Econ 3040 - Assignment 5: Interaction terms and instrumental variables

Ryan T. Godwin

Due date: December 8th

1. Use the same CPS dataset from class and from assignment 4:

   ```
   cps <- read.csv("http://rtgodwin.com/data/cps1985.csv")
   ```

   a) Estimate a model with log(*wage*) as the dependent variable (note the **log**!). As explanatory variables use *education*, *gender*, *age*, *experience*, and a *gender* × *education* **interaction term**.

   b) What is the estimated effect of education on *wage* for men, and for women?

   c) Test the hypothesis that the effect of *education* on *wage* is the same for men as it is for women.

2. Use the Fulton fish market dataset from class:

   ```
   fish <- read.csv("https://rtgodwin.com/data/fish.csv")
   ```

   See the table in the notes for a description of the variables.

   a) Plot log(quantity) on the y-axis and log(price) on the x-axis. Does it look like a demand curve?

   b) Estimate the demand curve using LS. Add the estimated line to the plot. What is the problem with using LS to estimate the demand curve?

   c) In class, we used the `ivreg()` function in order to perform instrumental variables regression to estimate the elasticity of the demand curve in the Fulton fish market. We used measures of wave heights as the instruments. Reproduce the results of the `ivreg()` function from class, using *only* the two-stage least squares method.