Econometrics of Causality: Regression Discontinuity Design

March 23, 2021

A large literature investigates the relationship between government policies and voters' choices. Many studies for instance have found that economic conditions around election time have predictive power for the incumbent's re-election success. However, there is less evidence on the effect of household economic conditions, and especially in targeted government transfers, on the evolution of voter preferences. Manacordan, Miguel, and Vigorito (2011) investigate whether being a recipient of a cash transfer program has an impact on political support for the government that implemented it. In March 2005, the Uruguayan government launched a large anti-poverty program, *PANES*. Household eligibility for the program was determined by a predicted income score based on various pre-program covariates. Thus, only households with scores below a predetermined threshold were eligible for *PANES*. The data for this exercise, which is the same as those used by Manacordan, Miguel, and Vigorito (2011), are located in the Donnees.dta file. They contain socioeconomic characteristics and political preferences for a sample of 1,942 Households. Eligibility to the program is measured by the variable called *newtreat*.

1. To get an understanding of the characteristics of the Households present in the sample create a table that gives the mean and standard deviation of Household socioeconomic characteristics. Do this separately for eligible and non-eligible Households, and then compare the means across these groups. Comment on the similarities and differences between eligible and non-eligible Households.

2. Following Manacordan, Miguel, and Vigorito (2011), the measure of political support that we will use is the support to the current left-wing government *Frente Amplio* during the program. The variable for this is called *support*07. Compare the mean of this variable across eligible and non-eligible households. Is the difference statistically significant? Is it large when compared to the mean value? What does it suggest about the power of social policies on support to the government?

3. To determine program allocation, the government used a predicted income score that depended only on household socioeconomic characteristics collected in the baseline survey. Only households with predicted income scores below a predetermined threshold were assigned to program treatment. An important element to be considered in such a program is to know whether the eligible population received the program. Estimate the share of the eligible household which received PANES. Next, use a graphic to show whether the eligible households were enrolled in the program. What you can conclude about the implementation of the program? How can you define the threshold used?

4. The authors use a regression discontinuity design to make sure they are comparing similar households. To do this, they consider that program assignment around the eligibility threshold was nearly "as good as random". As a check for non-random assignment, the authors estimated whether pre-treatment covariates vary discontinuously at the eligibility threshold. Based on your previous answers, what can you conclude regarding the validity of their identification assumption? What does it imply on the

household assignment to *PANES*?

5. Let us now measure the impact of receiving *PANES* on government support. The estimated equation is:

$$support_i = \beta_0 + \beta_1 PANES_i + f_1 N_i + PANES_i \times f_2 N_i + \epsilon_i \tag{1}$$

where *PANES* is a dummy equals to 1 if the normalized income score of household i is negative, i.e. it receives PANES. N_i is the normalized income score of household i; f_1 and f_2 are parametric polynomials in the normalized income score on either side of the eligible threshold. Estimate the regression without and with the following controls: pre-program characteristics of household members, log per-capita income, age, education, and gender of the household head, as well as *localidad* fixed-effects. Compare this to a simple comparison of mean in government support. Were there big changes in the estimated difference? What happens if you add and interacted the eligibility status with a polynomial in the standardized score of degrees 1, and 2? Does this suggest that the program has a robust effect on government support?

6. Lastly, two important questions arise: did the program have persistent impacts on government support? To do this, we measure the political support in 2008, 1 year after the program. You should use the variable called *support08*. Did the program induce higher support on other political institutions and organizations than the current government?

7. To conclude, what is the strength of the evidence that government economic policies impact beneficiaries' political preferences? Does this give rise to a clear policy implication for future economic policies?