

## **ECON 4230/5230 Intermediate Econometric Theory**

### **Problem Set #3**

**Due: Thursday, March 28, 2019**

#1. Gujarati and Porter, 5<sup>th</sup> Edition, Exercise 8.35.

#2. Use the annual data from Problem Set #2 to re-estimate a linear (X-Y) version of Okun's Law over the period 1950-2016. Comment on the results. Then answer the following three questions.

- a) Use an intercept-dummy model to test whether the Financial Crisis (i.e., the Great Recession) led to a significant shift in Okun's Law. Show a scatter plot of your results along with the best-fitting regression lines. Comment on the results.
- b) Use a slope-dummy model to estimate whether there is a structural break after 2000 in Okun's Law. Perform both an unrestricted and restricted general linear F test to for equal slopes across the two periods. Again, show a scatter plot with the two fitted OLS regression lines and comment on the results.
- c) Estimate a spline regression model to see if there is a structural break at a critical X value. Choose the best-fitting spline regression across different possible positive integer kinks for real GDP growth. Show the scatter plot with the best fitting regression line and comment on the results. Finally, provide a formal test to see if a spline is necessary.

#3. ECON 5230 Question. Gujarati and Porter, 5<sup>th</sup> Edition, Exercise 9.24. Make sure to provide an interpretation of all the coefficient estimates and predict whether Trump will win the 2020 election. Provide confidence intervals for the predicted values.