Problem Set #4
Sonoma State University  Dr. Cuellar
Economics 421- Seminar in Labor Economics

Introduction to the Labor-Leisure Model III: Labor Force Participation

Theoretic Analysis
(1) Use the Labor-Leisure model to show graphically someone who refrains from the labor market. Explain your answer.
(2) Define the reservation wage.
(3) Assuming an individual is currently out of the labor market, use the Labor-Leisure model to show graphically the affects of an increase in non-labor income on the individuals decision to enter the labor market. Explain your answer and any assumptions you make.
(4) Assuming an individual is currently out of the labor market, use the Labor-Leisure model to show graphically the affects of a decrease in non-labor income on the individuals decision to enter the labor market. Explain your answer and any assumptions you make.
(5) Assuming an individual is currently out of the labor market, use the Labor-Leisure model to show graphically the wage necessary to induce the individual to enter the labor market. Explain your answer and any assumptions you make.

Empirical Analysis
Use the CPS data to answer the following questions:
(6) Generate the variable work defined as those who work positive hours for positive wages.
   (i) How many and what percent of those in the data set works?
   (ii) Show graphically a distribution of the hours worked by those who work. What is the number of hours per week worked? Explain your graph.
   (iii) Show graphically the distribution of wages of those who work. What is the mean wage of those who work? Explain your graph.
(7) Examine the following characteristics of those who are age 18-65 and not in school.
   (i) What percent of those in the data set age 18-65 and not in school work?
   (ii) What percent of those in the data set age 18-65 and not in school with only a high school degree work?
   (iii) What percent of those in the data set age 18-65 and not in school with a BS/BA degree work?

Note: For all regressions, examine only those age 18-65, not in school with NLI $\geq 0$.
(8) Use a linear probability model to estimate the following binary regression equation:
work = $\beta_0 + \beta_1$Age, + $\beta_2$Education, + $\beta_3$Non-labor Income, + $\beta_4$Female, + $\beta_5$Black, + $\beta_6$Married, +u
   (i) Interpret the coefficients. Are they statistically significant?
   (ii) Estimate the probability of working for a married 35 year old White male with 21 years of education and no non-labor income. Show graphically as a function of schooling.
   (iii) Estimate the probability of working for a married 55 year old White female with 12 years of education and $1,000,000$ of non-labor income. Show graphically as a function of schooling.
(9) Use a probit model to estimate the following binary regression equation:
work = $\beta_0 + \beta_1$Age, + $\beta_2$Education, + $\beta_3$Non-labor Income, + $\beta_4$Female, + $\beta_5$Black, + $\beta_6$Married, +u
   (i) Interpret the coefficients. Are they statistically significant?
   (ii) Estimate the probability of working for a married 35 year old White male with 21 years of education and no non-labor income. Show graphically as a function of schooling.
   (iii) Estimate the probability of working for a married 55 year old White female with 12 years of education and $1,000,000$ of non-labor income. Show graphically as a function of schooling.
(10) Use a logit model to estimate the following binary regression equation:
work = $\beta_0 + \beta_1$Age, + $\beta_2$Education, + $\beta_3$Non-labor Income, + $\beta_4$Female, + $\beta_5$Black, + $\beta_6$Married, +u
    (i) Interpret the coefficients. Are they statistically significant?
    (ii) Estimate the probability of working for a married 35 year old White male with 21 years of education and no non-labor income. Show graphically as a function of schooling.
    (iii) Estimate the probability of working for a married 55 year old White female with 12 years of education and $1,000,000$ of non-labor income. Show graphically as a function of schooling.
(11) Compare the logit and probit probabilities of working for single, white, females with zero non-labor income, with a high school degree to the same group with a college degree (BA/BS). Show graphically as a function of age.