

Extra credits (2 points)

Table 10.13 gives data on imports, GDP, and the Consumer Price Index (CPI) for the United States over the period 1975-2005. You are asked to consider the following model:

$$\ln Imports_t = \beta_1 + \beta_2 \ln GDP_t + \beta_3 \ln CPI_t + u_t$$

- a) Estimate the parameters of this model using the data given in the table.
- b) Do you suspect that there is multicollinearity in the data? How do you detect? Show the work.
- c) Regress:
 - (1) $\ln Imports_t = A_1 + A_2 \ln GDP_t$
 - (2) $\ln Imports_t = B_1 + B_2 \ln CPI_t$
 - (3) $\ln GDP_t = C_1 + C_2 \ln CPI_t$

On the basis of these regressions, what can you say about the nature of multicollinearity in the data?

- d) Suppose there is multicollinearity in the data but $\hat{\beta}_2$ and $\hat{\beta}_3$ are individually significant at the 5 percent level and the overall F test is also significant. In this case should we worry about the collinearity problem?