

Due Thursday, February 24

This assignment is on hypothesis testing and single equation forecasting with the standard linear regression model. The necessary data are in the Excel file `dat105.xls` available at <http://uaeller.eller.arizona.edu/~rlo> under econ 522a. Be sure to attach the supporting computer print out to the completed assignment and make clear where your answers are shown.

Consider again the following money demand model:

$$\ln(M_{1t}) = \beta_0 + \beta_1 \ln(r_t) + \beta_2 \ln(P_t) + \beta_3 \ln(Q_t) + u_t, \quad t = 1959, \dots, 1989$$

1. Test the following hypotheses at the 5% level of significance using the t test.
 - a. $H_0: \beta_3 = 1, H_1: \beta_3 \neq 1$
 - b. $H_0: \beta_2 < 1, H_1: \beta_2 > 1$
 - c. $H_0: \beta_1 = 0, H_1: \beta_1 < 0$

2. Test the following hypotheses at the 5% level of significance using both the F test and the *likelihood ratio* test. For each hypothesis $R\beta = r$, specify the parameter restriction matrix R , the number of restrictions q , and the vector r .
 - a. $H_0: \beta_2 = \beta_3, H_1: \sim H_0$
 - b. $H_0: \beta_2 = \beta_3 = 1, H_1: \sim H_0$
 - c. $H_0: \beta_1 = -0.2, \beta_2 + \beta_3 = 2, H_1: \sim H_0$

3. Re-estimate the above model for the period $t = 1959, \dots, 1988$, i.e., leave out 1989 as a holdout sample.
 - a. Forecast the actual value of $\ln(M_{1,1989})$ and calculate the forecast error.
 - b. Construct the 95% confidence interval for your forecast of the *conditional mean* value of $\ln(M_{1,1989})$.
 - c. Construct the 95% forecast interval for your forecast of the *actual* value of $\ln(M_{1,1989})$.
 - d. At the 5% level of significance test the following hypotheses:
 - (1) the *conditional mean* value of $\ln(M_{1,1989})$ is 6.7.
 - (2) the *actual* value of $\ln(M_{1,1989})$ is 6.7.