Introduction to the Labor-Leisure Model I: Labor Supply

Theoretic Analysis

(1) A wage increase will induce both an income and substitution effect on the hours worked of a utility maximizing consumer.
   (i) Explain the substitution effect of a wage increase on hours worked.
   (ii) Explain the income effect of a wage increase on hours worked.
   (iii) Using the labor leisure model, show the effect of a wage increase on hours worked if the substitution effect dominates the income effect. Explain fully and show graphically.
   (iv) Using the labor leisure model, show the effect of a wage increase on hours worked if the income effect dominates the substitution effect. Explain fully and show graphically.
   (v) Using the labor leisure model, show the effect of a wage increase on hours worked if the income effect and the substitution effect are of equal size. Explain fully and show graphically.
   (vi) What are the implications of your previous answers on the shape of the labor supply curve?

Empirical Analysis

The following questions all relate to the data set CPS-12.dta.

Note: For all estimated labor supply functions include only prime age workers (25-65), not in school for whom usual weekly hours, weeks worked per year, non-labor income and wages are all positive and are earning at least the federal minimum wage and less than $100 per hour.

(2) (i) Estimate the following equation:

\[ \text{Hours}_i = \beta_0 + \beta_1 \log(\text{wage})_i + \beta_2 \log(\text{Non} - \text{Labor Income})_i + \Omega Z_i + \epsilon_i \]

In Z include gender, years of schooling, age, the number of children under 6, number of children between age 18 and 6.

(ii) Interpret your regression coefficients: Are they the expected sign, are they significant, how well does the model explain labor supply?

(3) (i) Run a separate regression for men. Describe your results.
   (ii) Prior empirical research indicates the presence of a backward bending supply curve at upper wage rates. Run a regression for men with a wage below $25 per hour. Describe your results.
   (iii) Run a regression for men with a wage above $25 per hour. Describe your results.
   (iv) How could you account for the both the positively sloped and the backward bending portion of the labor supply function in your regression equation? Run this regression and describe your results.
   (v) Calculate the wage at which the supply curve bends backwards. Explain fully.

(4) (i) Run a separate regression for women. Describe your results.
   (ii) Run a regression for women with a wage below $25 per hour. Describe your results.
   (iii) Run a regression for women with a wage above $25 per hour. Describe your results.
   (iv) How could you account for the both the positively sloped and the backward bending portion of the labor supply function in your regression equation? Run this regression and describe your results.
   (v) Calculate the wage at which the supply curve bends backwards. Explain fully.

(5) Compare the male and female labor supply functions. Are they statistically different from each other? Explain fully.

(6) Compare the labor supply functions of never married, college educated (those with a BA/BS degree), men and women with no children. Are they statistically different from each other? Show graphically and explain fully.