

CHEN Anhua's homework summary of Chapter 5

- Repository
<https://github.com/ChenAnhua/BootCamp2017/tree/master/probsets/econ>
- Homework Result
 - **Question 5.1**
Using the original calibration, the results are recorded as below(also printed if the script is running):

Steady State savings: [0.01931274 0.05841159]
Steady state period 1 consumption: 0.182412558356
Steady state period 2 consumption: 0.209614907072
Steady state period 3 consumption: 0.240873817365
Steady state wage: 0.201725293596
Steady state compound interest rate: 2.43303025356
Steady state capital: 0.0777243261181
Steady state labor: 2.2

- **Question 5.2**
After changing the Beta to 0.55 (agents become more patient), the results are:
(will be printed after change line 55 in 3period_OG_execution.py)

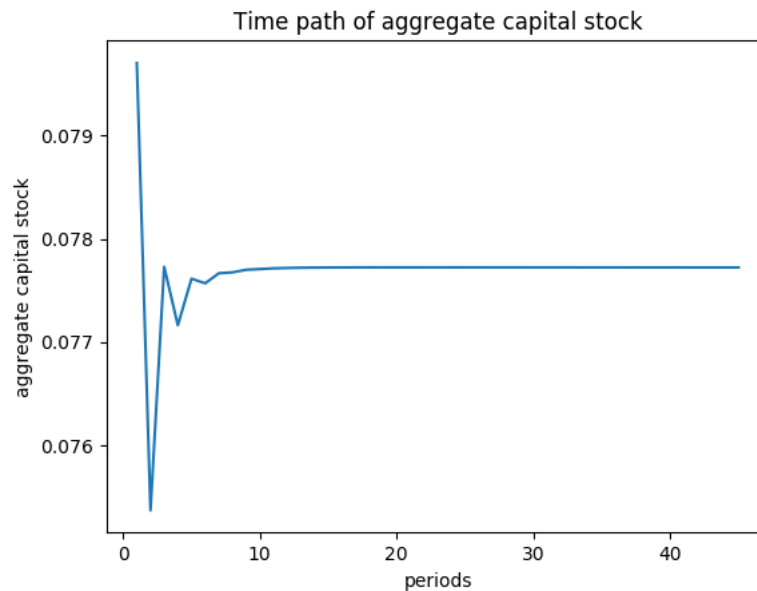
Steady State savings: [0.02817696 0.07686557]
Steady state period 1 consumption: 0.195975352642
Steady state period 2 consumption: 0.228615593799
Steady state period 3 consumption: 0.266692158088
Steady state wage: 0.22415231191
Steady state compound interest rate: 1.88635999915
Steady state capital: 0.105042525508
Steady state labor: 2.2

Both young and middle agents will save more after beta is increased (more patient). The steady state consumption for all agents also increased after beta increases. A possible explanation is that when agents become more patient and save more, it will also increase capital and therefore the output and wage. Actually we did witness a higher wage in this case.

Interest rate falls when beta becomes bigger. An intuitive explanation is that when agents choose to save more, it will bring down the interest rate given a higher supply of savings. (also quantitatively captured in formula (5.26) in our notes)

- **Question 5.3**
Please refer to the scripts on repository
- **Question 5.4**

The converged time path is stored under the name 'K_path' after running the 3period_OG_execution.py. And the economy starts to reach the 0.0001 region of steady state starting from period 9. Please see the plot below:



We saw a sharp drop in capital stock in period 2 and a zig-zag path to steady state starting roughly from period 9. A potential explanation is that given our initialization of period 1 savings, the young people is saving only 0.8 of steady state saving for young people. This might indicate that the economy will be under-saving in the next period (a sharp drop in period 2).