ECO6353-Consumption & Investment Dynamics

Problem Set 2

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Solutions

1. There are 3 bugs in the provided code on Blackboard. Correct all of them and concisely explain what was causing the bug. 2 bugs are prior to the loop and one bug is in the loop.

   - 1st bug: The gamma (γ) parameter is not preallocated which is required when solving for consumption

   - 2nd bug: The maximum point is incorrect since a_n should be multiplied with (1 + r).

   - 3rd bug: The last bug is in the main loop. We need to identify x,y,z and the method for interpolation. We used the estimates of w_orig, a, and w1.

2. Explain how the simulated results (c, a') would qualitatively change if the borrowing constraint was set to 0.

   As we can see from the results of the correlation, the correlation coefficients are higher compared to the first simulated results of (c, a'). Therefore, individuals have the ability to borrow against future income to smooth consumption over time.

3. Explain how the simulated results (c, a') would qualitatively change if the relative risk aversion parameter was doubled.

   As we can see from the results of the correlation, the values are lower compared to the first simulated results of (c,a') as well as lower compared to the results on no borrowing. This is because the higher risk aversion value of parameter gamma at 7 indicates a reduced consumption volatility. Hence, individuals become more sensitive to changes in consumption. The gamma is also higher compared to the first problem set where gamma is set to 2.6. Hence, the results here are comparatively lower.

   In theory, with higher risk aversion (higher gamma), individuals tend to be more cautious about their consumption choices. They are less inclined to consume when faced with income fluctuations. This behavior may lead to a lower responsiveness of consumption to changes in income. Conversely, individuals tend to save more during times of higher income to smooth consumption over time. This behavior leads to a dampened response of consumption to income changes.

4. Solutions for d) and e) are in the code file.