

EC 821
Time Series Econometrics
Spring 2003
Prof. Baum

Problem Set 2
Due at classtime, 19 March 2003

Perform these exercises using Stata 7.0 or 8.0. You may use either version of Stata on any computer with Internet access (Mac, Windows, Unix, Linux). If you are interested in acquiring your own copy of Stata 8, please see

<http://www.stata.com/info/order/new/edu/gradplans/gp3-order.html>

1. Using the Lothian and Taylor (“Real exchange rate behavior: The Recent Float from the Perspective of the Past Two Centuries”, *J. Political Economy*, 104, 488-509, 1996) data on the components of the real exchange rate, accessible via

use <http://fmwww.bc.edu/ec-p/data/hayashi/ltaylor96.dta>

Calculate the USD/GBP real exchange rate as

$$z_t = \log(S_t) - \log(P_t) + \log(P_t^*)$$

Since S is in USD/GBP, an increase indicates sterling appreciation. The z series will be used in all tests below.

a. For the entire sample period, apply the sequential- t rule, the AIC, and the BIC to select the number of lagged changes to be included in an ADF test (with constant but no trend). Set the maximum lag order to 14, and the significance level of the sequential- t rule to 10%.

b. Apply the ordinary (non-augmented) D-F test to the floating exchange rate period of 1974–1990. Can you reject the null at 5%?

c. Apply the ordinary D-F test to the gold standard period of 1870-1913. Can you reject the null at 5%? Is the estimate of the coefficient on z_{t-1} closer to zero than it was in the floating rate period?

d. Assume that the real exchange rate follows a stationary $AR(1)$ process. Split the sample into two subsamples, 1791-1973 and 1974-1990, and test for structural change in both the intercept and slope.

e. Use the Phillips–Perron test, with the same lag orders as selected in part (a), to the full sample. Comment on your results relative to those of the ADF test in part (a).

f. Apply the DF-GLS test (`findit dfgls`), with automatic lag selection, to the full sample. Comment on your results relative to those of the ADF test of part (a).

g. Apply the KPSS test (`findit kpss`), with automatic lag selection: the `auto` option, to the full sample. Comment on your results relative to those of the ADF test of part (a) and the DF-GLS test of part (f).