Homework 8

Environmental Economics II
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Problem 1 Stata

1. Variable `l_mw` and `treatment` are generated.

   (a) Using the specification in equation 1, the treatment effect estimate is -0.06560 with a standard error of 0.00136.

   (b) The treatment effect estimate is -0.07039 with a standard error of 0.001. Following the Stata package documentation, it is recommended to use the bias-corrected estimator for two or more continuous control variables. Using the bias-corrected estimator, the treatment effect estimate is -0.08117 with a standard error of 0.00106.

   (c) I would suspect the COVID effect will make people to work from home and thus increase the electricity consumption. Methods used in 1(a) and 1(b) measure the treatment effect by comparing electricity consumption between the treated and untreated household within similar zone at the same month, day, and hour. Both do not capture the annual trend in electricity consumption. With 1(a) month 1 and 2 are never treated as COVID happen only from month 3 to 12 in the sample.

2. The following estimates are obtained from estimating equation 2.

   (a) The treatment effect estimate is 0.02356 with a standard error of 0.00271.

   (b) Now that we capture the annual trend using equation 2, the treatment effect makes more sense.

3. The matched electricity consumption variable `l_mwhat` is generated.

   (a) Following specification in equation 3, the treatment effect estimate is 0.04251 with a standard error of 0.00195.

   (b) I think there are some sample adjustment that we made when we create the matched electricity consumption variable, which some of them are the mean of multiple matched observation. This might cause the standard error estimates to not reflect the uncertainty in treatment from the original sample.