

RM01 Research Methods

STATA Exercises

Quarterly data on property price index and GDP are given in Worksheet 'example1'. Variable T is a quarterly time index (e.g., T = 1 for the first quarter). Use STATA to complete the following tasks.

- a) Open the file in STATA and view the data
- b) Create a histogram of variable INDEX
- c) Create a scatter plot between INDEX and GDP
- d) Generate descriptive statistics for INDEX and GDP
- e) Generate frequency statistics for T
- f) Generate two new variables: $T2 = T * T$, and $LNGDP = \ln(GDP)$
- g) Estimate the regression model $INDEX = \beta_0 + \beta_1 GDP + \beta_2 T + \beta_3 T2 + \varepsilon$, where T2 is T squared. Obtain collinearity statistics and autocorrelation test statistics
- h) Use stepwise, backward, and forward selection methods to determine the best set of regressors to predict the value of INDEX
- i) Generate a scatter plot between the residuals and GDP for the model $INDEX = \beta_0 + \beta_1 GDP + \beta_2 T + \varepsilon$.
- j) Perform a White heteroskedasticity test on the model $INDEX = \beta_0 + \beta_1 GDP + \beta_2 T + \varepsilon$.
- k) Perform a RESET test on the model $INDEX = \beta_0 + \beta_1 GDP + \beta_2 T + \varepsilon$.
- l) Perform a predictive failure test on the model $INDEX = \beta_0 + \beta_1 GDP + \beta_2 T + \varepsilon$. Reserve the last 10 observations for the test.
- m) Test if there is a structural break at $GDP = 30,000,000$.
- n) Create dummy variables for T
- o) Estimate a regression model using the group of dummy variables created in part n)
- p) Create a dummy variable INDEXD, which equals one when $INDEX > 103$ and zero otherwise
- q) Estimate a logit model by using INDEXD as the dependent variable, and T and GDP as the independent variables
- r) Predict the value of INDEXD when T = 1, 2, and 3 and $GDP = 30,000,000$