

## StandardRBC\_CAEN

```
/////////////////////////////////////////////////////////////////
// This program simulates a standard Real Business Cycle model. */
// Prof. Marcelo Arbex (Uwindsor), CAEN March 2019
/////////////////////////////////////////////////////////////////
```

```
close all;
```

```
%-----
% 1. Defining variables
%-----
```

```
var y c k inv l y_1 z;
varexo e;
```

```
parameters beta psi delta alpha rho;
```

```
%-----
% 2. Calibration
%-----
```

```
alpha = 0.33;
beta = 0.99;
delta = 0.023;
psi = 1.75;
rho = 0.95;
sigma = (0.007/(1-alpha));
```

```
%-----
% 3. Model
%-----
```

```
%%% CAEN - Master Students
%%% Please complete the code and produce numerical results for
%%% a TFP shock - one standard deviation
```

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%-----
% 4. Computation
%-----
```

```
initval;
  k = 9;
  c = 0.76;
  l = 0.3;
  z = 0;
  e = 0;
end;
```

```
%%% CAEN - Master Students
```

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```
%%% Please complete the code and produce numerical results for
%%% a TFP shock - one standard deviation
steady;
check;

stoch_simul(periods = 2100, hp_filter = 1600, order = 1, irf = 100);

%%% Dynare can easily use the model to simulate series for the endogenous
variables. To simulate 2100 observations,
%%% use stoch_simul(periods=2100). Dynare will generate 2100 shocks of the
exogenous variables, and use the model
%%% solution to generate the endogenous variables.

rplot z;
rplot y c;
rplot c inv;

%%% rplot VARIABLE_NAME. . . ; [Command]
%%% Plots the simulated path of one or several variables, as stored in oo .endo
simul by either simul
%%% (see Section 4.12 [Deterministic simulation], page 32) or stoch simul with
option periods (see
%%% Section 4.13.1 [Computing the stochastic solution], page 34). The variables are
plotted in levels.

%-----
% 5. Some Results
%-----

%recall endogenous variables order: y c k i l y_l z;

statistic = oo_.steady_state(1:7);

y1 = ((y./statistic(1))-1)*100;
c1 = ((c./statistic(2))-1)*100;
k1 = ((k./statistic(3))-1)*100;
i1 = ((inv./statistic(4))-1)*100;
l1 = ((l./statistic(5))-1)*100;
yl1 = ((y_l./statistic(6))-1)*100;

save data1.mat y1 c1 k1 i1 l1 yl1;

statistic1 = 100*sqrt(diag(oo_.var(1:6,1:6)))./oo_.mean(1:6);

//oo_.var
//After a run of stoch_simul, contains the variance-covariance of the endogenous
variables.
//Contains theoretical variance if the periods option is not present (or an
```

```

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approximation thereof for order=2),
//and simulated variance otherwise. The variables are arranged in declaration
order.

// To compare with data or another paper results

statistic2 = statistic1(2:6)./statistic1(1:1);

//function dyntable(title,headers,labels,values,label_width,val_width, val_precis)
//label_width,val_width: width of columns; val_precis: decimals

//variables are arranged row by row, in order of declaration (as in M_.endo_names )

dyntable(options_,'Standard deviation
(%)',strvcat('Variable','SP'),M_.endo_names(1:6,:),statistic1,10,8,4)

dyntable(options_,'Relative Volatilities
(%)',strvcat('Variable','RSP'),M_.endo_names(2:6,:),statistic2,10,8,4)

```