;
//eta_ch;
//mu_;
//end_free_params;
//calibrated ME
//***************
//MODEL BLOCK
//***************
 (RCSS*exp(RC))-(MCCSS*exp(MCC))*(YCSS*exp(YC))/(USS*exp(UC))/(KCSS*exp(KC(-1)))*alphatical part of the property of the prope
 (RKSS*exp(RK))-(MCKSS*exp(MCK))*(YKSS*exp(YK))/(USS*exp(UK))/(KKSS*exp(KK(-1)))*alphatical statement (MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKSS*exp(MCK))*(MCKS
  (\mbox{WCSS*exp(WC)}) - (\mbox{MCCSS*exp(MCC)}) * (\mbox{YCSS*exp(YC)}) / (\mbox{HCSS*exp(HC)}) * (1-\mbox{alpha}_{\mbox{\sc op}}) = 0; 
 (WKSS*exp(WK))-(MCKSS*exp(MCK))*(YKSS*exp(YK))/(HKSS*exp(HK))*(1-alpha_)=0;
 (YCSS*exp(YC))-((USS*exp(UC))*(KCSS*exp(KC(-1)))/(MUKSS*exp(MUK)))^alpha_*((HCSS*exp(UC)))
 (YKSS*exp(YK))-((USS*exp(UK))*(KKSS*exp(KK(-1)))/(MUKSS*exp(MUK)))^alpha_*((HKSS*exp
 (MCCSS*exp(MCC))*(YCSS*exp(YC))*theta_c-(theta_c-1)*(YCSS*exp(YC))-100*phi_pc*((INFC)
```

```
(MCKSS*exp(MCK))*(YKSS*exp(YK))*theta_k/(PKBSS*exp(PKB))-(theta_k-1)*(YKSS*exp(YK))-100*phi_pc*
  (QKSS*exp(QK))-beta_*(1/(ONE*exp(EFFK)))*(((1-delta_)*(QKSS*exp(QK(+1)))+(RCSS*exp(RC(+1)))*(US
  (QKSS*exp(QK))-beta_*(1/(ONE*exp(EFFK)))*(((1-delta_)*(QKSS*exp(QK(+1)))+(RKSS*exp(RK(+1)))*(US
 (LSS*exp(L))-(beta_*exp(betas))*(RSS*exp(R))/rpr/(INFCSS*exp(INFC(+1)))/(MUCSS*exp(MUC(+1)))*(INFCSS*exp(L))-(beta_*exp(betas))*(RSS*exp(R))/rpr/(INFCSS*exp(INFC(+1)))/(MUCSS*exp(MUC(+1)))*(INFCSS*exp(L))/(INFCSS*exp(L))/(INFCSS*exp(L))/(INFCSS*exp(L))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1)))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp(MUC(+1))/(INFCSS*exp
ln((RSS*exp(R))/RSS)-rho_R*ln((RSS*exp(R(-1)))/RSS)-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNA))/RSS))-(1-rho_R)*(r_inf*ln((INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFCNASS*exp(INFC
 (LSS*exp(L))-eta\_cnn/((ECSS*exp(EC))-h*(ECSS*exp(EC(-1)))/(MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta\_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta\_cnn*beta_*h/((MUCSS*exp(MUC)))+eta_*h/((MUCSS*exp(MUC)))+eta_*h/((MUCSS*exp(MUC)))+eta_*h/((MUCSS*exp(MUC))+eta_*h/((MUCSS*exp(MUC)))+eta_*h/((MUCSS*exp(MUC)))+eta_*h/((MUCSS*exp(
 (KKSS*exp(KK))-(1-delta_)*(KKSS*exp(KK(-1)))/(MUKSS*exp(MUK))+(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(KK(-1)))/(MUKSS*exp(MUK))+(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(KK(-1)))/(MUKSS*exp(MUK))+(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(KK(-1)))/(MUKSS*exp(MUK))+(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(KK(-1)))/(MUKSS*exp(MUK))+(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(KK(-1)))/(MUKSS*exp(MUK))+(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(MUK))+(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(MUK))+(KCSS*exp(KC))-(1-delta_)*(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+(KCSS*exp(MUK))+
// XXXXXXXXXXXXXXXXXXXXXXXXXXX
// labor block
// TOTAL LABOR INPUT (called "(LSS*exp(L))" in the paper, I kept the "H" notation of the origin
-100+(UHCSS*exp(UHC))*theta_wc-(theta_wc-1)*(WCSS*exp(WC))-100*phi_wc*((INFWCSS*exp(INFWC))-gam
 (UHSCSS*exp(UHSC)) - (WCSS*exp(WC)) + phi_H/10*((HSCSS*exp(HSC))/(HSKSS*exp(HSK)) - gam_h*(HSCSS*exp(WC)) + phi_H/10*((HSCSS*exp(HSC))/(HSKSS*exp(HSK)) - gam_h*(HSCSS*exp(HSC))/(HSKSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSKSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSCSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSCSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSCSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSCSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSCSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSCSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSCSS*exp(HSC)) + phi_H/10*((HSCSS*exp(HSC))/(HSC)) + phi_H/10*((HSCSS*exp(HSC
 -100+(UHKSS*exp(UHK))*theta_wk-(theta_wk-1)*(WKSS*exp(WK))-100*phi_wc*((INFWKSS*exp(INFWK))-gam
  (UHSKSS*exp(UHSK))-(WKSS*exp(WK))-phi_H/10*((HSCSS*exp(HSC))/(HSKSS*exp(HSK))-gam_h*(HSCSS*exp(
  (UHCSS*exp(UHC))*(LSS*exp(L))*(ONE*exp(Lpref))-A_HC*((1+sigman)/(1+sigman/(1+sigmah)))*((HCSS*exp(UHC))*(DHCSS*exp(LHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHCSS*exp(UHC))*(DHC
   (UHSCSS*exp(UHSC))*(LSS*exp(L))*(ONE*exp(Lpref))-A_HC*((1+sigman)/(1+sigman/(1+sigmah)))*((HSCS
  (UHKSS*exp(UHK))*(LSS*exp(L))*(ONE*exp(Lpref))-A_HK*((1+sigman)/(1+sigman/(1+sigmah)))*((HKSS*exp(UHK))*(UHKSS*exp(UHK))*(UHKSS*exp(UHK))*(UHKSS*exp(UHK))*(UHKSS*exp(UHK))*(UHKSS*exp(UHK))*(UHKSS*exp(UHK))*(UHKSS*exp(UHK))*(UHKSS*exp(UHK))*(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS*exp(UHKSS
   (UHSKSS*exp(UHSK))*(LSS*exp(L))*(ONE*exp(Lpref))-A_HK*((1+sigman)/(1+sigman/(1+sigmah)))*((HSKS
   (empCSS*exp(empC))-((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(-1/(1+sigmah+sigman))*(HCSS*exp(HC))^(1/
   (HrCSS*exp(HrC))-((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empCSS*exp(empC))^(sigman/
  (empKSS*exp(empK))-((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(-1/(1+sigmah+sigman))*(HKSS*exp(HK))^(1/
   (HrKSS*exp(HrK))-((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empKSS*exp(empK))^(sigman/
   (empSCSS*exp(empSC))-((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(-1/(1+sigmah+sigman))*(HSCSS*exp(HSC))
  (HrSCSS*exp(HrSC))-((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(1/(1+sigmah))*(empSCSS*exp(empSC))^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_HrC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)^(sigmah*xsi_NC/xsi_NC)
  (empSKSS*exp(empSK))-((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(-1/(1+sigmah+sigman))*(HSKSS*exp(HSK))
  (HrSKSS*exp(HrSK))-((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))^(sigmah*xsi_NK/xsi_HrK)^(1/(1+sigmah))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(empSK))*(empSKSS*exp(em
   (unempSS*exp(unemp))-((empSCSS*exp(empSC))+(empSKSS*exp(empSK))-((empCSS*exp(empC))+(empKSS*exp
  (PKBSS*exp(PKB))-(1-100*phi_ic*((EIKSS*exp(EIK))-gam_ic*(EIKSS*exp(EIK(-1)))-(1-gam_ic)*EIKSS)/
  (YCSS*exp(YC))-(ECSS*exp(EC))-(ECHSS*exp(ECH))-0.2*YCSS*(ONE*exp(HG))=0;
ln((INFWCSS*exp(INFWC))) - ln((WCSS*exp(WC))) + ln((WCSS*exp(WC(-1)))) - ln((MUCSS*exp(MUC))) - ln((INFWCSS*exp(WC)))) + ln((MUCSS*exp(MUC))) - ln((MUCSS*exp(MUC))) - ln((MUCSS*exp(MUC)))) + ln((MUCSS*exp(MUC))) + ln((MUCSS*exp
ln((INFWKSS*exp(INFWK)))-ln((WKSS*exp(WK)))+ln((WKSS*exp(WK(-1))))-ln((MUCSS*exp(MUC)))-ln((INFWKSS*exp(WK))))+ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC)))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))-ln((MUCSS*exp(MUC))
ln((INFKSS*exp(INFK)))-ln((INFCSS*exp(INFC)))-ln((PKBSS*exp(PKB)))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1))))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKB(-1)))+ln((PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((PKBSS*exp(PKB(-1)))+ln((P
 (YKSS*exp(YK))-(EIKSS*exp(EIK))-(ECDSS*exp(ECD))-0.2*YKSS*(ONE*exp(HG))=0;
ln((ONE*exp(DIFFNORMGDP))) - (1-s_k)*(ln((YCSS*exp(YC))) - ln((YCSS*exp(YC(-1))))) - s_k*(ln((YKSS*exp(YC))) - ln((YCSS*exp(YC(-1)))))) - s_k*(ln((YKSS*exp(YC))) - ln((YCSS*exp(YC))))) - ln((YCSS*exp(YC(-1)))))) - s_k*(ln((YKSS*exp(YC))) - ln((YCSS*exp(YC))))) - ln((YCSS*exp(YC)))) - ln((YCSS*exp(YC(-1)))))) - s_k*(ln((YKSS*exp(YC))) - ln((YCSS*exp(YC)))))) - ln((YCSS*exp(YC)))) - ln((YCSS*exp(YC))) - ln((YCSS*exp(YC)))) - ln((YCSS*exp(YC)))) - ln((YCSS*exp(YC)))) - ln((YCSS*exp(YC))) - ln((YCSS*exp(YC)))) - ln((YCSS*exp(YC))) - ln((YCSS*exp(YC)))) - ln((YCSS*exp(YC))) - ln((YCSS*exp(YC))
ln((ONE*exp(NORMINFGDP))) - s_k*(ln((PKBSS*exp(PKB))) - ln((PKBSS*exp(PKB(-1))))) = 0;
ln((DIFFREALGDPSS*exp(DIFFREALGDP)))-ln((ONE*exp(DIFFNORMGDP)))-(1-s_k)*ln((MUCSS*exp(MUC)))-s_
ln((DIFFREALECSS*exp(DIFFREALEC)))-ln((ECSS*exp(EC)))+ln((ECSS*exp(EC(-1))))-ln((MUCSS*exp(MUC)
ln((DIFFREALEIKSS*exp(DIFFREALEIK)))-ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK(-1))))-ln((MUKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK)))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EIKSS*exp(EIK))+ln((EI
// Identities
ln((DIFFREALWSS*exp(DIFFREALW)))-HCSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWKSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC))))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC)))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC)))-HKSS/AHSS*(ln((INFWCSS*exp(INFWC)))-HKSS*(INFWC))-HKS*(INFWC)-HKS*(INFWC))-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS*(INFWC)-HKS
// XXXXXXXXXXXXXXXXXXXXXX
// Aggregate hours equals agg hours in each sector
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(AHSS*exp(AH))-(HCSS*exp(HC))-(HKSS*exp(HK))=0;
ln((INFGDPSS*exp(INFGDP)))-ln((INFCSS*exp(INFC)))-ln((YCSS*exp(YC))*(MUCSS*exp(MUC)),
ln((INFCNASS*exp(INFCNA)))-(1-s_ecdc)*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))
ln((INFCORSS*exp(INFCOR)))-(1-s_ecdc)*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFKSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC))-s_ecdc*ln((INFCSS*exp(INFC)))-s_ecdc*ln((INFCSS*exp(INFC))-s_ecdc*
ln((ONE*exp(GAP)))-(1-s_k)*ln((YCSS*exp(YC))/YCSS)-s_k*ln((YKSS*exp(YK))/YKSS)=0;
ln((ONE*exp(PFGAP)))-(1-alpha_)*((1-s_k)*ln((HCSS*exp(HC))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK))/HCSS)+s_k*ln((HKSS*exp(HK
ln((INFC10SS*exp(INFC10)))-betarl*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1))))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC10SS*exp(INFC10(+1)))-(1-betarl)*ln((INFC1
// See Section 8: Data Identities
// new equations
// Durable Block
 (KCDSS*exp(KD))-(1-delta_cd)*(KCDSS*exp(KD(-1)))/(MUKSS*exp(MUK))-(ECDSS*exp(ECD))=0
 (LSS*exp(L))*(RCDSS*exp(RCD))-eta_cd/((KCDSS*exp(KD(-1)))/(MUKSS*exp(MUK))-h_cd*(KCDS))
 (QCDSS*exp(QCD))-beta_*(1/(ONE*exp(EFFECD)))*(LSS*exp(L(+1)))/(LSS*exp(L))/(MUKSS*exp
 (PKBSS*exp(PKB))-(QCDSS*exp(QCD))*(1-100*phi_cd*((ECDSS*exp(ECD))-gam_icd*(ECDSS*exp
// Housing Block
 (LSS*exp(L))*(RCHSS*exp(RCH))-eta_ch/((KCHSS*exp(KCH(-1)))/(MUCSS*exp(MUC))-h_ch*(KCH)
 (QCHSS*exp(QCH))-beta_*(1/(ONE*exp(EFFECH)))*(LSS*exp(L(+1)))/(LSS*exp(L))/(MUCSS*exp
 1*(ECHSS*exp(ECH))+(1-delta_ch)*(KCHSS*exp(KCH(-1)))/(MUCSS*exp(MUC))-(KCHSS*exp(KCH
 1-(QCHSS*exp(QCH))*(1-100*phi_ech*((ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH(-1)))-(1-phi_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH(-1)))-(1-phi_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam_ech*(ECHSS*exp(ECH))-gam
ln((KCDSS*exp(KD(-1))))-ln((KCDSS*exp(LAGKD)))=0;
ln((KCHSS*exp(KCH(-1))))-ln((KCHSS*exp(LAGKCH)))=0;
 (RKSS*exp(RK))-(QKSS*exp(QK))*mu_*(USS*exp(UK))^(1/phi_u)=0;
 (RCSS*exp(RC))-(QKSS*exp(QK))*mu_*(USS*exp(UC))^(1/phi_u)=0;
ln((DIFFREALECHSS*exp(DIFFREALECH)))-ln((MUCSS*exp(MUC)))-ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH)))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS*exp(ECH))+ln((ECHSS
ln((DIFFREALECDSS*exp(DIFFREALECD)))-ln((MUKSS*exp(MUK)))-ln((ECDSS*exp(ECD)))+ln((E
ln((beta_*exp(betas))/beta_)-rho_B*ln((beta_*exp(betas(-1)))/beta_)-eB=0;
ln((ONE*exp(XiL)))-rho_XiL*ln((ONE*exp(XiL(-1))))-eXiL=0;
ln((ONE*exp(Lpref)))-rho_lpref*ln((ONE*exp(Lpref(-1))))-eLpref=0;
ln((ONE*exp(EFFK)))-rho_EFFK*ln((ONE*exp(EFFK(-1))))-eEFFK=0;
ln((MUZKSS*exp(MUZK))/MUZKSS)-eMUZK=0;
ln((MUZMSS*exp(MUZM))/MUZMSS)-eMUZM=0;
ln((ONE*exp(HG)))-rho_HG*ln((ONE*exp(HG(-1))))-eHG=0;
ln((MUCSS*exp(MUC)))-ln((MUZMSS*exp(MUZM)))-alpha_*ln((MUZKSS*exp(MUZK)))=0;
ln((MUKSS*exp(MUK)))-ln((MUZMSS*exp(MUZM)))-ln((MUZKSS*exp(MUZK)))=0;
ln((ONE*exp(EFFECD)))-rho_EFFECD*ln((ONE*exp(EFFECD(-1))))-eEFFECD=0;
ln((ONE*exp(STAR)))-rho_STAR*ln((ONE*exp(STAR(-1))))-eSTAR=0;
ln((RL1SS*exp(RL1))) - ln((RSS*exp(R(+1))))=0;
ln((RL2SS*exp(RL2))) - ln((RL1SS*exp(RL1(+1))))=0;
ln((RL3SS*exp(RL3))) - ln((RL2SS*exp(RL2(+1))))=0;
ln((RL4SS*exp(RL4))) - ln((RL3SS*exp(RL3(+1))))=0;
ln((RL5SS*exp(RL5))) - ln((RL4SS*exp(RL4(+1))))=0;
```

```
ln((RL6SS*exp(RL6))) - ln((RL5SS*exp(RL5(+1))))=0;
ln((RL7SS*exp(RL7))) - ln((RL6SS*exp(RL6(+1))))=0;
ln((RT2SS*exp(RT2))) - tp2 - 0.125*(ln((RSS*exp(R))) + ln((RL1SS*exp(RL1))) + ln((RL2SS*exp(RL2)))) + ln((RL2SS*exp(RL2))) + ln((RL2SS*exp(RL2)) + ln((RL2SS*e
//measurement_equations;
DIFFREALGDP_obs = DIFFREALGDP + DIFFREALGDPSS_obs;
DIFFREALEC_obs = DIFFREALEC + DIFFREALECSS_obs;
DIFFREALEIK_obs = DIFFREALEIK + DIFFREALEIKSS_obs;
DIFFREALECD_obs = DIFFREALECD + DIFFREALECDSS_obs;
DIFFREALECH_obs = DIFFREALECH + DIFFREALECHSS_obs;
DIFFREALW_obs = DIFFREALW + DIFFREALWSS_obs;
AH_{obs} = AH;
INFCNA_obs = INFCNA + INFCNASS_obs;
INFCOR_obs = INFCOR + INFCORSS_obs;
INFK_obs = INFK + INFKSS_obs;
R_{obs} = R + RSS_{obs};
RT2_{obs} = RT2 + RT2SS_{obs};
unemp_obs = unemp + unempSS_obs;
//end_measurement_equations;
end;
varobs DIFFREALEGDP_obs DIFFREALEC_obs DIFFREALEIK_obs DIFFREALECD_obs DIFFREALECH_obs DIFFREALW
shocks;
var eHG;
stderr sig_HG;
var eXiL;
stderr sig_XiL;
var eLpref;
stderr sig_lpref;
var eR;
stderr sig_R;
var eMUZK;
stderr sig_MUZK;
var eMUZM;
stderr sig_MUZM;
var ePMKC;
stderr sig_PMKC;
var ePMKK;
stderr sig_PMKK;
var eEFFECH;
stderr sig_EFFECH;
var eEFFECD;
stderr sig_EFFECD;
```

```
var eEFFK;
stderr sig_EFFK;
var eB;
stderr sig_B;
var eSTAR;
stderr sig_STAR;
var DIFFREALGDP_obs;
stderr 0.3;
var DIFFREALEC_obs;
stderr 0.1;
var DIFFREALEIK_obs;
stderr 1.5;
var DIFFREALECD_obs;
stderr 1.5;
var DIFFREALECH_obs;
stderr 1.5;
var DIFFREALW_obs;
stderr 0.3;
var AH_obs;
stderr 0.3;
var INFCNA_obs;
stderr 0.5;
var INFCOR_obs;
stderr 0.05;
var INFK_obs;
stderr 0.2;
var RT2_obs;
stderr 0.1;
var unemp_obs;
stderr 4;
end;
steady;
estimated_params;
                              , -1
                                             , 1
             , .673
                                                                     ,,,-1
h
                                                     , uniform_pdf
             , 1.461
                              , -999
                                             , 999
                                                    , normal_pdf
r_inf
                                                                     , 1.5000
             , 0.214
                              , -999
                                            , 999
                                                    , normal_pdf
                                                                     , 0.125
r_y
                              , 0
                                             , 999
             , 3.126
                                                    , gamma_pdf
                                                                     , 4.0000
phi_pc
                              , 0
                                             , 999
phi_H
              , 4.064
                                                    , gamma_pdf
                                                                     , 4.0000
             , 5.119
                              , 0
                                             , 999
phi_wc
                                                     , gamma_pdf
                                                                     , 4.0000
                              , 0
phi_ic
             , .325
                                             , 999
                                                      , gamma_pdf
                                                                     , 4.0000
                              , 0
              , .651
                                              , 999
                                                      , gamma_pdf
                                                                     , 4.0000
phi_cd
phi_ech
               , 10.948
                              , 0
                                              , 999
                                                      , gamma_pdf
                                                                     , 4.0000
```

```
, 0.386
                                  , -999
                                                   , 999
                                                           , normal_pdf
                                                                            , 0.000
                                                                                             , 0.250
gam_pc
                 , 0.213
                                  , -999
                                                   , 999
                                                                            , 0.000
                                                           , normal_pdf
                                                                                             , 0.250
gam_wc
                                  , 0
                                                   , 999
                                                                            , 1.25
                                                                                             , 12.5
sigman
                 , 1.25
                                                           , gamma_pdf
                                  , 0
                 , 10
                                                  , 999
                                                                            , 10
                                                                                             , 100^.
                                                           , gamma_pdf
sigmah
rho_R
                , 0.654
                                  , -1
                                                  , 1
                                                           , normal_pdf
                                                                            , 0.5
                                                                                             , 0.25;
                , 0.654
                                  , -1
                                                   , 1
                                                                            , 0.5
rho_XiL
                                                           , normal_pdf
                                                                                             , 0.25;
                                  , -1
                                                  , 1
                                                                            , 0.5
                                                                                             , 0.25;
rho_lpref
                 , 0.954
                                                           , normal_pdf
                                  , -1
                                                  , 1
                                                                            , 0
rho_B
                 , 0.825
                                                           , normal_pdf
                                                                                             , 0.5;
                                                  , 1
                                                                            , 0
rho_STAR
                 , 0.825
                                  , -1
                                                           , normal_pdf
                                                                                             , 0.5;
                                                  , 1
                                                                            , 0
rho_EFFK
                 , 0.850
                                  , -1
                                                           , normal_pdf
                                                                                             , 0.5;
rho_EFFECD
                 , .230
                                  , -1
                                                  , 1
                                                           , normal_pdf
                                                                            , 0
                                                                                             , 0.5;
rho_HG
                 , 0.596
                                  , 0
                                                  , 1
                                                           , beta_pdf
                                                                            , 0.5
                                                                                             , 0.015
                                                                            , 0
rho_EFFECH
                 , 0.844
                                  , -1
                                                   , 1
                                                           , normal_pdf
                                                                                             , 0.5;
                 , 0.001
                                  , -999
                                                   , 999
                                                                            , 0.0
                                                                                             , 0.000
tp2
                                                           , normal_pdf
                                                   , 999
stderr eHG
                 , .745
                                  , 0.0001
                                                           , inv_gamma_pdf , 1.772454
                                                                                             , Inf;
stderr eXiL
                 , 3.621
                                  , 0.0001
                                                   , 999
                                                           , inv_gamma_pdf , 1.772454
                                                                                             , Inf;
stderr eLpref
                 , 1.621
                                  , 0.0001
                                                   , 999
                                                           , inv_gamma_pdf , 1.772454
                                                                                             , Inf;
                                                           , inv_gamma_pdf , 0.354491
                 , 0.165
                                 , 0.0001
                                                   , 999
stderr eR
                                                                                             , Inf;
stderr eMUZK
                 , .834
                                , 0.0001
                                                  , 999
                                                           , inv_gamma_pdf , 0.443113
                                                                                             , Inf;
                 , .484
                                , 0.0001
                                                   , 999
stderr eMUZM
                                                           , inv_gamma_pdf , 0.443113
                                                                                             , Inf;
stderr ePMKC
                 , .391
                                , 0.0001
                                                  , 999
                                                           , inv_gamma_pdf , 0.354491
                                                                                             , Inf;
stderr ePMKK
                 , .552
                                 , 0.0001
                                                  , 999
                                                           , inv_gamma_pdf , 0.354491
                                                                                             , Inf;
stderr eEFFECH
                                                  , 999
                                                           , inv_gamma_pdf , 1.772454
                , .526
                                 , 0.0001
                                                                                             , Inf;
                                                   , 999
stderr eEFFECD
                 , 13.349
                                  , 0.0001
                                                           , inv_gamma_pdf , 1.772454
                                                                                             , Inf;
                                                  , 999
stderr eEFFK
                 , .499
                                  , 0.0001
                                                           , inv_gamma_pdf , 1.772454
                                                                                             , Inf;
stderr eB
                 , 0.5
                                  , 0.0001
                                                    999
                                                           , inv_gamma_pdf , 1.772454
                                                                                             , Inf;
stderr eSTAR
                 , 0.05
                                  , 0.0001
                                                   , 999
                                                           , inv_gamma_pdf , 0.354491
                                                                                             , Inf;
end;
options_.order = 1;
options_.jacobian_flag = 1;
options_.nonlin = 1;
```

This code is written to file srcedo/linearized.mod.

stoch_simul(order=1,irf=40,nograph);

A.4 linearized_steadystate.m

```
32
      \langle srcedo/linearized.steadystate.m \ 32 \rangle \equiv
       function [ys,check] = linearized_steadystate(ys,exe)
                global M_
       check = 0;
       NumberofParameters=M_.param_nbr;
       for i=1:NumberofParameters
            paramname=deblank(M_.param_names(i,:));
            eval([paramname ' =M_.params(' int2str(i) ');']);
       end:
       %start_steady_state;
       beta_0 = pbeta;
       beta_2 = pbeta*rpr; % s.s. funds rate premium
       beta_ = beta_2;
       MUZCSS=1;
       ONE=1;
       USS=1;
       MUKSS=MUZKSS*MUZMSS;
       MUCSS=MUZKSS^alpha_*MUZMSS;
       MUKSShabit=MUKSS;
       MUCSShabit=MUCSS;
       PKBSS=theta_k/(theta_k-1)*(theta_c-1)/theta_c;
       PYSS=1;
       MCCSS=(theta_c-1)/theta_c;
       MCKSS=(theta_k-1)/theta_k;
       RKSS=MUKSS/beta_2-(1-delta_);
       RCSS=MUKSS/beta_2-(1-delta_);
       RCHSS=MUCSS/beta_2-(1-delta_ch); % Housing sector
       RCDSS=MUKSS/beta_2-(1-delta_cd); % Durable sector
       USS=1;
       mu_=RCSS;
       AA=alpha_/RKSS*MCKSS;
       DD = 0.135;
       RR = 0.075;
       eta_cnn=1;
       eta_cd_eta_cnn=DD/((MUKSShabit-beta_2*h_cd)/(1-beta_2*h/MUCSShabit)*(1-h/MUCSShabit)
       eta_ch_eta_cnn=RR/((MUCSShabit-beta_2*h_ch)/(1-beta_2*h/MUCSShabit)*(1-h/MUCSShabit)
       eta_ch=eta_ch_eta_cnn;
       eta_cd=eta_cd_eta_cnn;
       DD=eta_cd_eta_cnn*(MUKSShabit-beta_2*h_cd)/(1-beta_2*h/MUCSShabit)*(1-h/MUCSShabit)/
```

RR=eta_ch_eta_cnn*(MUCSShabit-beta_2*h_ch)/(1-beta_2*h/MUCSShabit)*(1-h/MUCSShabit)/

```
Rnr=(1-(1-delta_)/MUKSS)*AA*MUKSS;
ycbi_ykb=((1-s_AS)-Rnr)/((DD*(1-s_AS)/(1+RR))+Rnr);
hc_hk=ycbi_ykb*(RCSS*MCKSS/(RKSS*MCCSS))^(alpha_/(1-alpha_));
HSS=0.25;
AHSS=HSS;
HKSS=HSS/(1+hc_hk);
HCSS=HSS-HKSS;
HrCSS=1/3;
HrKSS=1/3;
empCSS=HCSS/HrCSS;
empKSS=HKSS/HrKSS;
ycbi=HCSS*(AA)^(alpha_/(1-alpha_));
ykb=HKSS*(AA)^(alpha_/(1-alpha_));
YCSS=ycbi;
YKSS=ykb;
KCSS=AA*ycbi*MUKSS;
KKSS=AA*ykb*MUKSS;
ECHSS=RR/(1+RR)*ycbi*(1-s_AS);
ECSS=1/(1+RR)*ycbi*(1-s_AS);
ECDSS=DD*PKBSS*ECSS;
EIKSS=(1-(1-delta_)/MUKSS)*(KCSS+KKSS);
KCDSS=ECDSS/(1-(1-delta_cd)/MUKSS);
KCHSS=ECHSS/(1-(1-delta_ch)/MUCSS);
YYSS=(YCSS+YKSS*PKBSS)/PYSS;
s_k_ecd=ECDSS/YKSS;
s_c_ech=ECHSS/YCSS;
s_k_eik=EIKSS/YKSS;
s_{yc} = (YCSS/YYSS);
s_ecdc=PKBSS*ECDSS/(ECSS+PKBSS*ECDSS+(MUCSS/beta_2-1+delta_ch)*KCHSS);
INFCNASS=exp(.02/4);
INFCSS = INFCNASS*((MUZCSS/MUZKSS)^(1-alpha_))^(-s_ecdc);
INFCORSS=INFCNASS;
INFKSS=INFCSS*(MUZCSS/MUZKSS)^(1-alpha_);
INFWCSS=INFCSS*MUZKSS^alpha_*MUZMSS;
INFWKSS=INFWCSS;
RSS=INFCSS/beta_0*MUCSS;
RT2SS=exp(tp2)*RSS;
INFC10SS = INFCNASS;
IMPHSSS = RCHSS*KCHSS;
s_k=PKBSS*YKSS/YYSS;
INFGDPSS=INFCSS^(YCSS/YYSS)*INFKSS^(YKSS*PKBSS/(YYSS));
LSS=eta_cnn/(ECSS*(1-h/MUCSShabit))-eta_cnn*beta_2*h/(ECSS*(MUCSShabit-h));
WCSS=MCCSS*(1-alpha_)*YCSS/HCSS;
WKSS=MCKSS*(1-alpha_)*YKSS/HKSS;
xsiN_xsiH_C = ((HrCSS/empCSS)^(1+sigmah))/(1+1/sigmah);
xsiN_xsiH_K = ((HrKSS/empKSS)^(1+sigmah))/(1+1/sigmah);
```

```
gC = (1/(1+sigman) + 1/sigmah)*(xsiN_xsiH_C*(1+sigmah)/sigmah)^(-(1+sigman)/(1+sigman))
markup_xsiN_C = (HCSS^((1+sigmah)*(1+sigman)/(1+sigmah+sigman)-1))*gC/(LSS*WCSS);
gK = (1/(1+sigman) + 1/sigmah)*(xsiN_xsiH_K*(1+sigmah)/sigmah)^(-(1+sigman)/(1+sigman))
markup_xsiN_K = (HKSS^((1+sigmah)*(1+sigman)/(1+sigmah+sigman)-1))*gK/(LSS*WKSS);
markup_w = (1-unempSS)^((1+sigmah+sigman)/(1+sigmah) - 1 - sigman);
theta_wc = markup_w/(markup_w -1); theta_wk = theta_wc;
A_{HC=LSS*(theta_wc-1)/theta_wc*WCSS/(((1+sigman)/(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigman)/(1+sigmah)))*HCSS^(-1+(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah)))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah))*HCSS^(-1+(1+sigmah)/(1+sigmah)/(1+sigmah)*HCSS^(-1+(1+sigmah)/(1+sigmah)/(1+sigmah)/(1+sigmah)*HCSS^(-1+(1+sigmah)/(1+sigmah)/
A_{HK}=LSS*(theta_wk-1)/theta_wk*WKSS/(((1+sigman)/(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigman)/(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah)))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS^(-1+(1+sigmah))*HKSS
xsi_NC=A_HC/((1/(1+sigman)+1/sigmah)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman/HrCSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigman+sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^sigmah)*(HCSS^si
xsi_NK=A_HK/((1/(1+sigman)+1/sigmah)*(HKSS^sigman/HrKSS^(1+sigman+sigmah))^((1+sigman)+1/sigman)*(HKSS^sigman/HrKSS^(1+sigman))
xsi_HrC=xsi_NC*(1+sigmah)/sigmah*(HCSS^sigman/HrCSS^(1+sigman+sigmah));
xsi_HrK=xsi_NK*(1+sigmah)/sigmah*(HKSS^sigman/HrKSS^(1+sigman+sigmah));
 UHCSS=A_HC*((1+sigman)/(1+sigman)/(1+sigman)))*HCSS^(-1+(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigm
 UHKSS=A_HK*((1+sigman)/(1+sigman)/(1+sigman)))*HKSS^(-1+(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigm
HSCSS=(WCSS*LSS/(A_HC*((1+sigman)/(1+sigman/(1+sigmah)))))^(1/(-1+(1+sigman)/(1+sigman)))
HSKSS=(WKSS*LSS/(A_HK*((1+sigman)/(1+sigman/(1+sigmah)))))^(1/(-1+(1+sigman)/(1+sigman)))
empSCSS=((1+sigmah)/sigmah*xsi_NC/xsi_HrC)^(-1/(1+sigmah+sigman))*HSCSS^(1/(1+sigman,
empSKSS=((1+sigmah)/sigmah*xsi_NK/xsi_HrK)^(-1/(1+sigmah+sigman))*HSKSS^(1/(1+sigman,
HrSCSS=HSCSS/empSCSS;
HrSKSS=HSKSS/empSKSS;
 \label{eq:uhscss} $$ UHSCSS=A_HC*((1+sigman)/(1+sigman/(1+sigman)))*HSCSS^(-1+(1+sigman)/(1+sigman/(1+sigman))). $$
 UHSKSS=A_HK*((1+sigman)/(1+sigman/(1+sigmah)))*HSKSS^{-1}+(1+sigman)/(1+sigman/(1+sigman))*HSKSS^{-1}+(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+sigman)/(1+si
unempSS=(empSCSS+empSKSS-(empCSS+empKSS))/(empSCSS+empSKSS);
QKSS=1;
QCDSS=1;
QCHSS=1;
UCSS=1;
UKSS=1;
XiBSS=1;
XiDSS=1;
XiHSS=1;
RL1SS=RSS;
RL2SS=RSS;
RL3SS=RSS;
RL4SS=RSS;
RL5SS=RSS;
RL6SS=RSS;
RL7SS=RSS;
DIFFREALECSS =exp( log(MUCSS));
DIFFREALEIKSS =exp( log(MUKSS));
DIFFREALECDSS =exp( log(MUKSS));
DIFFREALECHSS =exp( log(MUCSS));
DIFFREALWSS =exp( log(MUCSS) );
DIFFREALGDPSS =exp( (1-s_k)*log(MUCSS)+(s_k)*log(MUKSS));
%end_steady_state;
```

```
%trends;
DIFFREALGDPSS_obs=(1-s_k)*log(MUCSS)*100+(s_k)*log(MUKSS)*100;
DIFFREALECSS_obs=log(MUCSS)*100;
DIFFREALEIKSS_obs=log(MUKSS)*100;
DIFFREALECDSS_obs=log(MUKSS)*100;
DIFFREALECHSS_obs=log(MUCSS)*100;
DIFFREALWSS_obs=log(MUCSS)*100;
INFCNASS_obs=(1-s_ecdc)*log(INFCSS)*100+s_ecdc*log(INFKSS)*100;
INFCORSS_obs=(1-s_ecdc)*log(INFCSS)*100+s_ecdc*log(INFKSS)*100;
INFKSS_obs=log(INFCSS)*100-log(MUKSS)*100+log(MUCSS)*100;
RSS_obs=log(RSS)*100;
RT2SS_obs=log(RT2SS)*100;
unempSS_obs=100*log(unempSS);
%end_trends;
for i=1:NumberofParameters
    paramname=deblank(M_.param_names(i,:));
    eval(['M_.params(' int2str(i) ')=' paramname ';']);
end;
ys = [
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
```

36	frbusEDO.nw	June 26, 2016
----	-------------	---------------

 ${\rm June~26,~2016} \hspace{1.5cm} {\rm frbusEDO.nw} \hspace{1.5cm} 37$

```
0
  0
  0
  0
  0
  0
  0
  0
  0
  0
  0
  0
  0
  0
  0
  0
  DIFFREALGDPSS_obs
  DIFFREALECSS_obs
  DIFFREALEIKSS_obs
  DIFFREALECDSS_obs
  DIFFREALECHSS_obs
  DIFFREALWSS_obs
  INFCNASS_obs
  INFCORSS_obs
  INFKSS_obs
  RSS_obs
  RT2SS_obs
  unempSS_obs
  ];
This code is written to file srcedo/linearized.steadystate.m.
```

A.5 readme.txt

 $\langle srcedo/readme.txt \ 38 \rangle \equiv$

How to run the model:

In Matlab/Octave:

- 1) Download Dynare Version 4 from the Dynare website: http://www.dynare.org/
- 2) Download the EDO files in a folder you choose.
- 3) Start Matlab/Octave and change the current directory to the folder in step 2.
- 4) Link in Matlab/Octave the Dynare folder in the menu under file/Set Path (or use the "addpath path/to/dynare").
- 5) Run the command "dynare linearized" or "dynare Dynare_edo" from the Matlab/Octave

Content of the EDO folder:

Dynare_edo.mod: Dynare model file containing the latest estimated parameters and non-Dynare_edo_steadystate.mod: Dynare steady-state file computes the steady state of the linearized.mod: Dynare model file containing the latest estimated parameters and nonlinearized_steadystate.mod: Dynare steady-state file computes the steady state of the

This code is written to file srcedo/readme.txt.

readme.txt: The file you are currently reading.

Appendix B

Notes, Bibliography and Indexes

B.1 Chunks

 $\langle srcedo/Dynare.edo.mod \ 9 \rangle \\ \langle srcedo/Dynare.edo.steadystate.m \ 18 \rangle \\ \langle srcedo/linearized.mod \ 24 \rangle \\ \langle srcedo/linearized.steadystate.m \ 32 \rangle \\ \langle srcedo/readme.txt \ 38 \rangle$

B.2 Index