

Problem Set #3

ECONOMICS 141
FALL 2004

Due October 16

1. For the data set on MPG and automobile speed from problem set #2, use the TSP statistical package to estimate the regression coefficients of fuel economy F_i on a constant term, speed S_i , and its squared value $(S_i)^2$. Also, use TSP to graph F_i and the fitted values \hat{F}_i from this regression against the variable S_i , and formally test the null hypothesis that the coefficient on $(S_i)^2$ is zero at a 5% level, assuming the error terms for the model are normally distributed.

2. through 6. Do problems 5.2 through 5.6 of chapter 5 of Pindyck & Rubinfeld's text (using the TSP statistical package). However, you should run all the regressions in *logarithms*, by replacing the two of the quantitative variables – *ROOMPER*, and *RENTPER* – by their (natural) logarithms whenever they appear in a regression equation. Do not try to take logarithms of the *SEX* indicator variable; that won't work, for obvious reasons. The same caveat holds for the *DIST* variable, which has $DIST = 0$ for the third observation.

For comparison purposes, you might want to run the regressions in levels rather than logs (as described in the problems), since the answers to some of these questions are given in the back of the book, which allows you to check your methods of calculating the desired statistics.

(As for problem set #1, these data are in the file "RentData.txt" on the course website.)