

Environmental Economics and Policy (Econ 231-01)
Homework 5
60 points
Label and explain all graphs

1. (20 points) Polluting firm location decisions

a. Consider the results in Table 2 on page 18 of Wolverton's paper. What do these results mean? Which body of literature is Wolverton addressing with the estimation shown in this table? How do the results compare with those from that body of literature?

b. Now consider the results in Table 3 on page 22. Focus on the results in column 5. The magnitudes of these results are not easily interpretable, but the signs of the coefficients are informative. What do these results imply? How do they compare to results found in the previous literature on polluting firms' location decisions?

c. Why do the results in Table 3 differ from the results found in previous papers? That is, what is it about Wolverton's methodology that allows her to uncover these relationships (or lack thereof)?

Please make sure that you also understand what we discussed in class (theory, etc.) with respect to this paper.

2. (20 points) The Environmental Kuznets Curve (EKC)

Say that researchers estimate the following regression equation using data on many countries in one year:

$$y_i = \alpha + \beta_1(GDP_i / capita_i) + \beta_2(GDP_i / capita_i)^2 + X\gamma + \varepsilon$$

where y is SO₂ per capita, and X is vector (a set of) control variables including information on the presence and strength of regulatory institutions in each country and γ are coefficients on X , i indexes each country, and ε is an error term in such regressions that you do not need to worry about for this exam.

The researchers found that α equals 1500, β_1 equals 500, and β_2 equals -0.015. All three coefficients are statistically significantly different than zero. The researchers do not report the coefficients on the control variables.

- a. What is the turning point $GDP/capita$? Calculate the number and show your work.
- b. Why might the estimates obtained using the data described above be inaccurate?
- c. What kind of data would be least likely to result in inaccurate estimates of the turning point income? Why?
- d. What does the EKC literature say about the turning point for water pollutants? For CO₂? Why are these numbers so different?

3. (20 points) Offshoring Pollution (Levinson 2010)

- a. Ignoring inputs into production, by how much and in what direction did the pollution embodied in imports change between 1972 and 2001?
- b. Not ignoring inputs into production, by how much and in what direction did the pollution embodied in imports change between 1972 and 2001?
- c. Is the U.S. offshoring pollution? How do these results reflect upon the United States' environmental Kuznet's curve?
- d. According to Levinson, what might explain the shift toward cleaner imports?