UNIVERSITY OF NORTH CAROLINA
Department of Economics

Economics 275	Dr. Gallant
Homework 5	Fall 2000
Due November 8, 2000	

For the Berndt-Wood factor demand system with symmetry imposed

$$y = f(x, \theta) + e$$

$$y = [\ln(M_K/M_M), \ln(M_L/M_M), \ln(M_E/M_M)]'$$

$$x = [\ln P_K, \ln P_L, \ln P_E, \ln P_M]'$$

$$\theta = (\theta_1, \theta_2, \cdots, \theta_{13})'$$

$$f(x, \theta) = \begin{pmatrix} \ln \frac{\theta_1 + \theta_2 x_1 + \theta_3 x_2 + \theta_4 x_3 + \theta_5 x_4}{1 + \theta_5 x_1 + \theta_9 x_2 + \theta_{12} x_3 + \theta_{13} x_4} \\ \ln \frac{\theta_6 + \theta_3 x_1 + \theta_7 x_2 + \theta_8 x_3 + \theta_9 x_4}{1 + \theta_5 x_1 + \theta_9 x_2 + \theta_{12} x_3 + \theta_{13} x_4} \\ \ln \frac{\theta_{10} + \theta_4 x_1 + \theta_8 x_2 + \theta_{11} x_3 + \theta_{12} x_4}{1 + \theta_5 x_1 + \theta_9 x_2 + \theta_{12} x_3 + \theta_{13} x_4} \end{pmatrix}$$

use the data in file klem.dat and documented in file klem.doc which are available either by anonymous ftp from ftp.econ.duke.edu in directory pub/arg/data or by clicking "Browse ftp site" on the course web page, to test the hypothesis of homogeneity

$$\theta_2 + \theta_3 + \theta_4 + \theta_5 = 0$$

$$\theta_3 + \theta_7 + \theta_8 + \theta_9 = 0$$

$$\theta_4 + \theta_8 + \theta_{11} + \theta_{12} = 0$$

$$\theta_5 + \theta_9 + \theta_{12} + \theta_{13} = 0$$

using as a test statistic either the Wald, likelihood ratio, or Lagrange multiplier test. Discuss the merits of your choice relative to the others.