Lista de Exercícios — Macroeconomia Avançada 1

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PIMES/UFPE — Pós-Graduação em Economia 2025

Task 1

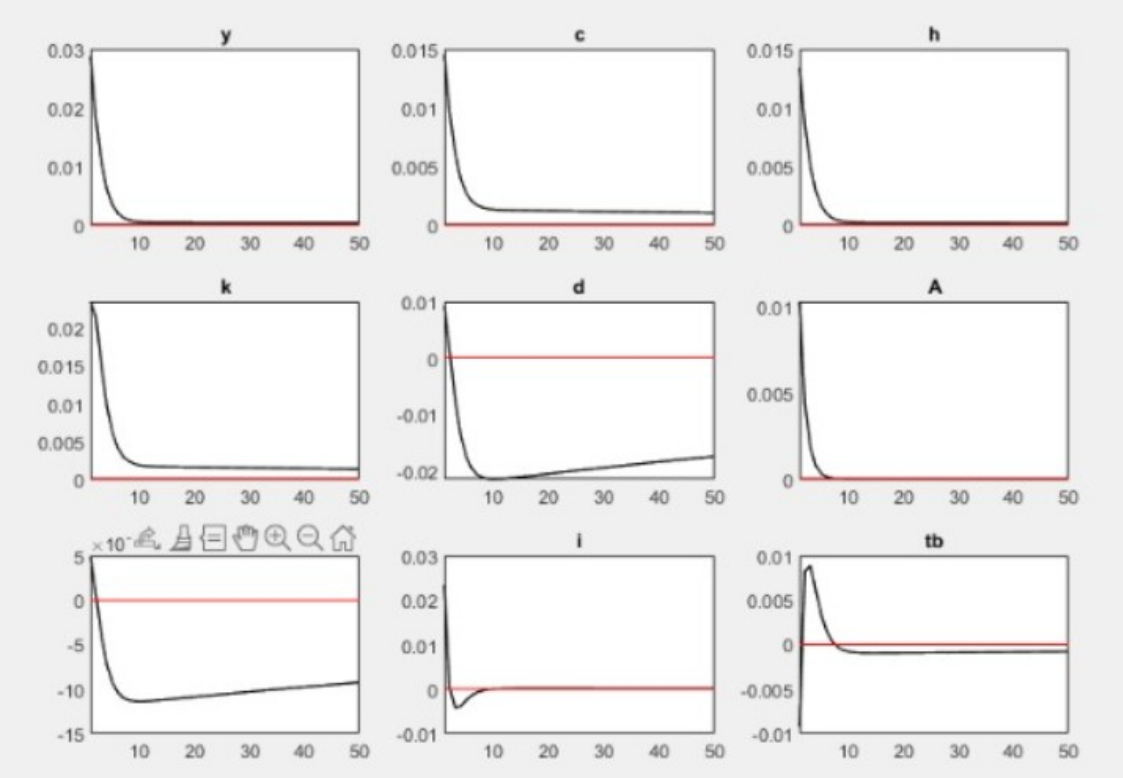
Código Dynare

```
var y c h k d A r phi i tb tby cay;
varexo ez;
parameters beta delta alpha rho omega gamma psi r_bar d_bar ept;

gamma = 2;
omega = 1.455;
alpha = 0.32;
ept = 0.028;
r_bar = 0.04;
delta = 0.1;
rho = 0.42;
sigma = 0.0103;
d_bar = 0.7442;
psi = 0.000742;
beta = 1 / (1 + r_bar);

model;
((c - (h^(omega)) / omega)^  - gamma) * (1 + ept*(k - k(-1))) =
((c(1) - (h(1) ^ (omega)) / omega) ^ - gamma) * beta *
((1 - delta) + ept*(k(1) - k) + exp(A(1))* (k^(alpha - 1)) * (h(1)^(1 -
   alpha)) * alpha);

((c - (h^(omega)) / omega)^  - gamma)  =
beta * ((c(1) - (h(1) ^ (omega)) / omega) ^-gamma) *
(1 + r_bar + psi*exp(d-d_bar)*(1 + d) - psi);

(h^(omega - 1 + alpha)) =
((exp(A) * (1 - alpha) * k(-1)^(alpha)));

c + i + phi = y + d - d(-1) * (1 + r(-1));
A = rho*A(-1) + ez;
r =  r_bar + psi*(exp(d-d_bar)-1);
phi = (ept/2) * (k-k(-1))^2;
y = exp(A)*(k(-1)^alpha) * (h^(1-alpha));
i = k - (1-delta)*k(-1);
```

```
tb = y - c - i - phi;
tby = tb / y;
cay = (d - d(-1))/y;
end;

steady;

shocks;
var ez;
stderr sigma;
end;

stoch_simul(order=1, irf=50, periods=100000, drop=95000);
```

Listing 1: Task 1: Putting the model in Dynare

Resultados e Gráficos



Task 2

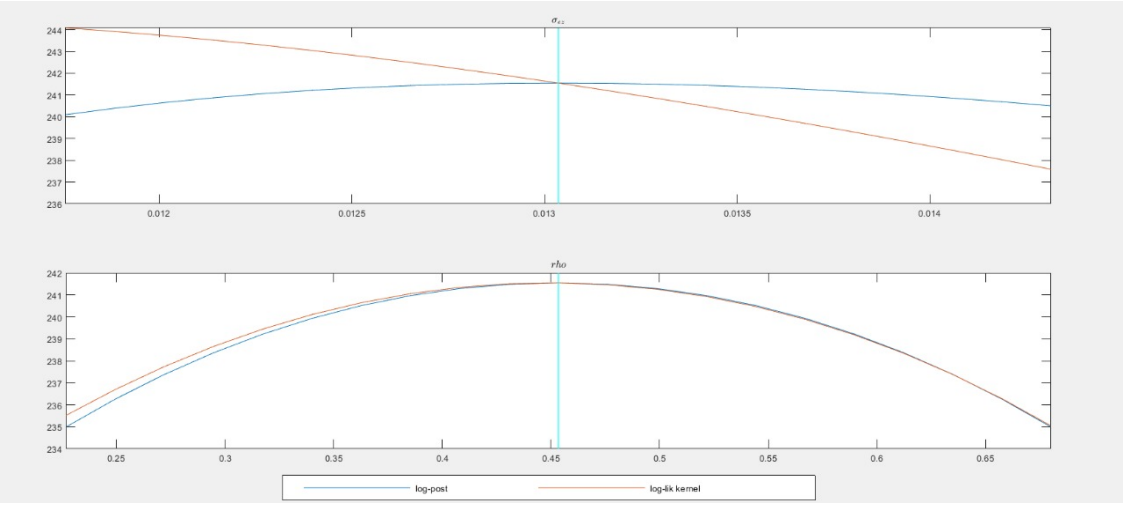
Código Dynare

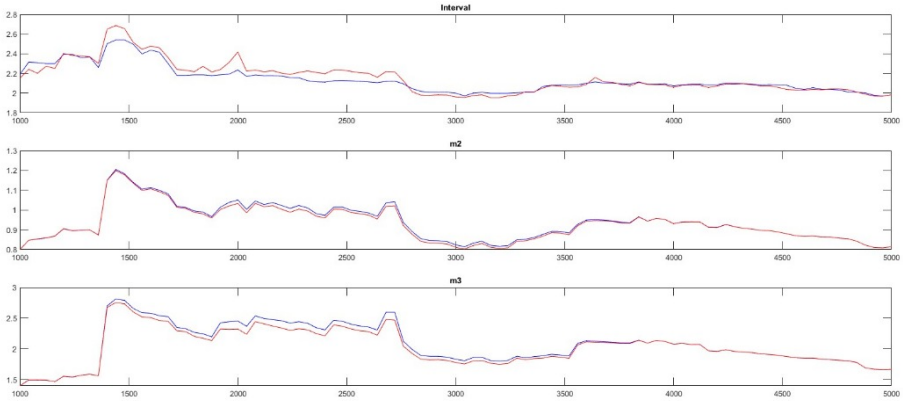
```
var y c h k d A r phi i a tb tby cay;
varexo ez;
parameters beta delta alpha rho omega gamma psi r_bar d_bar ept;

gamma = 2;
omega = 1.455;
alpha = 0.32;
ept = 0.028;
r_bar = 0.04;
delta = 0.1;
rho = 0.42;
sigma = 0.0103;
d_bar = 0.7442;
psi = 0.000742;
beta = 1 / (1 + r_bar);

model;
((c - (h^(omega)) / omega)^ - gamma) * (1 + ept*(k - k(-1))) =
((c(1) - (h(1) ^ (omega)) / omega) ^ - gamma) * beta *
((1 - delta) + ept*(k(1) - k) + exp(A(1))* (k^(alpha - 1)) * (h(1)^(1 -
   alpha)) * alpha);

((c - (h^(omega)) / omega)^ - gamma) =
beta * ((c(1) - (h(1) ^ (omega)) / omega) ^-gamma) *
(1 + r_bar + psi*exp(d-d_bar)*(1 + d) - psi);

(h^(omega - 1 + alpha)) =
((exp(A) * (1 - alpha) * k(-1)^(alpha)));

c + i + phi = y + d - d(-1) * (1 + r(-1));
A = rho*A(-1) + ez;
r = r_bar + psi*(exp(d-d_bar)-1);
phi = (ept/2) * (k-k(-1))^2;
y = exp(A)*(k(-1)^alpha) * (h^(1-alpha));
i = k - (1-delta)*k(-1);
tb = y - c - i - phi;
tby = tb / y;
cay = (d - d(-1))/y;
a = y - steady_state(y);
end;

varobs a;

estimated_params;
rho, beta_pdf, 0.9, 0.2;
stderr ez, inv_gamma_pdf, 0.10, inf;
end;

estimation(datafile= 'tfp_br.csv',
```

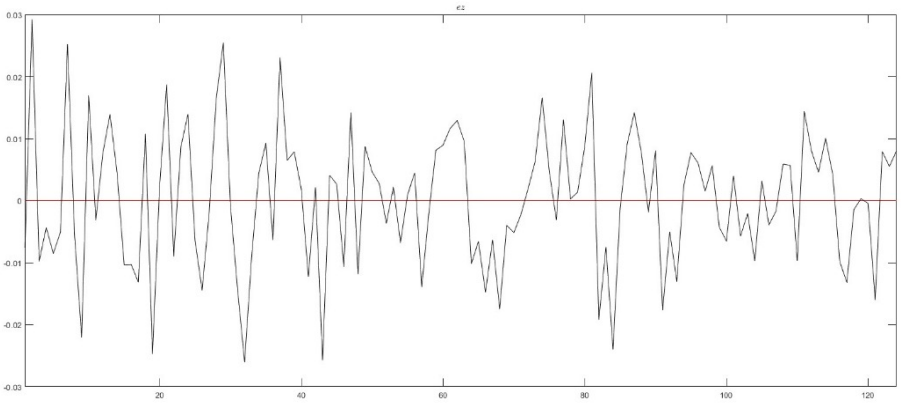
```
plot_priors = 0,
mode_compute = 6,
mode_check,
mh_replic = 5000,
mh_nblocks = 2,
mh_drop = 0.5,
mh_conf_sig = 0.9,
bayesian_irf,
// irf = 36,
tex) y c h i k A;
```

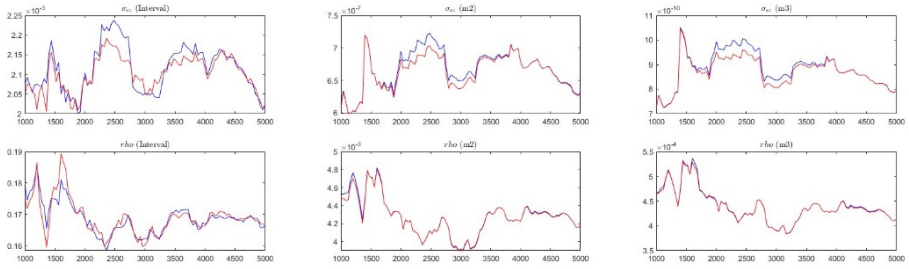
Listing 2: Dynare Code — Modelo DSGE sem Governo

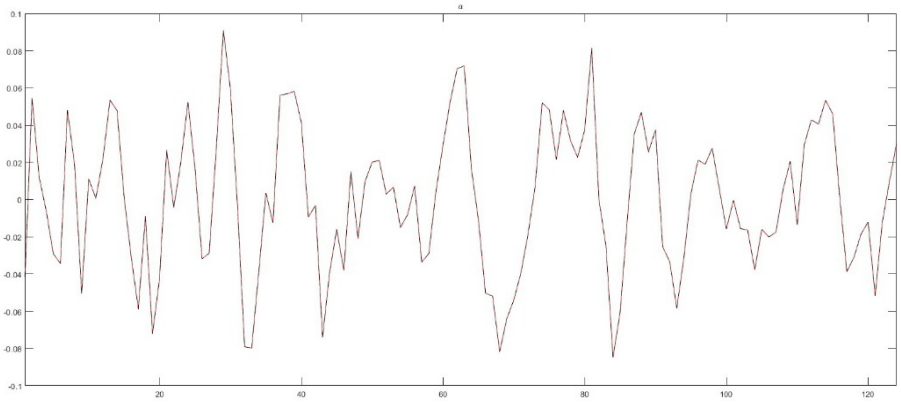
Resultados e Gráficos

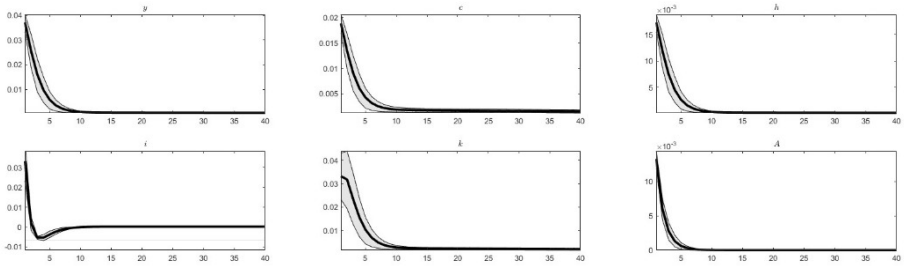


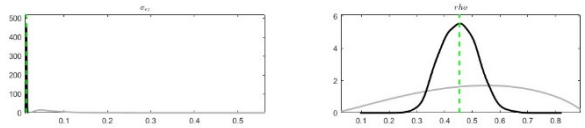



e2


σe (Interval)
σe (m2)
σe (m3)
rho (Interval)
rho (m2)
rho (m3)


a


y
c
h
i
k
A


σ_ε
rho

Task 3

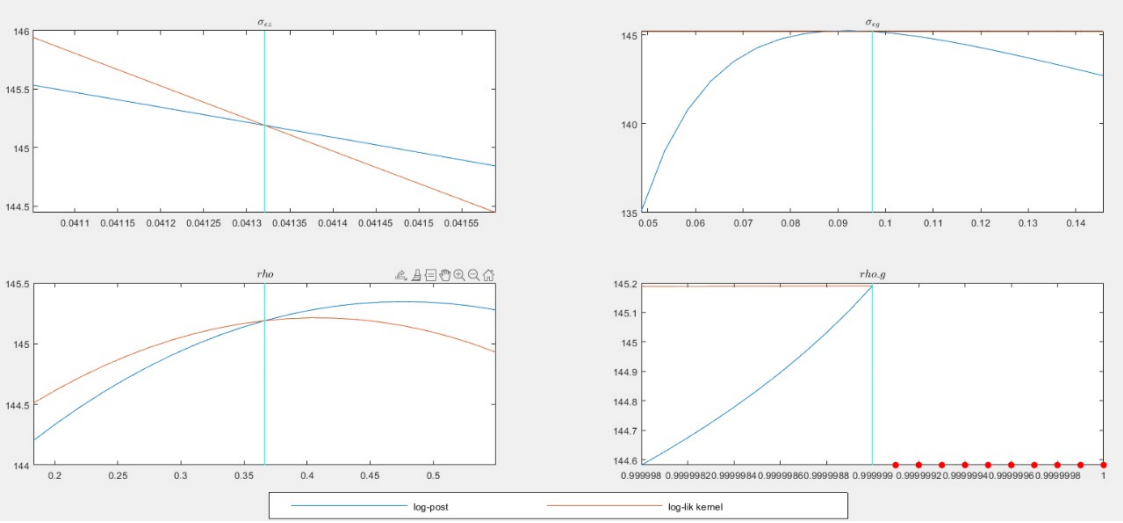
Task 3: Adding Fiscal Policy

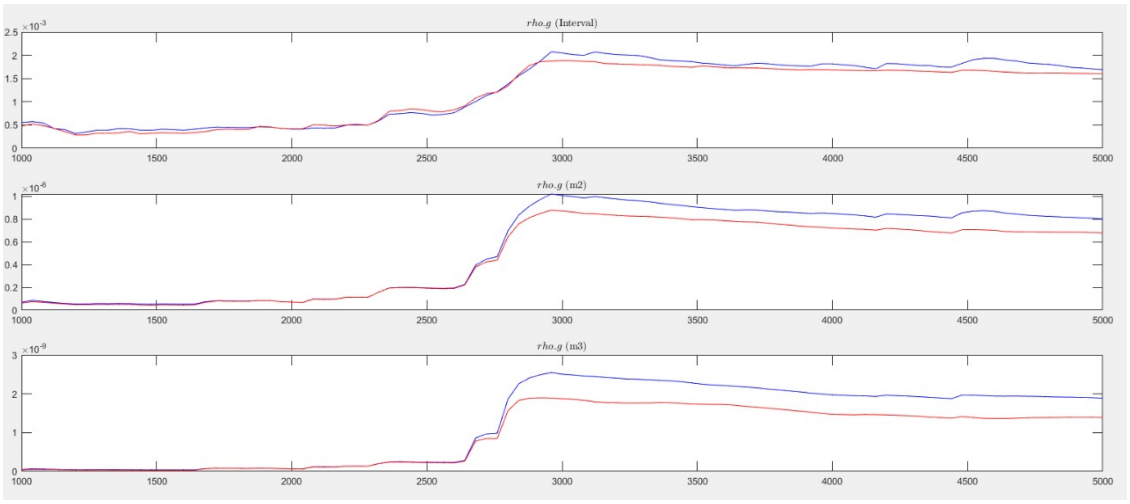
```
var y c h k d A r phi i a tb tby cay G T;
varexo ez eg;
parameters beta delta alpha rho omega gamma psi r_bar d_bar ept rho_g
   G_bar;

gamma = 2;
omega = 1.455;
alpha = 0.32;
ept = 0.028;
r_bar = 0.04;
delta = 0.1;
sigma = 0.0103;
d_bar = 0.7442;
psi = 0.000742;
G_bar = 0.4;
beta = 1 / (1 + r_bar);

model;
((c - (h^(omega)) / omega)^ - gamma) * (1 + ept*(k - k(-1))) =
((c(1) - (h(1) ^ (omega)) / omega) ^ - gamma) * beta *
((1 - delta) + ept*(k(1) - k) + exp(A(1))* (k^(alpha - 1)) * (h(1)^(1 -
   alpha)) * alpha);

((c - (h^(omega)) / omega)^ - gamma) =
beta * ((c(1) - (h(1) ^ (omega)) / omega) ^-gamma) *
(1 + r_bar + psi*exp(d-d_bar)*(1 + d) - psi);

(h^(omega - 1 + alpha)) =
((exp(A) * (1 - alpha) * k(-1)^(alpha)));

c + i + phi + T = y + d - d(-1) * (1 + r(-1));
A = rho*A(-1) + ez;
G/G_bar = rho_g*(G(-1)/G_bar) + eg;
G = T;
r = r_bar + psi*(exp(d-d_bar)-1);
phi = (ept/2) * (k-k(-1))^2;
y = exp(A)*(k(-1)^alpha) * (h^(1-alpha));
i = k - (1-delta)*k(-1);
tb = y - c - i - phi;
tby = tb / y;
cay = (d - d(-1))/y;
a = y - steady_state(y);
end;

initval;
A = 1; r = r_bar; d = d_bar; k = 3; h = 1; c = 1;
y = 1.5; G = G_bar; T = G_bar; tb = 0.2; tby = 0.2/1.5; cay = 0;
end;
```

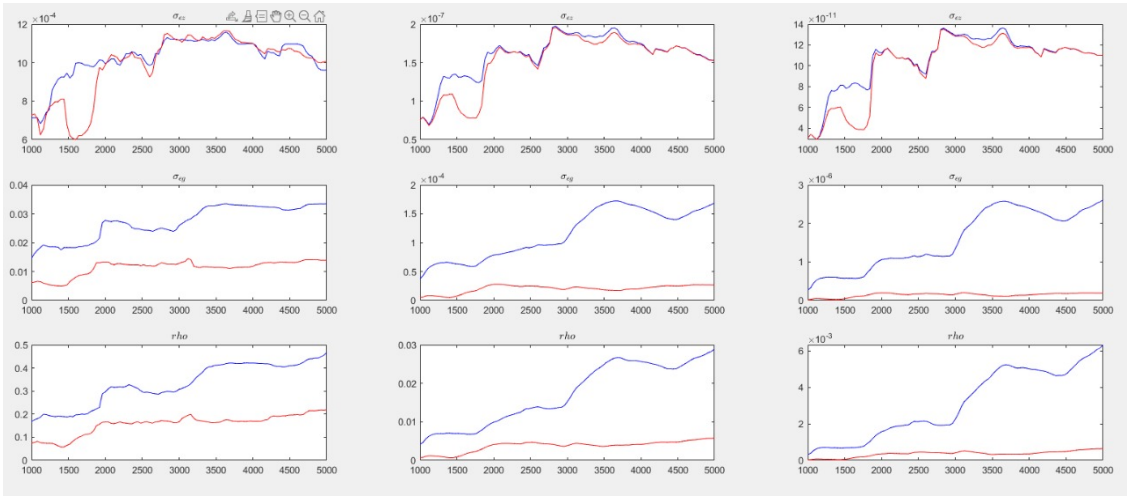
```
varobs a;

estimated_params;
rho, beta_pdf, 0.9, 0.2;
rho_g, beta_pdf, 0.9, 0.2;
stderr ez, inv_gamma_pdf, 0.10, 0.02;
stderr eg, inv_gamma_pdf, 0.10, 0.02;
end;

estimation(datafile= 'tfp_br.csv',
plot_priors = 0,
mode_compute = 6,
mode_check,
mh_replic = 5000,
mh_nblocks = 2,
mh_drop = 0.5,
mh_conf_sig = 0.9,
bayesian_irf,
irf = 20,
tex) y c h i k A G;
```

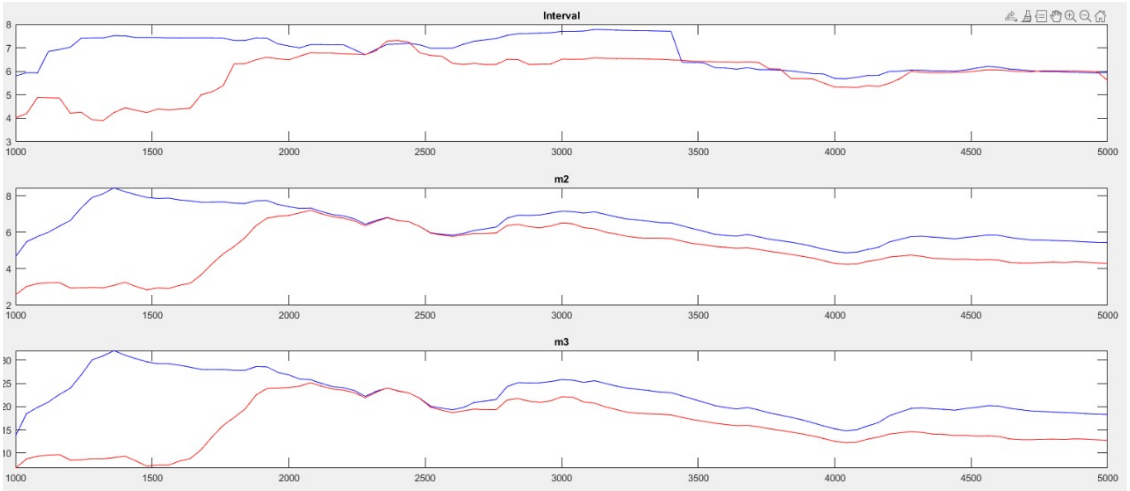
Listing 3: Task 3: Adding Fiscal Policy

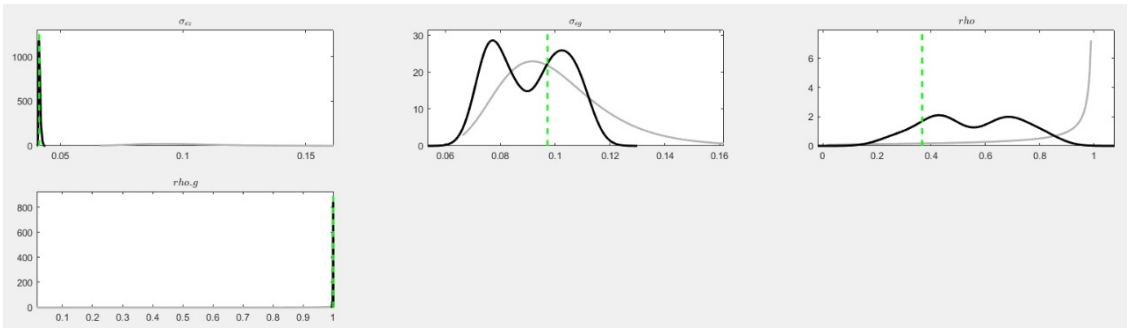
Resultados e Gráficos

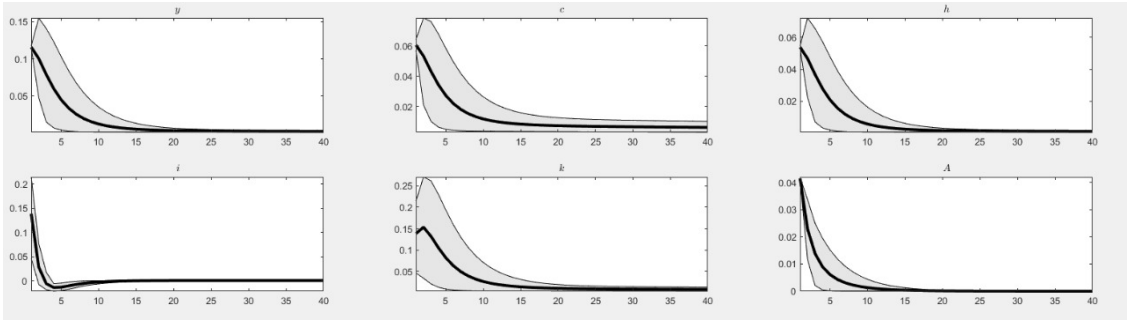


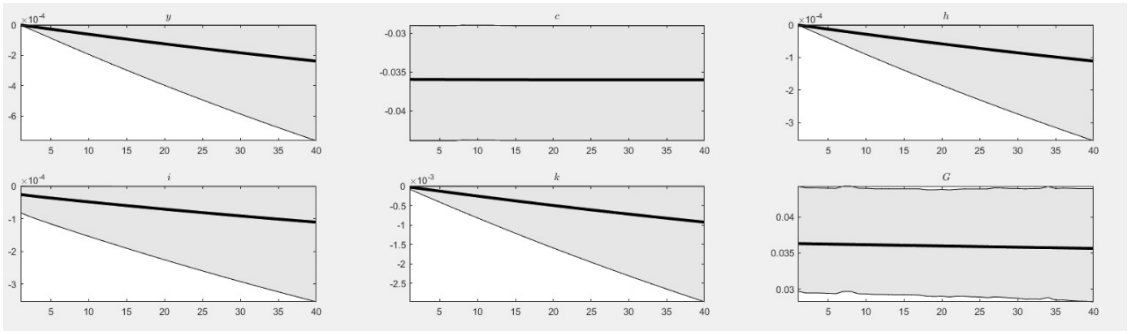

rho.g (Interval)
rho.g (m2)
rho.g (m3)

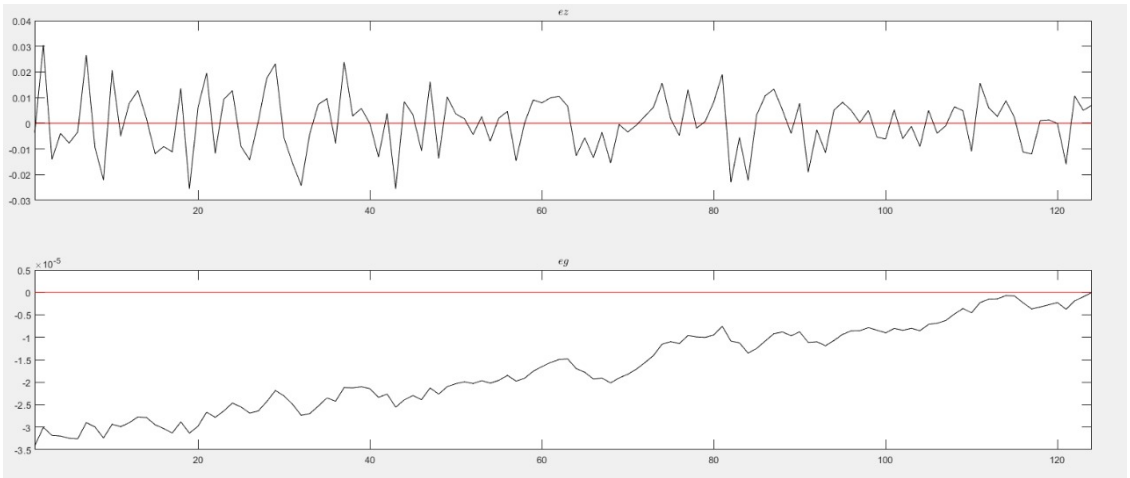

σ_ez
σ_ez
σ_ez
σ_ej
σ_ej
σ_ej
rho
rho
rho

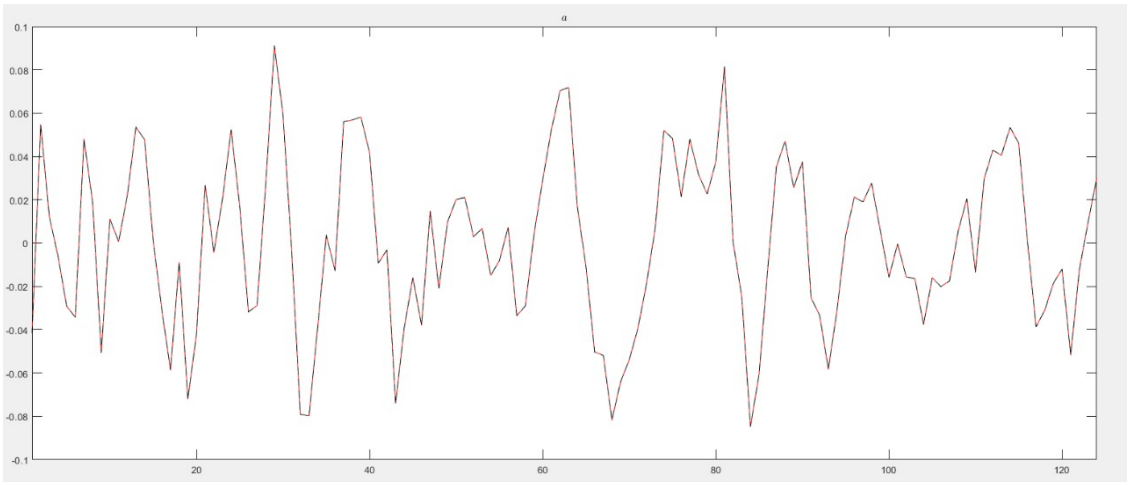

Interval
m2
m3

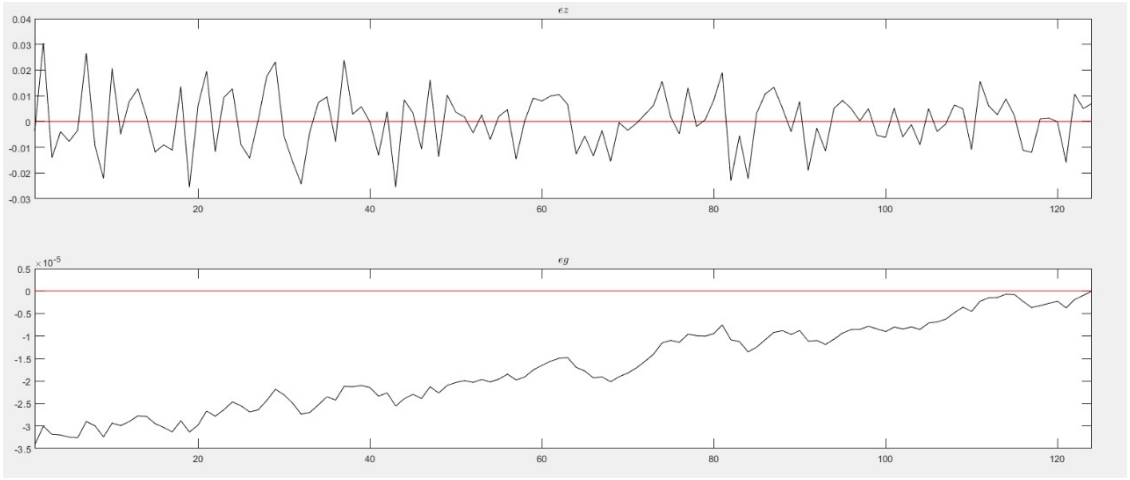

σ_{ez}
σ_{eg}
rho
$rho.g$


y
c
h
i
k
A


y
c
h
i
k
G


ez
eg


a
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
20
40
60
80
100
120


ez
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
20
40
60
80
100
120
eg
×10^-5
0.5
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
20
40
60
80
100
120