

Econ 7010 - Assignment 3

Ryan T. Godwin

Due: Nov. 15th. Worth 3% of your mark. For each answer include the R code that you use, as well as a brief explanation. Upload your answers to the assignment 3 dropbox on UM Learn.

Load the Card (1993) “CollegeDistance” data using the code:

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

1. Using LS, estimate the “returns to education”. That is, estimate how much wages increase (on average) due to an additional year of education.
2. Explain why the additional demographic variables are needed in the regression, even though you are only interested in “education”.
3. Test the null hypothesis that the returns to education are zero.
4. Using the `ivreg` package, estimate the returns to education via the instrumental variables estimator, using “distance” as an instrument for “education”. Re-test the null hypothesis that the returns to education are zero.

You can load the `ivreg` package using:

```
install.packages("ivreg")  
library(ivreg)
```

5. Estimate the same model from question 4, using the 2SLS approach. For this question, do not use the `ivreg` package (or any other IV package). You may, for example, use the `lm` and `predict` functions to estimate the model. Verify that the estimates are the same as from the `ivreg` function.
-