

## Empirical Exercise: Chapter 8

In the folder, you will find a data file **CPS2015**, which contains data for full-time, full-year workers, ages 25–34, with a high school diploma or B.A./B.S. as their highest degree. A detailed description is given in **CPS2015\_Description**, also available in the folder. (These are the same data as in **CPS96\_15**, i will use in Empirical Exercise 9, but are limited to the year 2015.) In this exercise, you will investigate the relationship between a worker's age and earnings. (Generally, older workers have more job experience, leading to higher productivity and higher earnings.)

- a. Run a regression of average hourly earnings ( $AHE$ ) on age ( $Age$ ), sex ( $Female$ ), and education ( $Bachelor$ ). If  $Age$  increases from 25 to 26, how are earnings expected to change? If  $Age$  increases from 33 to 34, how are earnings expected to change?
- b. Run a regression of the logarithm of average hourly earnings,  $\ln(AHE)$ , on  $Age$ ,  $Female$ , and  $Bachelor$ . If  $Age$  increases from 25 to 26, how are earnings expected to change? If  $Age$  increases from 33 to 34, how are earnings expected to change?
- c. Run a regression of the logarithm of average hourly earnings,  $\ln(AHE)$ , on  $\ln(Age)$ ,  $Female$ , and  $Bachelor$ . If  $Age$  increases from 25 to 26, how are earnings expected to change? If  $Age$  increases from 33 to 34, how are earnings expected to change?
- d. Run a regression of the logarithm of average hourly earnings,  $\ln(AHE)$ , on  $Age$ ,  $Age^2$ ,  $Female$ , and  $Bachelor$ . If  $Age$  increases from 25 to 26, how are earnings expected to change? If  $Age$  increases from 33 to 34, how are earnings expected to change?
- e. Do you prefer the regression in (c) to the regression in (b)? Explain.
- f. Do you prefer the regression in (d) to the regression in (b)? Explain.
- g. Do you prefer the regression in (d) to the regression in (c)? Explain.
- h. Plot the regression relation between  $Age$  and  $\ln(AHE)$  from (b), (c), and (d) for males with a high school diploma. Describe the similarities and differences between the estimated regression functions. Would your answer change if you plotted the regression function for females with college degrees?
- i. Run a regression of  $\ln(AHE)$  on  $Age$ ,  $Age^2$ ,  $Female$ ,  $Bachelor$ , and the interaction term . What does the coefficient on the interaction term measure? Alexis is a 30-year-old female with a bachelor's degree. What does the regression predict for her value of  $\ln(AHE)$ ? Jane is a 30-year-old female with a high school diploma. What does the regression predict for her value of  $\ln(AHE)$ ? What is the predicted difference between Alexis's and Jane's earnings? Bob is a 30-year-old male with a bachelor's degree. What does the regression predict for his value of  $\ln(AHE)$ ? Jim is a 30-year-old male with a high school diploma. What does the regression predict for his value of  $\ln(AHE)$ ? What is the predicted difference between Bob's and Jim's earnings?
- j. Is the effect of  $Age$  on earnings different for men than for women? Specify and estimate a regression that you can use to answer this question.
- k. Is the effect of  $Age$  on earnings different for high school graduates than for college graduates? Specify and estimate a regression that you can use to answer this question.
- l. After running all these regressions (and any others that you want to run), summarize the effect of age on earnings for young workers.