Statistics/Data Analysis

```
/*******************************************************************************
                              Problem Set 9: power calculations

                          Universidad de San Andrés
                              Economía Aplicada
/*******************************************************************************/
                                        Barnes, Fasan, Legaspe y Martin
/*******************************************************************************
Este archivo sigue la siguiente estructura:
* 0) Set up environment
* 1)

*******************************************************************************/

* 0) Set up environment
*==============================================================================*/
clear all
global main "C:\Users\Usuario\Desktop\MAESTRIA\Economia Aplicada\TPs\Applied-Economics
> \PS10"
global input "$main/input"
global output "$main/output"

cd "$main"

set matsize 4000
set more off

* INSTALL PACKAGES
** RDROBUST: net install rdrobust, from(https://raw.githubusercontent.com/rdpackages/r
> drobust/master/stata) replace
** RDDENSITY: net install rdlocrand, from(https://raw.githubusercontent.com/rdpackages
> /rdlocrand/master/stata) replace
** RDLOCRAND: net install rddensity, from(https://raw.githubusercontent.com/rdpackages
> /rddensity/master/stata) replace
** LPDENSITY: net install lpdensity, from(https://raw.githubusercontent.com/nppackages
> /lpdensity/master/stata) replacez


* Call data
use "$input/data_elections.dta", clear

*******************************************************************************/
* 1) Generate cut-off
*******************************************************************************/

gen demwon=0
replace demwon=1 if vote_share_democrats>0.5


*******************************************************************************/
* 2) RD Graphs - polinomial order 1 and 2
*******************************************************************************/

global y lne
global x vote_share_democrats
global covs "unemplyd union urban veterans"

rdplot lne vote_share_democrats, c(0.5) p(1) graph_options(graphregion(color(white)) /
> //
                                                          xtitle(Democrats vote share) /
> //
                                                          ytitle(Log FED expenditure) na
> me(glne, replace))

graph export "$output/pol_g1.png", replace
```

```
rdplot lne vote_share_democrats, c(0.5) p(2) graph_options(graphregion(color(white)) /
> //
                                                        xtitle(Democrats vote share) /
> //
                                                        ytitle(Log FED expenditure) na
> me(glne, replace))

graph export "$output/pol_g2.png", replace



*******************************************************************************/
* 3) Falsification tests
*******************************************************************************/

* Density discontinuity test

rddensity vote_share_democrats, plot c(0.5)
graph export "$output/falsif_test1.png", replace

* Placebo tests on pre-determined covariates

foreach var of global covs {
        rdrobust `var' vote_share_democrats, c(0.5)
        qui rdplot `var' vote_share_democrats, c(0.5) p(1) graph_options(graphregion(c
> olor(white)) ///

>                 xlabel(0.2(0.1)1) ///

>                 ytitle(`var') name(g`var', replace))
        graph export "$output/falsif_test_`var'.png", replace
}

local num: list sizeof global(covs)
mat def pvals = J(`num',1,.)
local row = 1

foreach var of global covs {
    qui rdrobust `var' vote_share_democrats, c(0.5)
    mat pvals[`row',1] =  e(pv_rb)
    local row = `row'+1
        }
frmttable using "$output/pvals", statmat(pvals) replace tex

*******************************************************************************/
* 4) Run regression
*******************************************************************************/
est clear

eststo rd1: rdrobust lne vote_share_democrats, masspoints(off) stdvars(on) c(0.5) p(1)

eststo rd2: rdrobust lne vote_share_democrats, covs("unemplyd union urban veterans") m
> asspoints(off) stdvars(on) c(0.5) p(1)

esttab rd1 rd2 using "$output/Reg_no_controls_p4.tex", replace label ///
cells(b(fmt(3) star) se(par fmt(2)))

*******************************************************************************/
* 5) Change bandwidth
*******************************************************************************/
* bandwidth = 0,025
eststo rd3: rdrobust lne vote_share_democrats, covs("unemplyd union urban veterans") m
> asspoints(off) stdvars(on) c(0.5) p(1) h(0.025)
* bandwidth = 0,15
eststo rd4: rdrobust lne vote_share_democrats, covs("unemplyd union urban veterans") m
> asspoints(off) stdvars(on) c(0.5) p(1) h(0.15)
* bandwidth  = 0,25
eststo rd5: rdrobust lne vote_share_democrats, covs("unemplyd union urban veterans") m
> asspoints(off) stdvars(on) c(0.5) p(1) h(0.25)
```

```
esttab rd3 rd4 rd5 using "$output/Reg_controls_p5.tex", replace label ///
cells(b(fmt(3) star) se(par fmt(2)))

*******************************************************************************/
* 6) Change cutoff
*******************************************************************************/
* Cut-off 40%
eststo rd6: rdrobust lne vote_share_democrats, covs("unemplyd union urban veterans") m
> asspoints(off) stdvars(on) c(0.4) p(1)

rdplot lne vote_share_democrats, c(0.4) p(1) graph_options(graphregion(color(white)) /
> //
                                                          xtitle(Democrats vote share) /
> //
                                                          ytitle(Log FED expenditure) na
> me(glne, replace))
* Cut-off 60%
eststo rd7: rdrobust lne vote_share_democrats, covs("unemplyd union urban veterans") m
> asspoints(off) stdvars(on) c(0.6) p(1)

rdplot lne vote_share_democrats, c(0.6) p(1) graph_options(graphregion(color(white)) /
> //
                                                          xtitle(Democrats vote share) /
> //
                                                          ytitle(Log FED expenditure) na
> me(glne, replace))

esttab rd6 rd7 using "$output/Diferent_cutoff_p6.tex", replace label ///
cells(b(fmt(3) star) se(par fmt(2)))


*******************************************************************************/
* 7) Local randomization with triangular kernel
*******************************************************************************/

rdwinselect vote_share_democrats "unemplyd union urban veterans", wmin(0.05) wstep(0.0
> 1) nwindows(20) seed(444) plot graph_options(xtitle(Half window length) ytitle(Minim
> um p-value across all covariates) graphregion(color(white))) c(0.5) kernel(triangula
> r)

rdrandinf lne vote_share_democrats, wl(0.32) wr(0.68) reps(1000) seed(444) c(0.5) kern
> el(triangular) p(1)

*******************************************************************************/
*Export to PDF
*******************************************************************************/
translate "$main/programs/PS10.do" "$output/PS10 Apendice.pdf", translator(txt2pdf) re
> place
```