

EC3303 Econometrics I Tutorial Problem Set 4

1. A researcher is interested in studying how years of education affects hourly earnings and whether the effect of another year of education is the same for males and females. He runs a regression of *log hourly earnings (AHE)* on *Years of Education*, *Female* (a binary variable =1 if person is female and =0 if person is male), an *interaction term where Female and Years of Education are interacted*, *Potential Experience*, *Potential Experience-Squared*, and *location dummy variables* (ie. Midwest is a binary variable = 1 if person lives in the Midwest and = 0 otherwise; South is a binary variable =1 if person lives in the South and =0 otherwise; West is a binary variable =1 if person lives in the West and =0 otherwise. The omitted region is Northeast. These 4 locations are mutually exclusive and exhaustive). Answer the questions below using the following regression results:

Regressor	(1)
<i>Years of Education</i>	0.1032** (0.0012)
<i>Female</i>	-0.451** (0.024)
<i>Female × Years of Education</i>	0.0134** (0.0017)
<i>Experience</i>	0.0143** (0.0012)
<i>Experience</i> ²	-0.000211** (0.000023)
<i>Midwest</i>	-0.095** (0.006)
<i>South</i>	-0.092** (0.006)
<i>West</i>	-0.023** (0.007)
<i>Intercept</i>	1.503** (0.023)
<i>Adjusted R</i> ²	0.267
<i>Observations</i>	52,790

- (a) Consider a man with 16 years of education and 2 years of experience who is from a Western state in the United States. Estimate the expected change in the **logarithm of** average hourly earnings (AHE) associated with an additional year of experience.
- (b) Consider a man with 16 years of education and 2 years of experience who is from a Western state in the United States. Estimate the expected change in the average hourly earnings (AHE) associated with an additional year of experience.
- (c) Repeat (a), assuming 10 years of experience.
- (d) Repeat (b), assuming 10 years of experience.

- (e) More generally, what is the effect of an additional year of experience on hourly earnings?
- (f) Interpret the coefficients on the location dummy variables
- (g) What is the effect of an additional year of education for males? What is the effect of an additional year of education for females? Is the effect of an additional year of education different for males and for females?

Stata Exercise (to be done in tutorial with the tutor)

2. The California Standardized Testing and Reporting data set (caschool.dta) contains data on test performance, school characteristics, and student demographic backgrounds for 420 Californian school districts. Today, we will learn how to perform non-linear regressions.