Problem Set 2[1]

Econ 202a

Fall 2020

Kendra Marcoux

A. The household's problem has 2 value equations so we can express its recursive problem as two separate Bellman equations, representing the recursive problem if the consumer is employed or not:

$$V_e(A,\tilde{Y}) = \max_{0\le C\le \tilde{Y}+A}\{\frac{C_t^{1-\gamma}}{1-\gamma} + \beta\mathbb{E}_0((1-p)V_e(\tilde{Y}_{t+1},A_{t+1}) + pV_u(b,A_{t+1}))\}$$

subject to:

$$C + \frac{A_{t+1}}{1+r} = \tilde{Y}_t + A_t, \quad A_{t+1}\ge 0$$

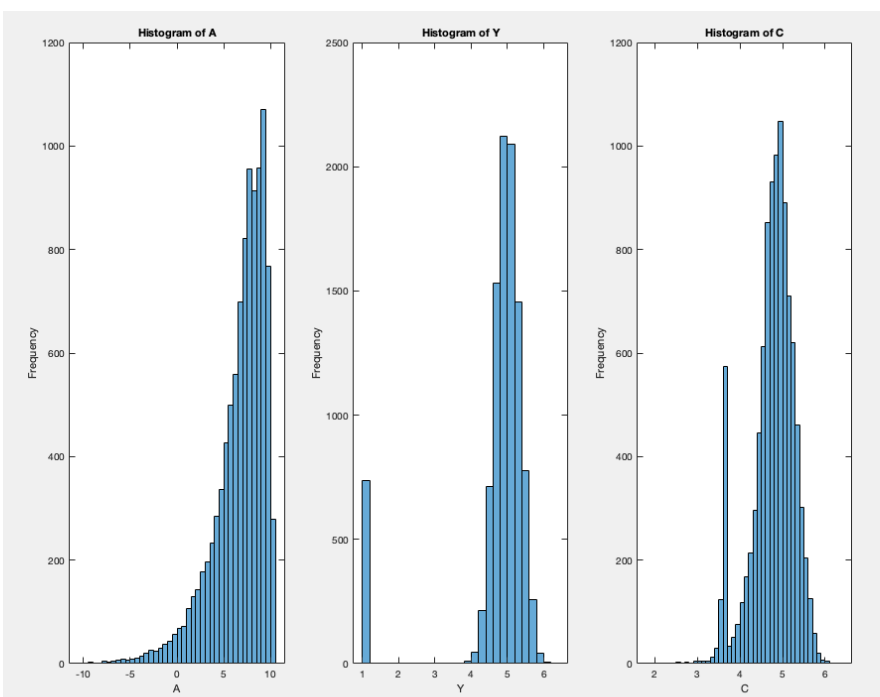
$$V_u(A,\tilde{Y}) = \max_{0\le C\le b+A}\{\frac{C_t^{1-\gamma}}{1-\gamma} + \beta\mathbb{E}_0((1-q)V_u(b,A_{t+1}) + qV_e(\tilde{Y}_{t+1},A_{t+1}))\}$$

subject to:

$$C + \frac{A_{t+1}}{1+r} = b + A_t, \quad A_{t+1}\ge 0$$

B.-H.,J. See Matlab code.

K. **Histograms:**

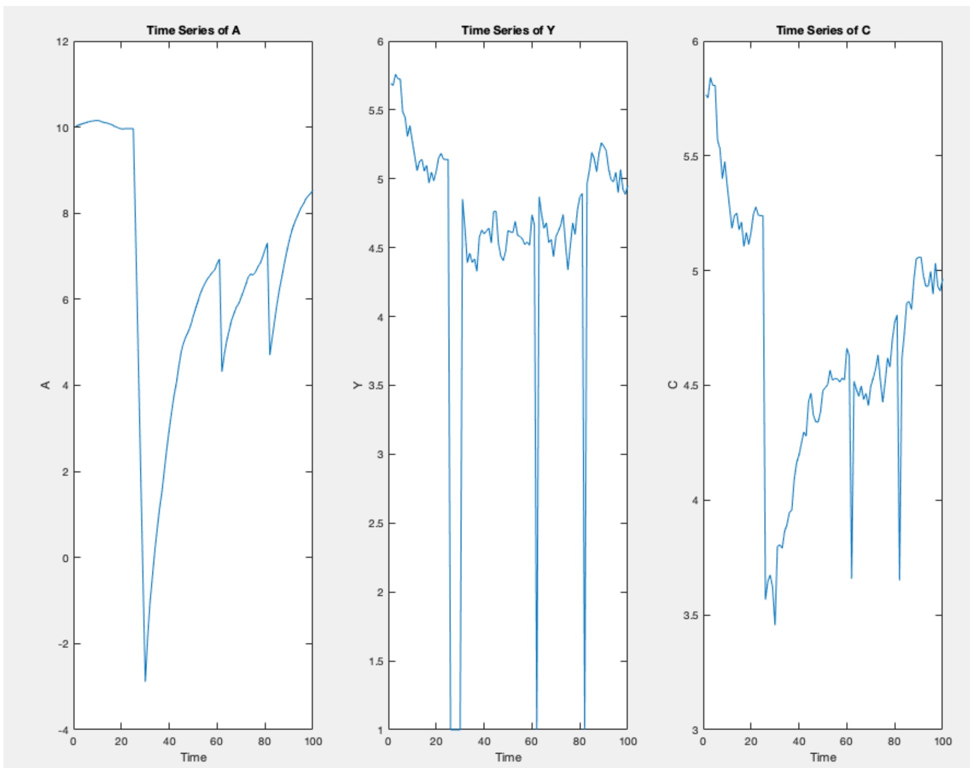


[1] I would like to thank Simon Greenhill, Sam Tugendhaft, and Clint Hamilton for working on portions of this problem set with me.

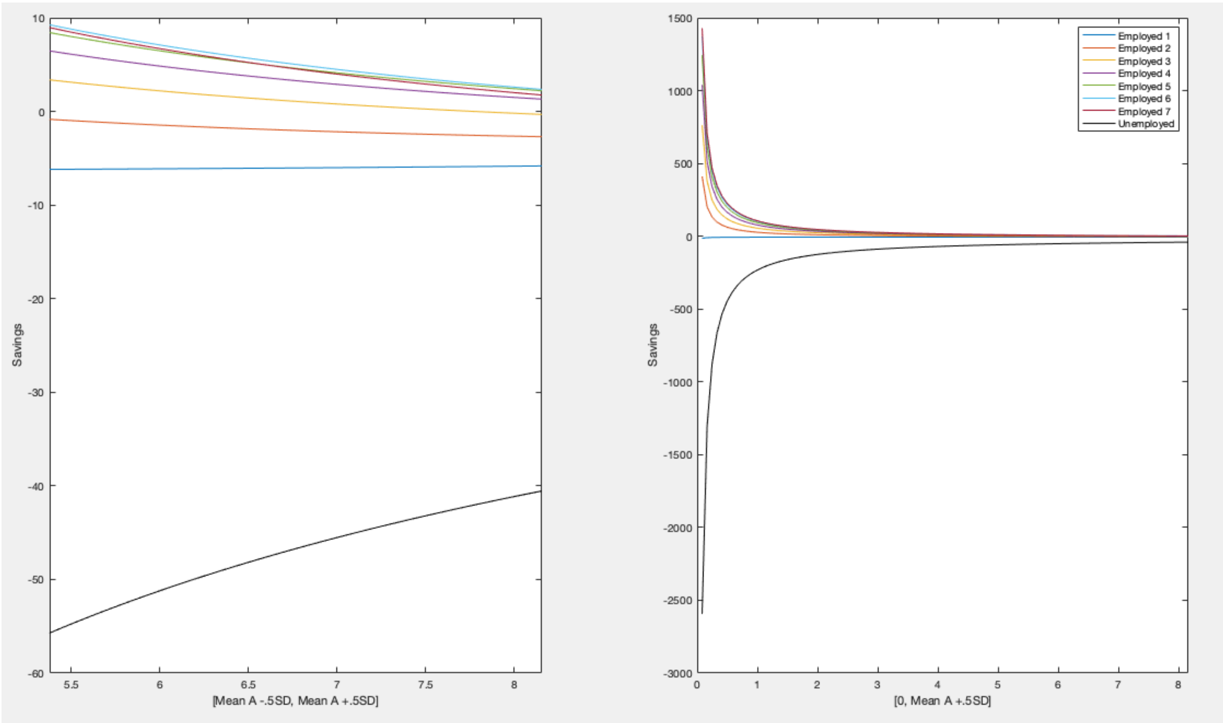
Summary statistics:

	A	**Y**	**C**
Mean	6.7663	4.7089	4.7752
Standard Deviation	2.7776	1.0904	0.4995

Time series: Starting at period 1,000 to 1,100. Period 0 on the x-axis is actually period 1,000.



L. **Savings as a function of A:**



M. **Marginal Propensity to Consume as a function of A:**