Econ Homework Week #3, Firm Dynamics

OSM Lab, Eun-Seok Lee

1. I modified given codes little bit, and applied "z_grid" and "pi" to Value function. It looks reasonable. With higher z_grid, it has higher value function.

2. I think that the firms invest specific amount of k in early period in a reason that adjustment cost will increase as k increases fast rather than the previous cost function. Therefore, investment rate will decrease more faster. I set the dense as 1 to control "no investment policy."

3. If I make policty function codes more efficient, it might be time-saving. But here, PFI takes longer time than VFI. (Actually, it is very slow...) The reason why I think PFI might be faster is that iteration time of PFI is shorter than VFI's when I execute the codes. When I see the result, the functions made from both of them look very similar. Because of processing time, I set weak tolerance and dense (1e-2 and 2). If I set those stonger, I expect that its shape will look more similar. I could have calculated the function for k_{t+1} with repect to other variables. But, I would like to depend on computer rather than hand calculating.

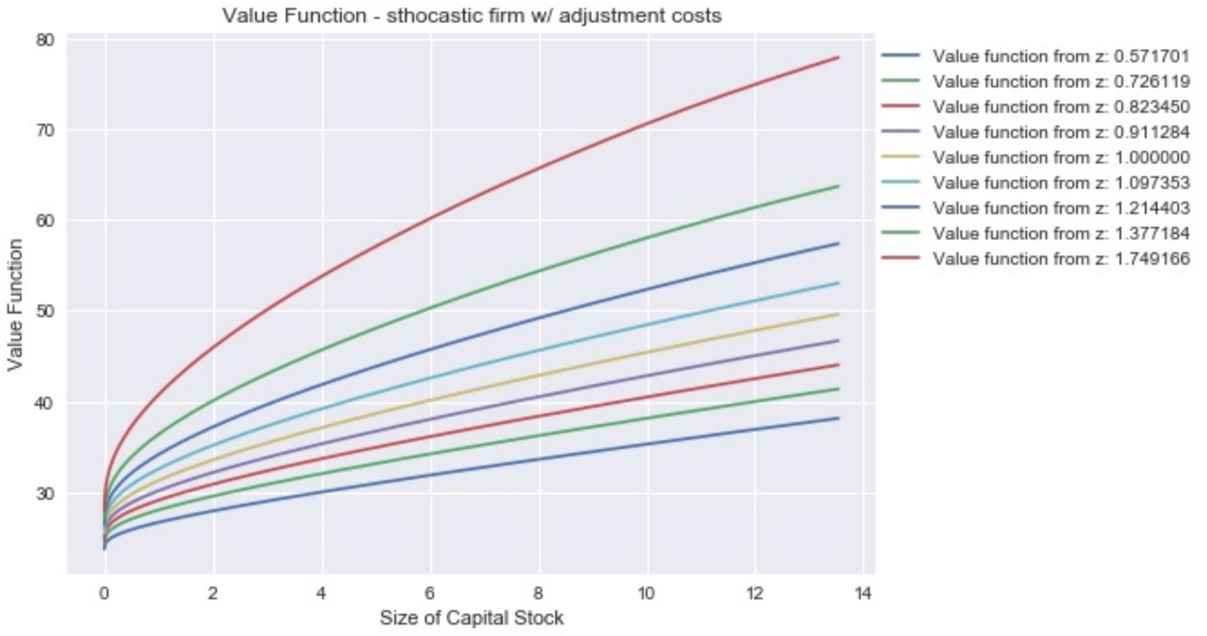
4. The result for the variables of interest is as follows.

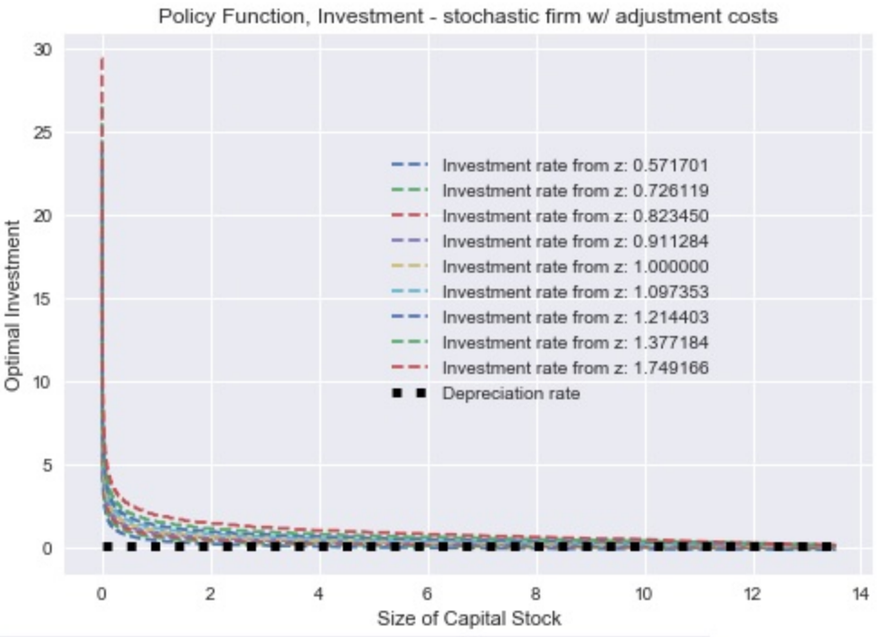
   – converged wage is 1.04695061
   – wage = 1.04695061
   – real interest rate = 0.04166666 (This is fixed by $(\frac{1}{\beta} - 1)$)
   – Labor demand = 0.482755926825
   – Labor supply = 0.485215909551

   Around size "1" of capital, density was higher. In this problem, I attached the picture of distribution in the next page.

References

Problem 1 Figures





Problem 4 Figures