Applied Project #1

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In the paper, the authors estimated their model using U.S. quarterly data spanning the period 1967:Q1 to 2003:Q1. Based on their estimation the coefficient of persistence of habit estimated is 0.86. Please see below our matrix of correlation coefficients and the impulse response functions using the aforementioned phi value.

Part 2

Question B)

By comparing our results of the matrix of correlation coefficients of the endogenous variables when the habit persistence is 0.86 and for a model with no consumption habit, we can see that the correlation coefficient between Y and C is lower for the

former case. Specifically:

With habit persistence: $corr(Y_t, C_t) = 0.9338$

With no habit persistence: $corr(Y_t, C_t) = 0.9681$

The reason for the above result is that with habit persistence Y_t is now influenced by not only C_t but also C_{t-1}. But without habit persistence Y_t is not affected by C_{t-1}. Thus, we expect the correlation coefficient to be smaller for the model with habit persistence.

Question C)

The impulse response fuctions for the model without habit persistence (phi=0) and the model with habit persistence (phi=0.86) are rather similar with small differences particularly in the graphs of Y and C. For instance, the model with habit persistence takes more periods for the impulse response function of C to reach its peak whereas the model without habit persistence reaches this peak relatively quicker. This is intuitive as with habit persistence the value of C_t will depend on C_{t-1} and thus be more resistant to changes in the system. This result follows for Y_t since C_t and Y_t are highly positively correlated as shown above. Therefore, it will take more periods for the impulse response function of Y_t to reach its peak in the model with habit persistence as opposed to the model without habit persistence.

See the attached pages for Figures 1-4 regarding the matrices of correlation and impulse response functions