Problem Set #2b

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Econ 715: Econometric Methods
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The attached file, functions.jl, includes all functions used in this problem set, including an OLS function. edgel_ps2.tex includes the code the executes the commands for the problem set. Using these files, the coefficient for education is derived as 0.151 .

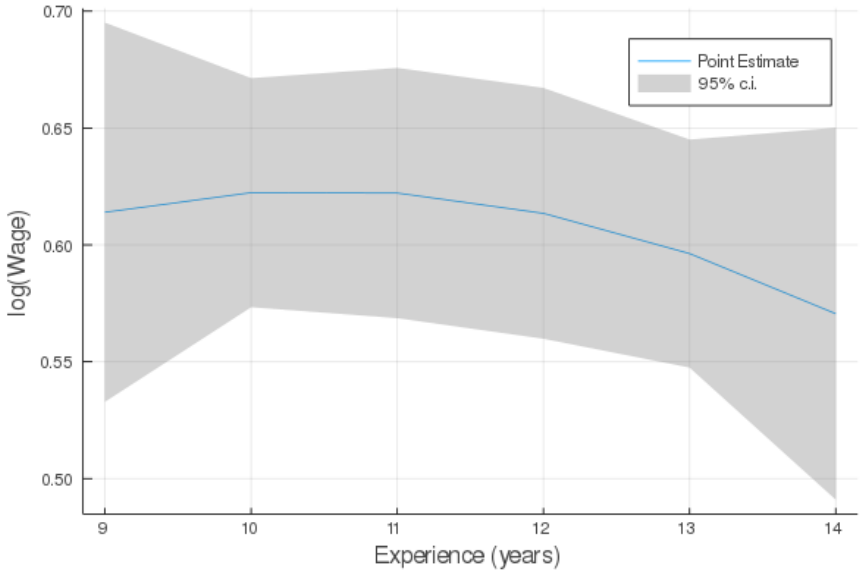
To obtain a conditional average treatment effect (CATE) for increasing education from 12 years to 16 years, I first subset the data to only include the observations with education equal to either 12 or 16 years. Then, I generated binary variable $T_i = \mathbb{1}\{edu_i = 16\}$ and ran OLS on the following specification:

$$Y_i = \beta_0 + \beta_1 T_i + \beta_2 T_i X_i + \beta_3 X_i^2 + \beta_4 X_i + \beta_5 X_i^2 \varepsilon_i$$

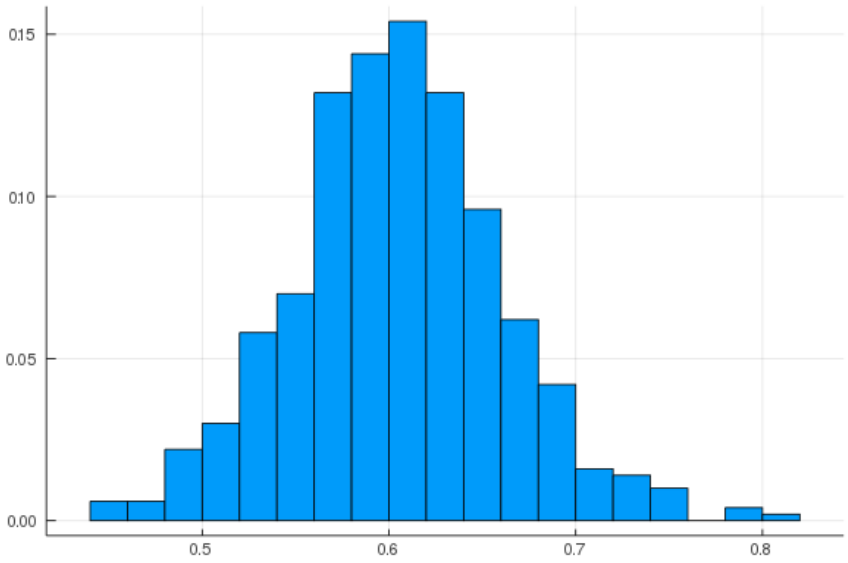
Where X_i is years of experience. Then, the CATE for each year of experience is given by:

$$\tau(X) = \beta_1 + \beta_2 X + \beta_4 X^2$$

Which is plotted below, along with a 95% confidence interval.



Using the sample shares of years of experience, the average treatment effect (ATE) is estimated as 0.606 . Using a single sample of 400 observations, the ATE is estimated as 0.661 . A histogram of ATE estimates from 500 samples of 400 observations is shown below.[1]



[1] All samples were taken without replacement.