Probability and Statistics II
GSIA, Carnegie Mellon University
45-734, Spring 2002

Homework #5, due Tuesday, April 30, 2002

Please attach relevant eview output to your assignment!

Please do the following problems from the book:

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Using the auto data as in assignment 3, answer the following:

Throughout, be clear what you are assuming. Also, be sure to interpret your answers.

1. Please estimate (in logs) a regression of price on weight and domestic. Test this regression for non-linearity.

2. Attempt to correct the non-linearity using a spline in weight with two knots. Put the knots at the 25th and 75th percentiles of weight. Interpret the coefficients on weight and its spline.

3. Test again for non-linearity and discuss what you would do next.

4. Now test the regression in question 1 for heteroskedasticity. Estimate the model with robust standard errors. How does estimating with robust standard errors affect the estimates and standard errors?

5. Now test the regression in question 1 for serial correlation. What effect would serial correlation have on your estiamtes, were it to exist?

6. Domestic cars are heavier on average than are foreign. What effect would you expect omitting the domestic dummy to have on the estimate of weight and why? Verify your reasoning.