

## 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)

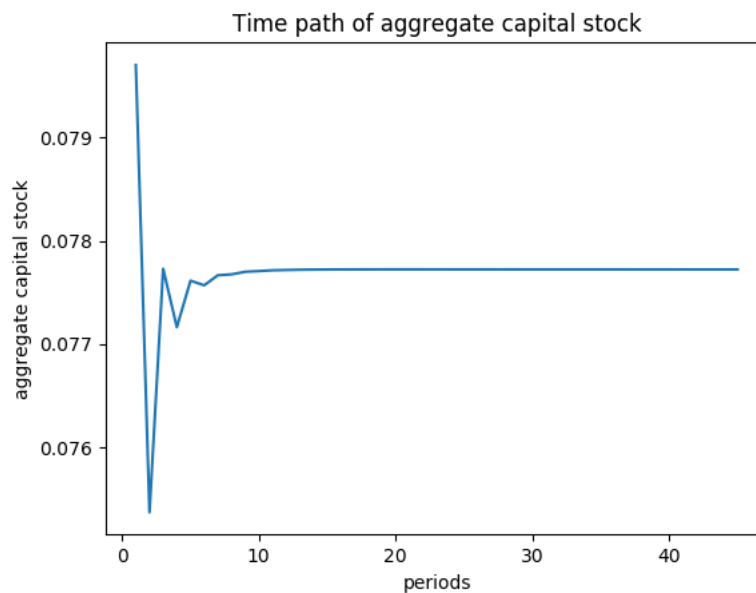
*Steady State savings: [ 0.02817696 0.07686557]*  
*Steady state period 1 consumption: 0.195975352642*  
*Steady state period 2 consumption: 0.228615593799*  
*Steady state period 3 consumption: 0.266692158088*  
*Steady state wage: 0.22415231191*  
*Steady state compound interest rate: 1.88635999915*  
*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 **6-7**. 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 **6-7**. 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).