Weiterführende Fragen der Ökonometrie

Übungsaufgaben – Blatt 13

Aufgabe 1

Use the data in `fringe.txt` for this exercise.

(i) (2 Punkte) For what percentage of the workers in the sample is *pension* equal to zero? What is the range of *pension* for workers with nonzero pension benefits? Why is a Tobit model appropriate for modeling *pension*?

(ii) (2 Punkte) Estimate a Tobit model explaining *pension* in terms of *exper*, *age*, *tenure*, *educ*, *depends*, *married*, *white*, and *male*. Do whites and males have statistically significant higher expected pension benefits?

(iii) (4 Punkte) Use the results from part (ii) to estimate the difference in expected pension benefits for a white male and a nonwhite female, both of whom are 35 years old, are single with no dependents, have 16 years of education, and have 10 years of experience which they gained in one firm.

(iv) (1 Punkt) Add *union* to the Tobit model and comment on its significance.

(v) (2 Punkte) Apply the Tobit model from part (iv) but with *peratio*, the pension-earnings ratio, as the dependent variable. (Notice that this is a fraction between zero and one, but, though it often takes on the value zero, it never gets close to being unity. Thus, a Tobit model is fine as an approximation.) Does gender or race have an effect on the pension-earnings ratio?

Quelle: Wooldridge 3e & 4e Computer Exercise C17.3

Aufgabe 2

(i) (3 Punkte) Überprüfen Sie in Ihrer Schätzung aus Aufgabe 1 (ii), ob die einzeln insignifikanten Variablen auch gemeinsam keinen Einfluss haben.

(ii) (2 Punkte) Führen Sie außerdem einen geeigneten Overall-Test durch (wieder ausgehend vom Modell unter Aufgabe 1 (ii)).

Aufgabe 3

Consider a family saving function for the population of all families in the United States:

$$sav = \beta_0 + \beta_1 inc + \beta_2 hhsize + \beta_3 educ + \beta_4 age + u$$

where $hhsize$ is household size, $educ$ is years of education of the household head, and age is age of the household head. Assume that $E(u|inc, hhsize, educ, age) = 0$.

(i) (1 Punkt) Suppose that the sample includes only families whose head is over 25 years old. If we use OLS on such a sample, do we get unbiased estimators for the β_j? Explain.

(ii) (2 Punkte) Now, suppose our sample includes only married couples without children. Can we estimate all of the parameters in the saving equation? Which ones can we estimate?

(iii) (1 Punkt) Suppose we exclude from our sample families that save more than $25,000 per year. Does OLS produce consistent estimators of the β_j?

Quelle: Wooldridge 3e & 4e Problem 17.6