

## ECON 4230 Intermediate Econometric Theory

### Problem Set #2

Due: Thursday, March 7, 2019

#1. Gujarati and Porter, 5<sup>th</sup> Edition, Exercise 5.1.

#2. Gujarati and Porter, 5<sup>th</sup> Edition, Exercise 5.3.

#3. Gujarati and Porter, 5<sup>th</sup> Edition, Exercise 5.17.

#4. Gujarati and Porter, 5<sup>th</sup> Edition, Exercise 6.1.

#5. Gujarati and Porter, 5<sup>th</sup> Edition, Exercise 6.8.

#6. Gujarati and Porter, 5<sup>th</sup> Edition, Exercise 7.12.

#7. Download annual data from FRED and estimate a linear (X-Y) version of Okun's Law over the period 1950-2016. Then estimate a version of Okun's Law with a Box-Cox transformation on the right-hand-side variable. Comment on the results and do a  $t$  test to see if Okun's Law is indeed linear. [Hint: The Box-Cox methodology does not work with negative values. Since both the change in unemployment and real GDP growth are likely to be negative for some years, you may need to make the change in unemployment the "Y" variable and add a constant to all real GDP values such that no "X" values are negative.]

#8. Using the same data from problem #7, estimate a multivariate linear version of Okun's law which adds the labor force participation rate. Then provide both unconditional and conditional scatterplots between the growth in real GDP and changes in the unemployment rate. In each scatterplot, show the best-fitting regression line along with the slope of the line and goodness-of-fit measure. Comment on the results.