ECON 124: Midterm #2

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Problem 1

You will find the data file USMacro_Quarterly, which contains quarterly data on several macroeconomic series for the United States; the data are described in the file USMacro_Description. The variable PCEP is the price index for personal consumption expenditures from the U.S. National Income and Product Accounts. In this exercise you will construct forecasting models for the rate of inflation, based on PCEP. For this analysis, use the sample period 1963:Q1–2012:Q4 (where data before 1963 may be used, as necessary, as initial values for lags in regressions).

(a) Compute the inflation rate, $infl = 400 \times [\ln PCEP_t - \ln PCEP_{t-1}]$.

(b) Plot the value of $infl$ from 1963:Q1 through 2012:Q4. Based on the plot, do you think that $infl$ has a stochastic trend? Explain.

(c) Compute the first four autocorrelation of $infl$.

(d) Run an OLS regression on $\Delta infl_t$. Is the AR(2) model better thatn an AR(1) model? Explain.

(e) Estimate the AR(p) model for $p = 0, \cdots, 8$. What lag length is chosen by BIC? What lag length is chosen by AIC?

(f) Use the AR(2) model to predict the change in inflation from 2012:Q4 to 2013:Q1 - that is, predict the value of $\Delta infl_{2013Q1}$?