EDS241: Assignment 04 - Price Elasticity

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1 EDS241 Environmental Policy Evaluation Assignment 04

This statistical analysis was completed as an assignment for the course, Environmental Data Science 241: Environmental Policy Evaluation.

This question will ask you to estimate the price elasticity of demand for fresh sardines across 56 ports located in 4 European countries with monthly data from 2013 to 2019.

2 Homework Questions

2.1 Question A:

Estimate a bivariate regression of log(volume_sold_kg) on log(price euro_kg). What is the price elasticity of demand for sardines? Test the null hypothesis that the price elasticity is equal to -1.

2.2 Question B:

Like in Lecture 8 (see the IV.R script), we will use wind_m_s as an instrument for log(price_euro_kg). To begin, estimate the first-stage regression relating log(price_euro_kg) to wind_m_s. Interpret the estimated coefficient on wind speed. Does it have the expected sign? Also test for the relevance of the instrument and whether it is a "weak" instrument by reporting the proper F-statistic.

2.3 Question C:

Estimate the TSLS estimator of the price elasticity of demand for sardines using wind_m_s as an instrument for log(price_euro_kg). What is the estimated price elasticity of demand for sardines?

2.4 Question D:

Repeat the exercise in (c), but include fixed effects for each year, month, and country. [Hint: you can use the command "as.factor(country) + as.factor(year) +as.factor(month)" to the ivreg function in R]. Report the estimated price elasticity of demand and the F-statistic testing for relevant and non-weak instruments.