POLS 6481, Spring 2021

Professor Scott Basinger

Reading Assignment Week 8

Distributed Friday, March 19

Due Thursday, March 25

Required reading: Wooldridge 2.4 + 6.2a + 6.4 + 7.2b + 17.3

Hardy, *Regression with Dummy Variables* 56–60

1. What are three practical limitations on using logarithmic transformations of the dependent variable?

2. Suppose your regression model employs *log*(*y*) as the dependent variable.

A. For an independent variable coded as *xj*, how would you express the effect of changes in *xj* on the value of *y* if the estimated slope coefficient is = 0.3?

B. For an independent variable coded as *log*(*xj*), how would you express the effect of changes in *xj* on the value of *y* if the estimated slope coefficient is = 0.3?

3A. Why is it not appropriate to compare the R2’s of a *level-level* model and a *log-level* model to decide which fits the data better?

3B. What steps are required in order to compare the R2’s or residual standard errors () of a *level-level* model and a *log-level* model?

4. What are the conditions that the Poisson regression model is specifically suited to addressing?

5. Let *x* be a binary variable, such that *x* = {0,1}; let *y* = *μ*(*x*) be a count, such that *y* = {0, 1, 2, …}; and suppose *μ*(0) = 1 and *μ*(1) = 1.3. Use the Poisson distribution to calculate the predicted probabilities that *y* = 0, 1, 2, 3, and 4 for these two different values of *x* (i.e., when *x* = 0 and when *x* =1).

6. Suppose you are using a Poisson regression model.

A. How would you express the effect of changes in *xj* on the value of *μ*(**x**) if the estimated slope coefficient is = 0.3?

B. What steps are required in order to express the effect of changes in *xj* on the predicted value of *y*?

The middle part of 17.3 is material you will cover next semester in Maximum Likelihood (POLS 6482). Read the first part, down to the bold font **Poisson regression model**, then jump straight to the example.