

ENV

```
clear all; clc;  
addpath('/Applications/Dynare/4.6.2/matlab'); % add dynare path
```

Baseline

```
dynare Q410.mod; % to get model instance
```

```
Using 64-bit preprocessor  
Starting Dynare (version 4.6.2).  
Calling Dynare with arguments: none  
Starting preprocessing of the model file ...  
Found 11 equation(s).  
Evaluating expressions...done  
Computing static model derivatives (order 1).  
Computing dynamic model derivatives (order 1).  
Processing outputs ...  
done  
Preprocessing completed.
```

```
Total computing time : 0h00m01s
```

```
print_table() % exactly replicate table 4.2 using textbook calibration
```

Results of table 4.2:

Variable	sig_x	rho1	rho2
y	3.08	0.62	1.00
c	2.71	0.78	0.84
i	9.04	0.07	0.67
h	2.12	0.62	1.00
tb_y	1.78	0.51	-0.04
ca_y	1.45	0.32	0.05

Q1.1 Calibrate model for Canada 1960-2011

```
%{  
NOTE:  
  1. moments to match: [std(y),autocor(y),std(i),std(tb/y)]  
  2. target moment values: [3.71%, 0.86, 10.31%, 1.72%]  
  3. pars to calibrate: rho, eta, phi, psi_1  
  4. method: min distance  
  5. solver: fminunc/BFGS Quasi-Newton  
  6. init guess: param = [0.42 0.0129 0.028 0.000742]  
%}  
  
param_init = [0.42 0.0129 0.028 0.000742];  
param_est = fminunc(@(x)m_dist(x), param_init);
```

current distance = 1.439177.
current distance = 1.439177.
current distance = 1.439166.
current distance = 1.439179.
current distance = 1.439178.
current distance = 479.802914.
current distance = 479.802922.
current distance = 479.802921.
current distance = 479.802911.
current distance = 479.802905.
current distance = 479.802905.
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current distance = 0.488237.
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current distance = 0.488237.
current distance = 0.488236.
current distance = 0.488230.
current distance = 0.361533.
current distance = 0.361533.
current distance = 0.361536.
current distance = 0.361531.
current distance = 0.361531.
current distance = 0.443904.
current distance = 0.443904.
current distance = 0.443896.
current distance = 0.443906.
current distance = 0.443905.
current distance = 0.324994.
current distance = 0.324994.
current distance = 0.324993.
current distance = 0.324993.
current distance = 0.324992.
current distance = 0.301981.
current distance = 0.301981.
current distance = 0.301980.
current distance = 0.301981.
current distance = 0.301980.
current distance = 0.250889.
current distance = 0.250889.
current distance = 0.250890.
current distance = 0.250888.
current distance = 0.250888.
current distance = 0.235159.
current distance = 0.235159.
current distance = 0.235159.
current distance = 0.235158.

[illegible]

current distance = 0.232409.
current distance = 0.232409.
current distance = 0.232398.
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current distance = 0.232398.
current distance = 0.232398.
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current distance = 0.232021.
current distance = 0.232021.
current distance = 0.232021.
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current distance = 0.231383.
current distance = 0.231383.
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current distance = 0.231383.
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current distance = 0.229715.
current distance = 0.229714.
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current distance = 0.229715.
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current distance = 0.225439.
current distance = 0.214896.
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current distance = 0.214894.
current distance = 0.214897.
current distance = 0.214896.
current distance = 0.189515.
current distance = 0.189515.
current distance = 0.189510.
current distance = 0.189515.
current distance = 0.189515.
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current distance = 0.186645.
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current distance = 0.077286.
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current distance = 0.072210.
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current distance = 0.065480.
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current distance = 0.060782.
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current distance = 0.052209.
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current distance = 0.074917.
current distance = 0.074932.
current distance = 0.074931.
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current distance = 0.036506.
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current distance = 0.039334.
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current distance = 0.039324.
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current distance = 0.033321.
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current distance = 0.033320.
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current distance = 0.030917.
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current distance = 0.030918.
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current distance = 0.027456.
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current distance = 0.027460.
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current distance = 0.024982.
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current distance = 0.024325.
current distance = 0.024323.
current distance = 0.024323.

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current distance = 0.023743.
current distance = 0.023741.
current distance = 0.023741.
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current distance = 0.023047.
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current distance = 0.022644.
current distance = 0.022642.
current distance = 0.022642.
current distance = 0.022031.
current distance = 0.022031.
current distance = 0.022032.
current distance = 0.022030.
current distance = 0.022030.
current distance = 0.021548.
current distance = 0.021548.
current distance = 0.021549.
current distance = 0.021547.
current distance = 0.021548.
current distance = 0.021648.
current distance = 0.021648.
current distance = 0.021645.
current distance = 0.021648.
current distance = 0.021648.
current distance = 0.021350.
current distance = 0.021350.
current distance = 0.021349.
current distance = 0.021350.
current distance = 0.021350.
current distance = 0.021154.
current distance = 0.021154.
current distance = 0.021155.
current distance = 0.021154.
current distance = 0.021154.
current distance = 0.021039.
current distance = 0.021039.
current distance = 0.021039.
current distance = 0.021039.

[illegible]

[illegible]

Solver stopped prematurely.

```
fminunc stopped because it exceeded the function evaluation limit,  
options.MaxFunctionEvaluations = 4.000000e+02.
```

```
fprintf('Estimation results:\n');
```

Estimation results:

```
fprintf('\n');
fprintf('rho    = %.6f\n', param_est(1));
```

$$\rho = 0.621901$$

```
fprintf('eta    = %.6f\n', param_est(2));
```

eta = 0.010536

```
fprintf('phi    = %.6f\n', param_est(3));
```

$$\phi = 0.018179$$

```
fprintf('psi_1 = %.6f\n', param_est(4));
```

```
psi_1 = 0.026189
```

```
% %% Q1.2 Compute theoretical second moments

set_param_value('rho', param_est(1));
set_param_value('eta', param_est(2));
set_param_value('phi', param_est(3));
set_param_value('psi_1', param_est(4));

[info, oo_, options_, M_] = stoch_simul(M_, options_, oo_, var_list_);

print_table()
```

Results of table 4.2:

Variable	sig_x	rho1	rho2
y	3.71	0.84	1.00
c	3.18	0.89	0.98
i	10.31	0.16	0.64
h	2.55	0.84	1.00
tb_y	1.73	0.04	-0.12
ca_y	1.66	0.04	-0.07

```
% %% Q1.4 compute std(ln A)

sd_list = sqrt(diag(oo_.var));
sd_A     = sd_list(strcmp('A', M_.endo_names))*100;
sd_y     = sd_list(strcmp('y', M_.endo_names))*100;
sd_A_old = 100*sqrt(0.0129^2/(1-0.42^2));

fprintf('Unconditional SD(ln(A)) = %.4f\n', sd_A);
```

Unconditional SD(ln(A)) = 1.3455

```
fprintf('Old value:                %.4f\n', sd_A_old);
```

Old value: 1.4214

```
fprintf('Unconditional SD(y)      = %.4f\n', sd_y);
```

Unconditional SD(y) = 3.7130

```
fprintf('Old value:                %.4f\n', 3.08);
```

Old value: 3.0800