581 HW 1,2

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September 14, 2015

1.1

First set of parameters:

$\tilde{k}_t$:

$$\begin{aligned}
\text{mean} &= 2.44142065 \\
\text{standard deviation} &= 0.016548655 \\
\text{coefficient of variation} &= 147.529857 \\
\text{relative coefficient of variation} &= 34.70249165 \\
\text{correlation with Y} &= 0.008751021 \\
\text{correlation with A} &= 0.067324833 \\
\text{autocorrelation} &= 0.977701483
\end{aligned}$$

For $\tilde{y}_t$

$$\begin{aligned}
\text{mean} &= 16.62386659 \\
\text{standard deviation} &= 3.910324347 \\
\text{coefficient of variation} &= 4.251275627 \\
\text{relative coefficient of variation} &= 1 \\
\text{correlation with Y} &= 1 \\
\text{correlation with A} &= -0.007854036 \\
\text{autocorrelation} &= 0.023820669
\end{aligned}$$

$\tilde{c}_t$

$$\begin{aligned}
\text{mean} &= 15.79267326 \\
\text{standard deviation} &= 3.71480813 \\
\text{coefficient of variation} &= 4.251275627 \\
\text{relative coefficient of variation} &= 1 \\
\text{correlation with Y} &= 1 \\
\text{correlation with A} &= -0.007854036 \\
\text{autocorrelation} &= 0.023820669
\end{aligned}$$

$\tilde{\dot{i}}_t$

$$\begin{aligned}
\text{mean} &= 0.83119333 \\
\text{standard deviation} &= 0.195516217 \\
\text{coefficient of variation} &= 4.251275627 \\
\text{relative coefficient of variation} &= 1 \\
\text{correlation with Y} &= 1 \\
\text{correlation with A} &= -0.007854036 \\
\text{autocorrelation} &= 0.023820669
\end{aligned}$$

$\tilde{A}_t$

$$\begin{aligned}
\text{mean} &= 1.58956E+19 \\
\text{standard deviation} &= 8.99959E+19 \\
\text{coefficient of variation} &= 0.176625269 \\
\text{relative coefficient of variation} &= 0.041546417 \\
\text{correlation with Y} &= -0.007854036 \\
\text{correlation with A} &= 1 \\
\text{autocorrelation} &= 0.996937289
\end{aligned}$$

$log(\tilde{k}_t)$

mean = 0.387632637
standard deviation = 0.002943609
coefficient of variation = 131.6862025
relative coefficient of variation = 11.68364577
correlation with Y = 0.005119208
correlation with A = 0.069949226
autocorrelation = 0.977701483

.
$log(\tilde{y}_t)$

mean = 1.20806748
standard deviation = 0.107183837
coefficient of variation = 11.27098554
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = −0.002328091
autocorrelation = 0.024272717

$log(\tilde{C}_t)$

mean = 1.185791085
standard deviation = 0.107183837
coefficient of variation = 11.06315202
relative coefficient of variation = 0.981560306
correlation with Y = 1
correlation with A = −0.002328091
autocorrelation = 0.024272717

$log(\tilde{I}_t)$

mean = −0.092962515
standard deviation = 0.107183837
coefficient of variation = −0.867318412
relative coefficient of variation = −0.076951426
correlation with Y = 1
correlation with A = −0.002328091
autocorrelation = 0.024272717

$\tilde{Z}_t$

mean = −0.000227542
standard deviation = 0.077752194
coefficient of variation = −0.002926504
relative coefficient of variation = −0.000259649
correlation with Y = 0.991863887
correlation with A = −0.001159019
autocorrelation = 0.018696135

For the second set of parameters:
$\tilde{k}_t$

mean = 19.33021123
standard deviation = 0.149250979
coefficient of variation = 129.5148037
relative coefficient of variation = 30.47115415
correlation with Y = 0.038584394
correlation with A = −0.044818267
autocorrelation = 0.982903312

$\tilde{y}_t$

mean = 32.90138658
standard deviation = 7.740761623
coefficient of variation = 4.250406896
relative coefficient of variation =
correlation with Y =
correlation with A = −0.029745081
autocorrelation = 0.025466048

$\tilde{c}_t$

mean = 26.32110927
standard deviation = 6.192609298
coefficient of variation = 4.250406896
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = −0.029745081
autocorrelation = 0.025466048

$\tilde{\tilde{i}}_t$

mean = 6.580277316
standard deviation = 1.548152325
coefficient of variation = 4.250406896
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = −0.029745081
autocorrelation = 0.025466048

$\tilde{A}_t$

mean = $6.62065E + 19$
standard deviation = $2.14821E + 20$
coefficient of variation = 0.308193504
relative coefficient of variation = 0.072509176
correlation with Y = −0.029745081

$log(\tilde{k}_t)$

mean = 1.286636314
standard deviation = 0.003312455
coefficient of variation = 388.4238386
relative coefficient of variation = 27.63552714
correlation with Y = 0.034335448
correlation with A = −0.170332691
autocorrelation = 0.982366333

$log(\tilde{y}_t)$

mean = 1.506063174
standard deviation = 0.108410611
coefficient of variation = 13.89221185
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = 0.010024524
autocorrelation = 0.023028172

$log(\tilde{C}_t)$

mean = 1.409153161
standard deviation = 0.108410611
coefficient of variation = 12.99829554
relative coefficient of variation = 0.935653421
correlation with Y = 1
correlation with A = 0.010024524
autocorrelation = 0.023028172

$log(\tilde{I}_t)$

mean = 0.806622141
standard deviation = 0.107129336
coefficient of variation = 7.529423524
relative coefficient of variation = 0.535750763
correlation with Y = 1
correlation with A = −0.016170752
autocorrelation = 0.032461931

$\tilde{Z}_t$

mean = 0.000381011
standard deviation = 0.077803028
coefficient of variation = 0.004897117
relative coefficient of variation = 0.000348451
correlation with Y = 0.991578612
correlation with A = −0.01440627
autocorrelation = 0.030289601

For the third set of parameters:
$\tilde{k}_t$

mean = 2.44154615
standard deviation = 0.018281284
coefficient of variation = 133.5544155
relative coefficient of variation = 31.46094187
correlation with Y = 0.030572945
correlation with A = 0.009737369
autocorrelation = 0.981720227

$\tilde{y}_t$

mean = 16.62615487
standard deviation = 3.91656457
coefficient of variation = 4.245086369
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = −0.017171241
autocorrelation = 0.032961885

$\tilde{c}_t$

mean = 15.79484713
standard deviation = 3.720736342
coefficient of variation = 4.245086369
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = −0.017171241
autocorrelation = 0.032961885

$\tilde{\dot{i}}_t$

mean = 0.831307744
standard deviation = 0.195828229
coefficient of variation = 4.245086369
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = −0.017171241
autocorrelation = 0.032961885

$\tilde{A}_t$

mean $= 3.99127E + 19$
standard deviation $= 1.82093E + 20$
coefficient of variation $= 0.219188954$
relative coefficient of variation $= 0.051633568$
correlation with Y $= -0.017171241$
correlation with A $= 1$
autocorrelation $= 0.996454884$

$log(\tilde{k}_t)$

mean $= 0.387652754$
standard deviation $= 0.003253728$
coefficient of variation $= 119.1410971$
relative coefficient of variation $= 10.60446978$
correlation with Y $= 0.031172048$
correlation with A $= 0.028851351$
autocorrelation $= 0.981720227$

$log(\tilde{y}_t)$

mean $= 1.208067305$
standard deviation $= 0.107527239$
coefficient of variation $= 11.2349886$
relative coefficient of variation $= 1$
correlation with Y $= 1$
correlation with A $= -0.004345455$
autocorrelation $= 0.031840109$

$log(\tilde{C}_t)$

mean $= 1.18579091$
standard deviation $= 0.107527239$
coefficient of variation $= 11.02781881$
relative coefficient of variation $= 0.981560303$
correlation with Y $= 1$
correlation with A $= -0.004345455$
autocorrelation $= 0.031840109$

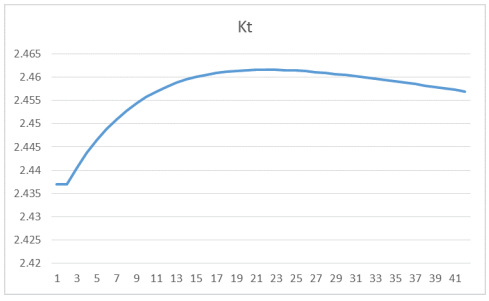
$log(\tilde{I}_t)$

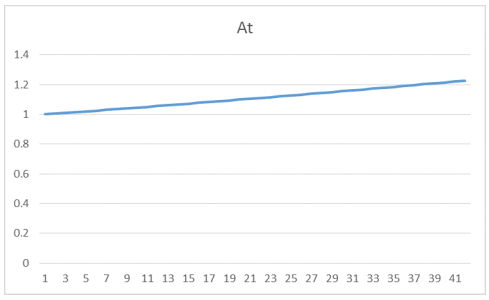
mean = −0.092086473
standard deviation = 0.107459799
coefficient of variation = −0.856938823
relative coefficient of variation = −0.07617103
correlation with Y = 1
correlation with A = 0.015610874
autocorrelation = 0.034508809

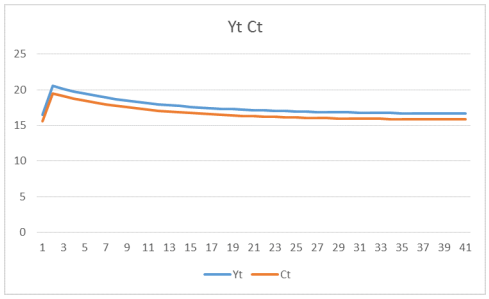
$\tilde{Z}_t$

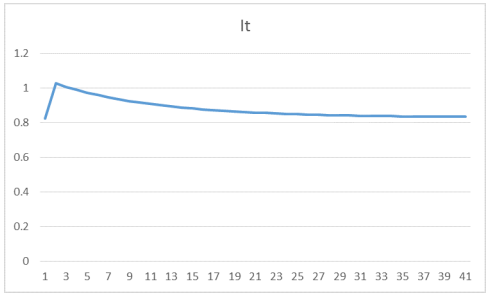
mean = 0.000561621
standard deviation = 0.077553116
coefficient of variation = 0.007241762
relative coefficient of variation = 0.000637963
correlation with Y = 0.992130811
correlation with A = 0.010751721
autocorrelation = 0.020834155

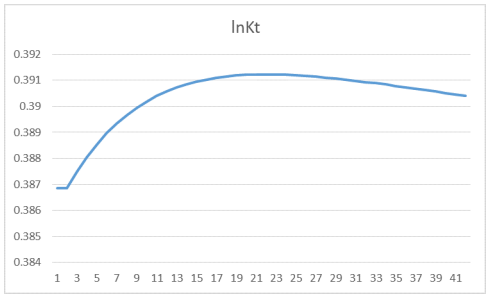
1.2






Yt Ct
25
20
15
10
5
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41
Yt
Ct


It
1.2
1
0.8
0.6
0.4
0.2
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41


lnKt
0.392
0.391
0.39
0.389
0.388
0.387
0.386
0.385
0.384
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41

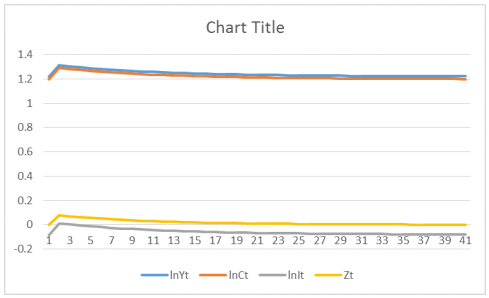


Chart Title
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41
lnYt
lnCt
lnIt
Zt

1.3

For the first set of paramaters: $\tilde{k}_t$

mean = 22.33412442
standard deviation = 2.436367142
coefficient of variation = 0.003270556
relative coefficient of variation = 744.9396976
correlation with Y = 22.2741009
correlation with A = 0.999083849
autocorrelation = 0.120164945

$\tilde{y}_t$

mean = 16.44194142
standard deviation = 0.491622964
coefficient of variation = 33.44420952
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = 0.811330798
autocorrelation = 0.999862829

$\tilde{c}_t$

mean = 15.61984435
standard deviation = 0.467041816
coefficient of variation = 33.44420952
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = 0.811330798
autocorrelation = 0.999862829

$\tilde{i}_t$

mean = 0.822097071
standard deviation = 0.024581148
coefficient of variation = 33.44420952
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = 0.811330798
autocorrelation = 0.999862829

$\tilde{A}_t$

mean = 0.999745803
standard deviation = 0.001699629
coefficient of variation = 588.2142476
relative coefficient of variation = 17.58792497
correlation with Y = 0.811330798
correlation with A = 1
autocorrelation = 0.989321611

$log(\tilde{k}_t)$

mean = 10.30626613
standard deviation = 6.886540103
coefficient of variation = 1.496581154
relative coefficient of variation = 0.000718038
correlation with Y = 0.12033207
correlation with A = 0.097343628
autocorrelation = 0.999987972

$log(\tilde{y}_t)$

mean = 1.216082417
standard deviation = 0.000583459
coefficient of variation = 2084.265232
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = 0.81132256
autocorrelation = 0.999862841

$log(\tilde{C}_t)$ 2046.085324, 0.981681838, 1, 0.81132256, 0.999862841.

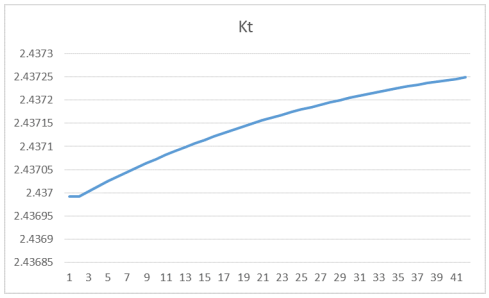
mean = 1.1938060220.000583459
standard deviation =
coefficient of variation =
relative coefficient of variation =
correlation with Y =
correlation with A =
autocorrelation =

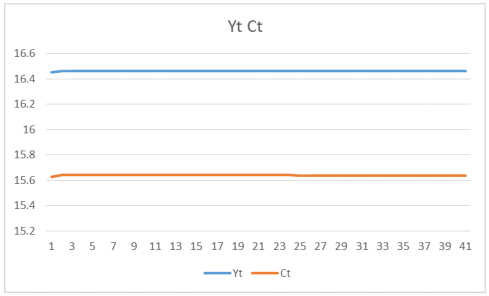
$log(\tilde{I}_t)$

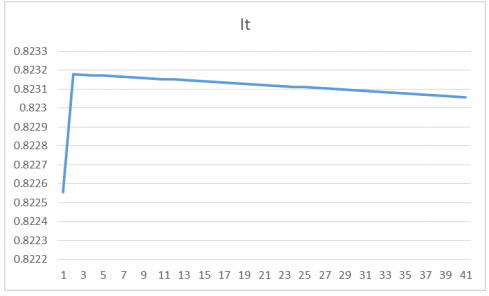
mean = −0.084947579
standard deviation = 0.000583459
coefficient of variation = −145.5931623
relative coefficient of variation = −0.069853472
correlation with Y = 1
correlation with A = 0.81132256
autocorrelation = 0.999862841

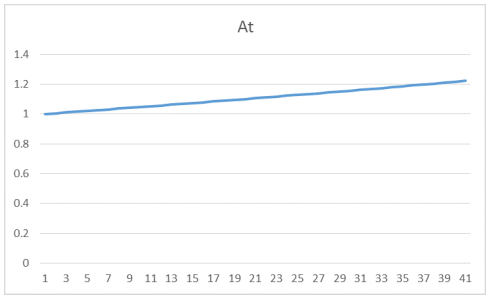
$\tilde{Z}_t$

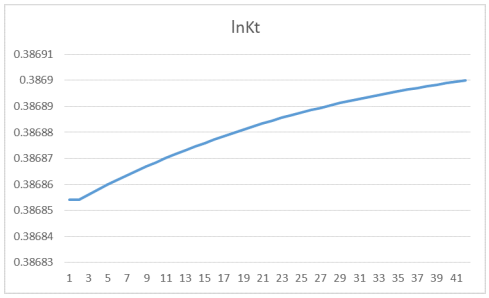
mean = 0
standard deviation = 0
coefficient of variation = 0
relative coefficient of variation = 0
correlation with Y = 0
correlation with A = 0
autocorrelation = 0

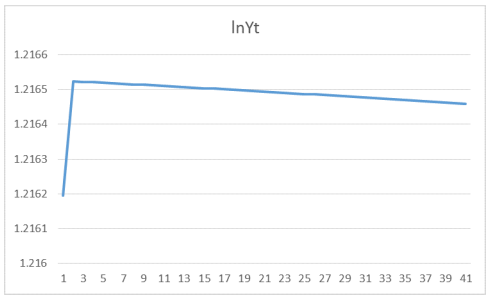


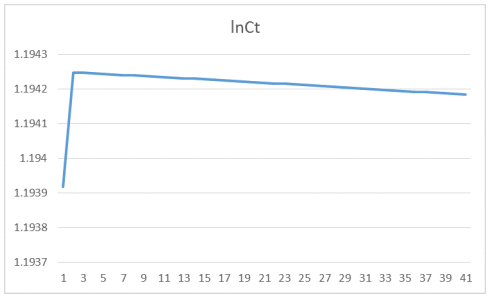


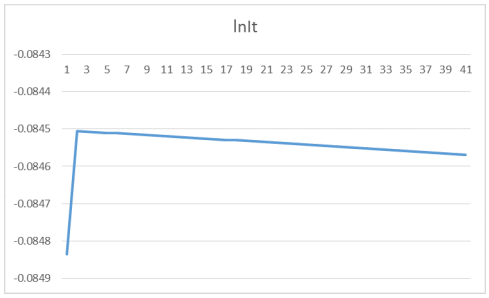


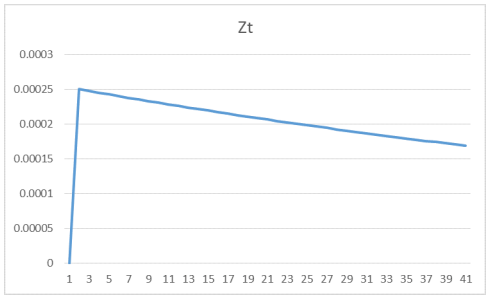

At
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41


lnKt
0.38691
0.3869
0.38689
0.38688
0.38687
0.38686
0.38685
0.38684
0.38683
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41


lnYt
1.2166
1.2165
1.2164
1.2163
1.2162
1.2161
1.216
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41


lnCt
1.1943
1.1942
1.1941
1.194
1.1939
1.1938
1.1937
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41


lnIt
-0.0843
-0.0844
-0.0845
-0.0846
-0.0847
-0.0848
-0.0849
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41



For the second set of parameters: $\tilde{k}_t$

$$\begin{aligned}
\text{mean} &= 2.444678672 \\
\text{standard deviation} &= 0.020320086 \\
\text{coefficient of variation} &= 120.3084803 \\
\text{relative coefficient of variation} &= 28.79617487 \\
\text{correlation with Y} &= 0.045494757 \\
\text{correlation with A} &= -0.112648907 \\
\text{autocorrelation} &= 0.984864362
\end{aligned}$$

$\tilde{y}_t$

$$\begin{aligned}
\text{mean} &= 16.73062081 \\
\text{standard deviation} &= 4.004521389 \\
\text{coefficient of variation} &= 4.177932687 \\
\text{relative coefficient of variation} &= 1 \\
\text{correlation with Y} &= 1 \\
\text{correlation with A} &= 0.023766636 \\
\text{autocorrelation} &= 0.044093365
\end{aligned}$$

$\tilde{c}_t$

$$\begin{aligned}
\text{mean} &= 15.89408977 \\
\text{standard deviation} &= 3.804295319 \\
\text{coefficient of variation} &= 4.177932687 \\
\text{relative coefficient of variation} &= 1 \\
\text{correlation with Y} &= 1 \\
\text{correlation with A} &= 0.023766636 \\
\text{autocorrelation} &= 0.044093365
\end{aligned}$$

$\tilde{i}_t$

mean = .83653104
standard deviation = 0.200226069
coefficient of variation = 4.177932687
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = 0.023766636
autocorrelation = 0.044093365

$\tilde{A}_t$

mean = 0.999579122
standard deviation = 0.001868439
coefficient of variation = 534.9807613
relative coefficient of variation = 128.0491576
correlation with Y = 0.023766636
correlation with A = 1
autocorrelation = 0.990940538

$log(\tilde{k}_t)$

mean = 15.07415464
standard deviation = 8.296185049
coefficient of variation = 1.816998361
relative coefficient of variation = 0.161859889
correlation with Y = −0.013069733
correlation with A = −0.214748505
autocorrelation = 0.999991542

$log(\tilde{y}_t)$

mean = 1.210794062
standard deviation = 0.107858651
coefficient of variation = 11.22574823
relative coefficient of variation = 1
correlation with Y = 1
correlation with A = 0.022987192
autocorrelation = 0.045019853

$log(\tilde{C}_t)$

mean = 1.188517667
standard deviation = 0.107858651
coefficient of variation = 11.01921501
relative coefficient of variation = 0.98160183
correlation with Y = 1
correlation with A = 0.022987192
autocorrelation = 0.045019853

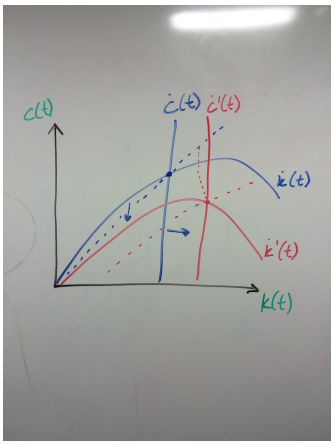
$log(\tilde{I}_t)$

mean = −0.090235934
standard deviation = 0.107858651
coefficient of variation = −0.836612851
relative coefficient of variation = −0.074526244
correlation with Y = 1
correlation with A = 0.022987192
autocorrelation = 0.045019853

$\tilde{Z}_t$

mean = 0.001499222
standard deviation = 0.078560334
coefficient of variation = 0.019083703
relative coefficient of variation = 0.001699479
correlation with Y = 0.991588202
correlation with A = −0.011609685
autocorrelation = 0.037249566

2.1



With an increase in a, consumption will increase immediately, then after date S decrease to lower than previous levels before the equilibrium shifts to the new saddle point.

2.2

With first parameter values, and shock of .7

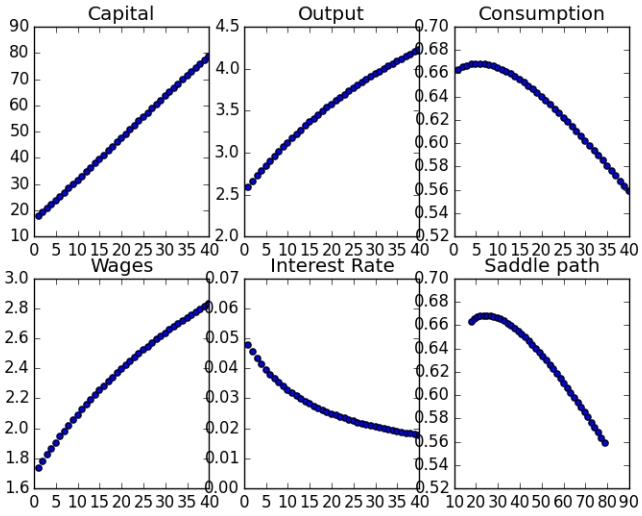
$$\bar{k} = 25.5152058604$$

$$\bar{y} = 2.91235086459$$

$$\bar{c} = 2.20996329086$$

$$\bar{r} = 0.037666785468$$

$$\bar{w} = 1.95127507927$$



With first parameter values, and shock of 1.5

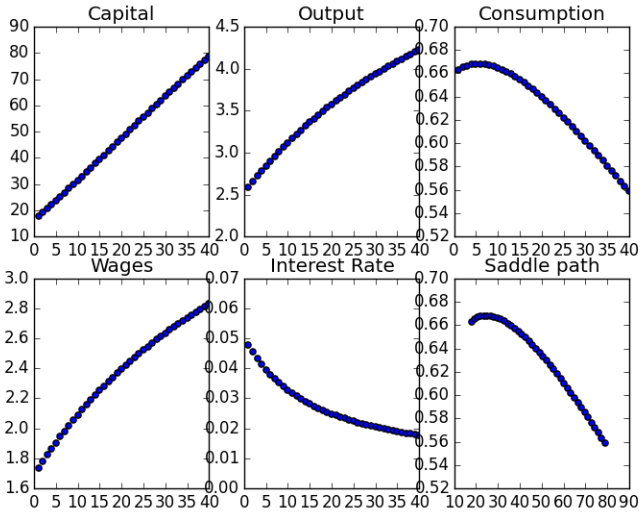
$$\bar{k} = 25.5152058604$$

$$\bar{y} = 2.91235086459$$

$$\bar{c} = 2.20996329086$$

$$\bar{r} = 0.037666785468$$

$$\bar{w} = 1.95127507927$$



With second parameter values, and shock of .7

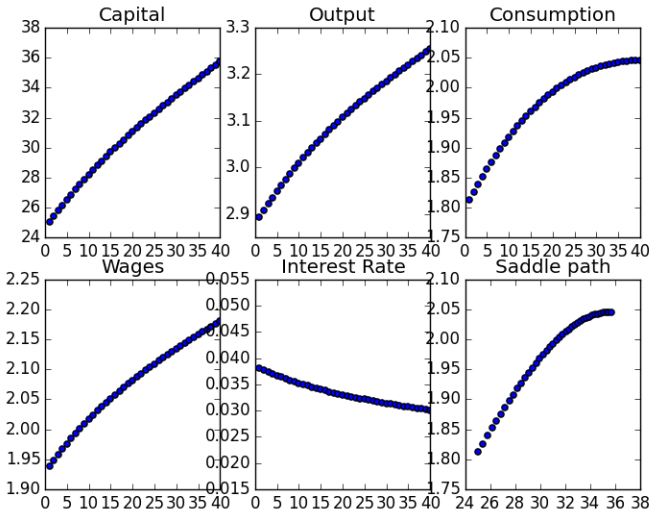
$$\bar{k} = 35.7240923352$$

$$\bar{y} = 3.25444695343$$

$$\bar{c} = 2.27102715755$$

$$\bar{r} = 0.0300628350346$$

$$\bar{w} = 2.1804794588$$



With second parameter values, and shock of 1.5

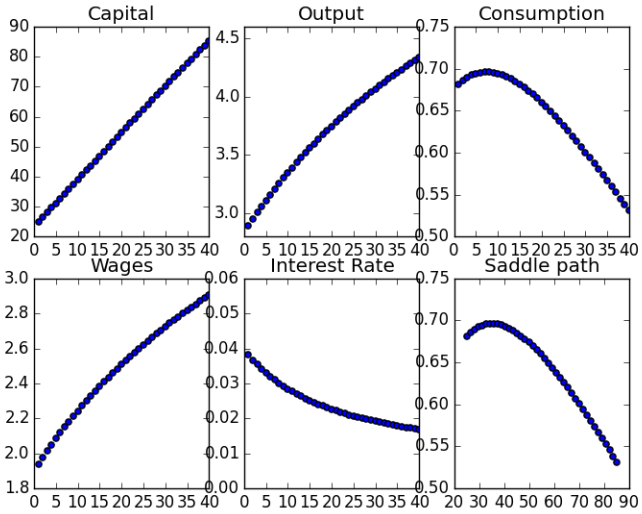
$$\bar{k} = 35.7240923352$$

$$\bar{y} = 3.25444695343$$

$$\bar{c} = 2.27102715755$$

$$\bar{r} = 0.0300628350346$$

$$\bar{w} = 2.1804794588$$



With third parameter values, and shock of .7

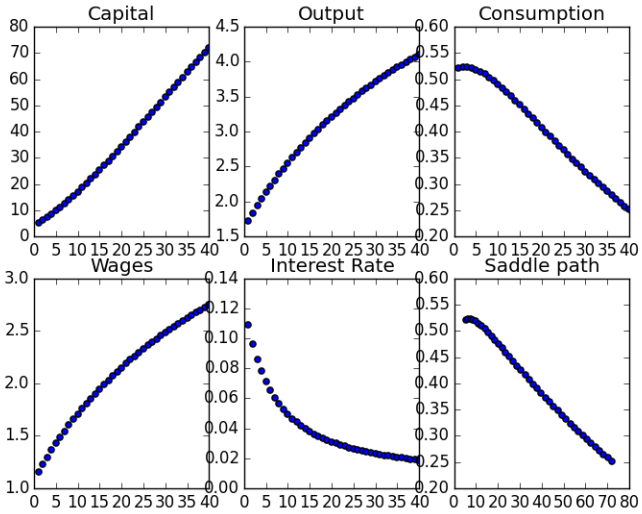
$$\bar{k} = 7.45813055462$$

$$\bar{y} = 1.94074239883$$

$$\bar{c} = 1.73543352327$$

$$\bar{r} = 0.0858720542533$$

$$\bar{w} = 1.30029740722$$



With third parameter values, and shock of 1.5

$$\bar{k} = 7.45813055462$$

$$\bar{y} = 1.94074239883$$

$$\bar{c} = 1.73543352327$$

$$\bar{r} = 0.0858720542533$$

$$\bar{w} = 1.30029740722$$