Assignment 2:
Due date: June 12, 2009, (12:00h)
(to be submitted to Mr. Liu and Ms. Guo)

Mincerian Earnings Equation

The dataset “ex03_2.xls” contains labor-market-related information on 974 full-time employees from the year 1996. The data is taken from the German Socio-Economic Panel Study (SOEP). It contains an identification number (ID), gender (GESCHL: 0=male, 1=female), age (ALTER), number of years of education (BILDUNG), yearly gross wage (EINK), hours worked (STUNDEN), sector (SEKTOR: 1=primary, 2=secondary, 3=tertiary; OEFFD: 0=private, 1=public) and size of the firm (BGROESSE) as well as the employee’s origin (SAMPLE: 1=West German, 2= East German, 3=guest worker).

We will analyse the factors influencing wages in Germany by estimating a Mincerian earnings function of the following form:

\[
\ln(w_i) = \beta_0 + \beta_1 \cdot X_i + \beta_2 \cdot X_i^2 + \beta_3 \cdot E_i + \gamma \cdot Z_i + \epsilon
\]

with:

- \( w_i \) wage rate
- \( X_i \) work experience
- \( E_i \) number of years of education
- \( Z_i \) further variable(s)
- \( \beta_3 \) rate of return to education

(a) Generate the logarithmic wage rate. Generate the potential work experience of the employees according to the following rule: potential work experience = age - number of years of education - 6. Run a regression of the logarithmic wage rate on work experience and squared work experience (no other variables). Display the predicted wage profile graphically. After how many years of work experience do you earn the highest wage rate?
(b) Extend the model from subquestion (a) by adding a gender dummy and years of education and the variable for the size of the firm. Also include this variable for all the subsequent parts of this exercise. Estimate the new model using OLS. Do women, on average, earn less than men?

(c) Now, calculate the average wage rates of men and women separately. Do they differ? Furthermore, do women with similar educational background and similar potential work experience earn less than men? To answer this question, run estimations for women and men separately. Why need the results not necessarily be caused by gender discrimination? Can you think of other possible explanations?

(d) Calculate the rate of return to education for West Germans and guest workers. Is the discrepancy statistically different from zero? (Hint: Look at the interaction effect.) Based on your results, would you say there exists discrimination against guest workers on the German labor market?

(e) Generate a dummy variable for the sector of the company. In which sector are the highest wage rates being paid? In which sector do full-time employees earn the lowest wage rates? Test the hypothesis that the dummy variables jointly do not have any influence on the wage rate. Based on the data, can the proposition that secondary sector wage rates are on average 15% higher than primary sector wage rates be rejected? (Perform both tests in two ways. At first, by using the commands frml/analyz. Then, program them “manually”.)

Instructions:

1. The same group of students (2) will submit one set of HW.
2. The software to be used is TSP
3. The relevant commands of TSP should be listed but not the whole output.
4. Interpretations should be presented on a separate page clearly.
5. Late submission is not allowed.