Econ 522 Final Exam (Spring 2020)

Part I

Please scan and submit your written answers to Part I on PolyLearn.

1. (10 points) What are the Yule-Walker equations for the model

$$y_t = 0.6y_{t-1} + 0.3y_{t-2} + w_t + 0.5w_{t-1},$$

   where $w_t \sim WN(\sigma_w^2)$.

2. (10 points) Compute the Wold decomposition for the model

$$y_t = 0.3y_{t-1} + w_t + 0.5w_{t-1} + 0.2w_{t-2}.$$

   That is, find $\psi_0, \psi_1, \psi_2, \ldots$ such that $y_t = \sum_{i=0}^{\infty} \psi_i w_{t-i}$.

Part II

Please do the following two problems using R Markdown and turn in the html output on PolyLearn.

(10 points each) For each of the data sets below: plot the data; do some exploratory analysis (e.g., ACF, PACF,...); come up with a good model; and show some diagnostics for your preferred model. Your analysis should include a summary describing what you did, what your conclusions are, evidence supporting your conclusions, and any potential shortcomings of your model.

3. `final2020_01.csv`

4. `final2020_02.csv`