Empirical Exercise 2, Stock and Watson Chapter 8

Econ 440 - Introduction to Econometrics

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Empirical Exercise: Earnings

The data file **CPS2015** 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**. In this exercise, you will investigate the relationship between a worker's age and earnings

Dataset:

```
library(readxl)
df <- read_xlsx("CPS2015.xlsx", trim_ws=TRUE)
head(df)
```

```
## # A tibble: 6 x 5
##    year   ahe bachelor female   age
##   <dbl> <dbl>    <dbl>  <dbl> <dbl>
## 1  2015 11.8         0      0    26
## 2  2015  9.62        0      1    33
## 3  2015 12.0         0      0    31
## 4  2015 18.4         0      0    32
## 5  2015 41.8         0      0    28
## 6  2015 19.2         0      1    31
```

(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?

```
## fill this space with your code
```

(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?

```
## fill this space with your code
```

(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?

```
## fill this space with your code
```

(d)

Run a regression of the logarithm of average hourly earnings, $ln(ahe)$, on age, $age2$, $female$, 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?

```
## fill this space with your code
```

(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?

```
## fill this space with your code
```

(i)

Run a regression of $ln(ahe)$ on age, $age2$, $female$, $bachelor$, and the interaction term $female * bachelor$. 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?

```
## fill this space with your code
```

(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.

```
## fill this space with your code
```

(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.

```
## fill this space with your code
```

(l)

After running all these regressions (and any others that you want to run), summarize the effect of age on earnings for young workers.

```
## fill this space with your code
```