

Homework 7 Submission

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Economics 7103

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1 Hourly data - Stata

1. The RD will be fuzzy because there will be existing cars already in the market and new cars in inventory from previous years.
2. There is evidence of a discontinuity but not bunching.

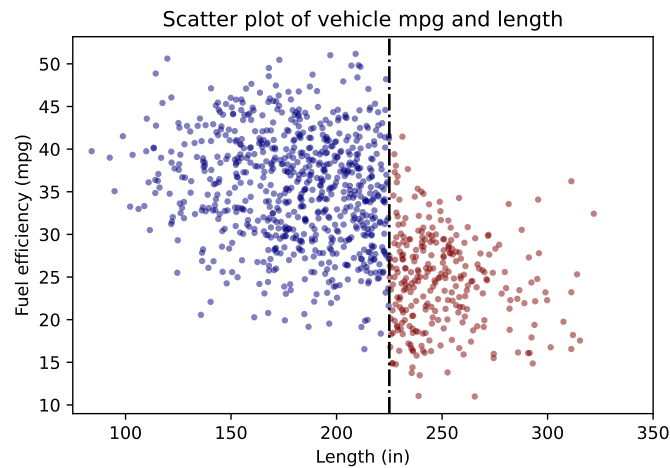


Figure 1: Scatter plot of fuel efficiency and size in inches.

3. The estimated impact of the policy on fuel efficiency around the cutoff is -8.43 mpg. Figure 2 shows the plot of utilizing a first-order polynomial.

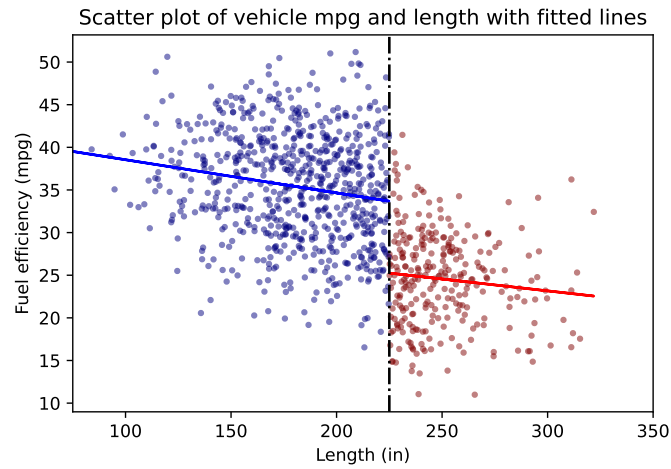


Figure 2: Scatter plot of fuel efficiency and size in inches using a first-order polynomial.

4. Figure 3 shows the results with a second-order polynomial.

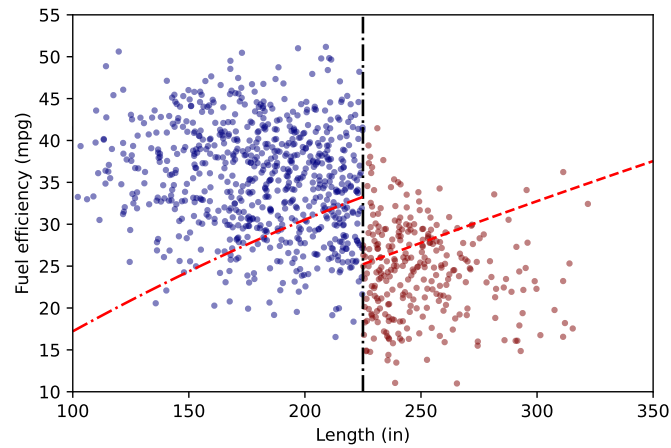


Figure 3: Scatter plot of fuel efficiency and size in inches.

5. The results utilizing a fifth-order polynomial probably doesn't look like Figure 4, but it is what Spyder pushed out.

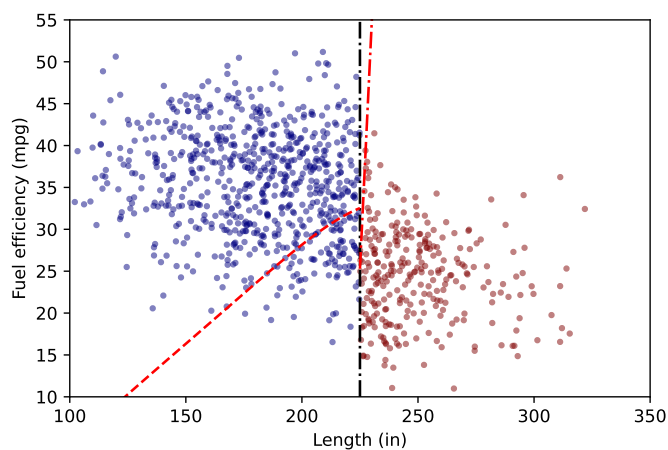


Figure 4: Scatter plot of fuel efficiency and size in inches with a fifth-order polynomial.

6. The ATE of the RD treatment is 158.7789.

2 Stata

1. The ATE for the second-stage regression is located below in Table 1 with the plot in Figure 5.

Table 1: Average Treatment Effect Estimate	
	Second-stage estimates
Miles per gallon	157.43*** (26.68)
=1 if the vehicle is sedan	-3674.49*** (224.25)
Adjusted R^2	0.219
Observations	1000
Standard errors in parentheses	
* $p < .1$, ** $p < .05$, *** $p < .01$	

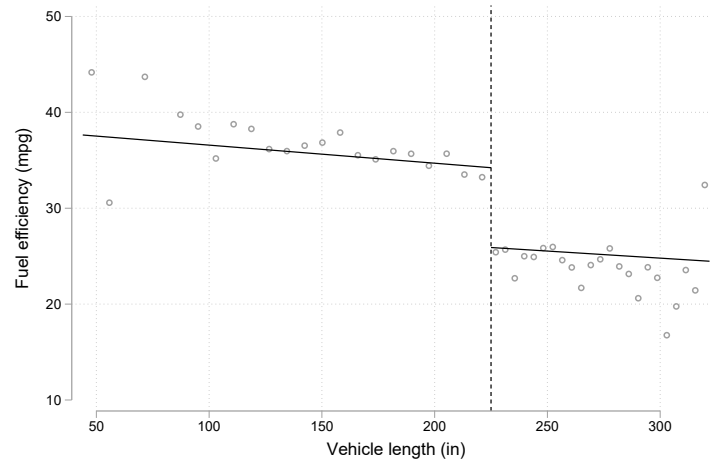


Figure 5: This is a plot of the RD using rdplot.

2. Looking at this plot here from the Stata code, I would say that yes it is a valid instrument.