**ECON 3314 ECONOMETRICS II**

**HOMEWORK (MT 2)**

**DUE ON 24TH April 2020**

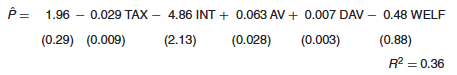
1. To see if the variable belongs in the model , Ramsey’s RESET test would estimate the linear model, obtaining the estimated Yi values from this model [i.e., ] and then estimating the model and testing the significance of α3. Prove that, if turns out to be statistically significant in the preceding (RESET) equation, it is the same thing as estimating the following model directly:

2. State whether the following statements are true or false. Give your reasoning.

a) Statistical inference in NLLS regression cannot be made on the basis of the usual t, F, and χ2 tests even if the error term is assumed to be normally distributed.

b) The coefficient of determination (R2) is not a particularly meaningful number for an NLRM.

3. To predict the probability of default on their bond obligations, Daniel Rubinfeld studied a sample of 35 municipalities in Massachusetts for the year 1930, several of which did in fact default. The LPM model he chose and estimated was as follows:



where; P = 0 if the municipality defaulted and 1 otherwise

TAX = average of 1929, 1930, and 1931 tax rates

INT = percentage of current budget allocated to interest payments in 1930

AV = percentage growth in assessed property valuation from 1925 to 1930

DAV = ratio of total direct net debt to total assessed valuation in 1930

WELF = percentage of 1930 budget allocated to charities, pensions, and soldiers’ benefits.

Interpret these results economically and statistically.

4. From data for 54 standard metropolitan statistical areas (SMSA), Demaris estimated the following logit model to explain high murder rate versus low murder rate:



where O = the odds of a high murder rate, P = 1980 population size inthousands,

C = population growth rate from 1970 to 1980,

R = reading quotient, and the se are the asymptotic standard errors.

a) How would you interpret the various coefficients?

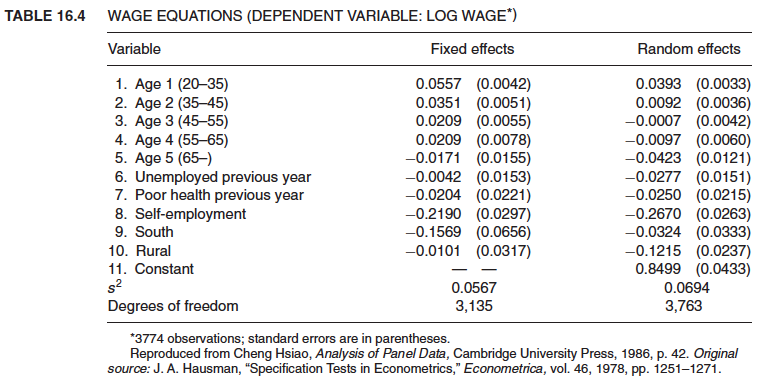
b) Which of the coefficients are individually statistically significant?

c) What is the effect of a unit increase in the reading quotient on the odds of having a higher murder rate?

d) What is the effect of a percentage point increase in the population growth rate on the odds of having a higher murder rate?

e) From the estimated logit model, how would you obtain the expression for the probability of having a higher murder rate?

5. Based on the Michigan Income Dynamics Study, Hausman attempted to estimate a wage, or earnings, model using a sample of 629 high school graduates, who were followed for a period of 6 years, thus giving in all 3774 observations. The dependent variable in this study was logarithm of wage, and the explanatory variables were age (divided into several age groups), unemployment in the previous year, poor health in the previous year, self-employment, region of residence (South = 1; 0 otherwise), area of residence (rural = 1; 0 otherwise). Hausman used both FEM and ECM. The results are given in Table 16.4 (standard errors in parentheses):



a) Do the results make economic sense?

b) Is there a vast difference in the results produced by the two models? If so, what might account for these differences?

c) On the basis of the data given in the table, which model, if any, would you choose?