

# Econ 3342

## Assignment #4

Instructions. Please type your answer key before turning it in. Don't forget to include your name and to include every graph/output that is requested in this activity.

1. Go to <https://fred.stlouisfed.org/> and search for the Consumer Price Index series *cpiaucsl* (Consumer Price Index for All Urban Consumers: All Items in U.S. City Average). This series is available since 1947. Download the data in annual frequency as an EXCEL file. Then import your data into Eviews.

a. Let  $y_t$  be the variable *cpiaucsl* in period  $t$ . Create the variable *inflation* with the formula  $\text{inflation} = 100 * \frac{y_t - y_{t-1}}{y_{t-1}}$ . When creating the variable, make sure that you have not made a mistake in the formula. (One way to check whether you have the right formula is to check magnitudes). Show the time series for the period 1947 - 2017 (paste the graph in your homework).

b. For the period 1983 - 2017 (NOTICE THE PERIOD) create the correlogram for the variable *inflation*, use 12 lags. Judging by the correlograms discussed in class, which time series model is more likely to describe the time series, an AR(1) or an AR(2) process? Explain.

c. Irrespective of your answer above, estimate an AR(1) model for *inflation* for the period 1983 - 2017. Follow the estimating procedures explained in class. Paste your output below.

d. What is the unconditional mean of inflation, according to the process estimated above?

e. Assume that the loss function is quadratic (this statement implies that you can use the conditional mean as the optimal forecast). With your estimated model, provide the optimal 1-step ahead forecast of inflation for year 2017, as well as the optimal 2-step ahead forecast of inflation for year 2019. You can obtain this forecast directly in Eviews. or you can do it by hand if you prefer. If you do it in Eviews, make sure you print the graph of your forecast. Then compare your forecasted values with the realized values of inflation for those 2 years.