Econ 301	**Bilkent University**	**Yigit**
Econometrics	**Department of Economics**	**Spring 2013**

Lab Exercise 4

The data set WAGE1 contain information on 526 workers. Educ (years of education), exper (years of labor market experience), tenure (years with current employer) and female (data which takes the value of one if the worker is female and describes a qualitative property-gender), are reported for these workers. The standard wage equation explains the wage relationship such as:

1. Estimate the following relationship:

$$Log(wage)_i = \beta_0 + \beta_1 educ_i + \beta_2 \exp er_i + \beta_3 tenure_i + \beta_4 female_i + u_i \quad \text{--------}$$

ANSWER THE FOLLOWING QUESTIONS FOR EQ 1. THIS EXERCISE WILL NUMERICALLY SHOW THAT THE NUMERICAL PROPERTIES OF OLS HOLDS

2. Interpret the coefficients, especially the coefficient of *exper*. What is the mathematical and economic meaning of this β_2.
3. Test the null hypothesis that $H_0 : \beta_2 = 0,$ against the alternative hypothesis $H_a : \beta_2 \neq 0$. What is your conclusion regarding the presence of this variable in the model?
4. What is your expectation, a priori, about the sign of this coefficient? Now test the above null hypothesis against the alternative $H_a : \beta_2 > 0$.
5. Calculate a 95% confidence interval for β_2.
6. What is the sum of squared residuals?
7. If you impose the restriction that $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$, what will be your new model?
8. Estimate the new model and determine the new sum of squared residuals? What is the percentage change in this statistics?
9. Test the hypothesis that education and experience will have the same impact on the wage. What are the null and alternative hypotheses? How will you compute the test statistics? What is your conclusion and interpretation,
10. Test the hypothesis that both educ and tenure will not have any impact on the wage changes. Test formally.