STaTa®

Statistics/Data Analysis

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/*****************************************************************************
                            Problem Set 6: diff-in-diffs

                          Universidad de San Andrés
                            Economía Aplicada
/*****************************************************************************/
                            Barnes, Fasan, Legaspe y Martin
/*****************************************************************************
Este archivo sigue la siguiente estructura:
* 0) Set up environment
* 1) Replica de la Tabla 4 (Cheng y Hoekstra, 2013)
* 2) Replica Panel C.1 with Callaway y Sant'Anna's Estimator
* 3) Descomposición de Bacon para log(Burglary Rate)


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

* 0) Set up environment
*==========================================================================*/
clear all
global main "C:\Users\Usuario\Desktop\MAESTRIA\Economia Aplicada\TPs\Applied-Economics
> \PS6"
global input "$main/input"
global output "$main/output"

cd "$main"

* Open data

use "$input/castle.dta", clear
browse

net install cleanplots, from("https://tdmize.github.io/data/cleanplots")
set scheme cleanplots

* define global macros (like Cunningham)
global crime1 jhcitizen_c jhpolice_c murder homicide robbery assault burglary larceny
> motor robbery_gun_r
global demo blackm_15_24 whitem_15_24 blackm_25_44 whitem_25_44 //demographics
global lintrend trend_1-trend_51 //state linear trend
global region r20001-r20104  //region-quarter fixed effects
global exocrime l_larceny l_motor // exogenous crime rates
global spending l_exp_subsidy l_exp_pubwelfare
global xvar l_police unemployrt poverty l_income l_prisoner l_lagprisoner $demo $spend
> ing

* define variable labels like paper's table
label var post "Castle Doctrine Law"
label var l_burglary "Log(Burglary Rate)"
label var l_assault "Log(Aggravated Assault Rate)"
label var l_robbery "Log(Robbery Rate)"
label var pre2_cdl "0 to 2 years before adoption of castle doctrine law"
*****************************************************************************/
* 1) Replica de la Tabla 4 (Cheng y Hoekstra, 2013)
*==========================================================================*/
*****************************************************************************/
* PANEL A
eststo clear
* 1
eststo: xtreg l_burglary post i.year [aweight=popwt], fe vce(cluster sid)

* 2
eststo: xtreg l_burglary post i.year $region [aweight=popwt], fe vce(cluster sid)

* 3
eststo: xtreg l_burglary post i.year $region $xvar [aweight=popwt], fe vce(cluster sid
> )

* 4
eststo: xtreg l_burglary post pre2_cdl i.year $region $xvar [aweight=popwt], fe vce(cl
> uster sid)
```

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* 5
eststo: xtreg l_burglary post i.year $exocrime $region $xvar [aweight=popwt], fe vce(c
> luster sid)

* 6
eststo: xtreg l_burglary post i.year $lintrend $region $xvar [aweight=popwt], fe vce(c
> luster sid)

* 7
eststo: xtreg l_burglary post i.year, fe vce(cluster sid)

* 8
eststo: xtreg l_burglary post i.year $region, fe vce(cluster sid)

* 9
eststo: xtreg l_burglary post i.year $region $xvar, fe vce(cluster sid)

* 10
eststo: xtreg l_burglary post pre2_cdl i.year $region $xvar, fe vce(cluster sid)

* 11
eststo: xtreg l_burglary post i.year $exocrime $region $xvar, fe vce(cluster sid)

* 12
eststo: xtreg l_burglary post i.year $lintrend $region $xvar, fe vce(cluster sid)

esttab using "$output/Table4_A.tex", se replace label noobs noabbrev ///
keep(post pre2_cdl, relax) cells(b(fmt(4) star) se(par fmt(4)))
*****************************************************************************
* PANEL B

eststo clear
* 1
eststo: xtreg l_robbery post i.year [aweight=popwt], fe vce(cluster sid)

* 2
eststo: xtreg l_robbery post i.year $region [aweight=popwt], fe vce(cluster sid)

* 3
eststo: xtreg l_robbery post i.year $region $xvar [aweight=popwt], fe vce(cluster sid)

* 4
eststo: xtreg l_robbery post pre2_cdl i.year $region $xvar [aweight=popwt], fe vce(clu
> ster sid)

* 5
eststo: xtreg l_robbery post i.year $exocrime $region $xvar [aweight=popwt], fe vce(cl
> uster sid)

* 6
eststo: xtreg l_robbery post i.year $lintrend $region $xvar [aweight=popwt], fe vce(cl
> uster sid)

* 7
eststo: xtreg l_robbery post i.year, fe vce(cluster sid)

* 8
eststo: xtreg l_robbery post i.year $region, fe vce(cluster sid)

* 9
eststo: xtreg l_robbery post i.year $region $xvar, fe vce(cluster sid)

* 10
eststo: xtreg l_robbery post pre2_cdl i.year $region $xvar, fe vce(cluster sid)

* 11
eststo: xtreg l_robbery post i.year $exocrime $region $xvar, fe vce(cluster sid)

* 12
eststo: xtreg l_robbery post i.year $lintrend $region $xvar, fe vce(cluster sid)
```

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esttab using "$output/Table4_B.tex", se replace label noobs noabbrev ///
keep(post pre2_cdl, relax) cells(b(fmt(4) star) se(par fmt(4)))

*******************************************************************************
* PANEL C

eststo clear
* 1
eststo: xtreg l_assault post i.year [aweight=popwt], fe vce(cluster sid)

* 2
eststo: xtreg l_assault post i.year $region [aweight=popwt], fe vce(cluster sid)

* 3
eststo: xtreg l_assault post i.year $region $xvar [aweight=popwt], fe vce(cluster sid)

* 4
eststo: xtreg l_assault post pre2_cdl i.year $region $xvar [aweight=popwt], fe vce(clu
> ster sid)

* 5
eststo: xtreg l_assault post i.year $exocrime $region $xvar [aweight=popwt], fe vce(cl
> uster sid)

* 6
eststo: xtreg l_assault post i.year $lintrend $region $xvar [aweight=popwt], fe vce(cl
> uster sid)

* 7
eststo: xtreg l_assault post i.year, fe vce(cluster sid)

* 8
eststo: xtreg l_assault post i.year $region, fe vce(cluster sid)

* 9
eststo: xtreg l_assault post i.year $region $xvar, fe vce(cluster sid)

* 10
eststo: xtreg l_assault post pre2_cdl i.year $region $xvar, fe vce(cluster sid)

* 11
eststo: xtreg l_assault post i.year $exocrime $region $xvar, fe vce(cluster sid)

* 12
eststo: xtreg l_assault post i.year $lintrend $region $xvar, fe vce(cluster sid)

esttab using "$output/Table4_C.tex", se replace label noobs noabbrev ///
keep(post pre2_cdl, relax) cells(b(fmt(4) star) se(par fmt(4))) ///
indicate("State and Year Fixed Effects = *.year" "Region-by-Year Fixed Effects = *r200
> 01" "Time-Varying Controls = *l_police" "Contemporaneous Crime Rates = *l_larceny" "
> State-Specific Linear Time Trends = *trend_1") ///
stats(N, fmt(0) labels("Observations"))

*******************************************************************************
* Export Table 4

include "https://raw.githubusercontent.com/steveofconnell/PanelCombine/master/PanelCom
> bine.do"

cd "$output"

panelcombine, use(Table4_A.tex Table4_B.tex Table4_C.tex)  columncount(12) paneltitles
> ("Burglary" "Robbery" "Aggravated Assault") save(Table4.tex)

cd "$main"

*******************************************************************************/
* 2) Replica Panel C. 1 with Callaway y Sant'Anna's Estimator
*============================================================================*/
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```
* ssc install csdid
* ssc install drdid


csdid l_assault post i.year i.sid [weight=popwt], ivar(sid) time(year) gvar(effyear) m
> ethod(reg) notyet

* Pretrends test

estat pretrend

* Average ATT

estat simple

estat event
csdid_plot

graph export "$output\EventStudy.png", as(png) name("Graph") replace


csdid l_assault post i.year i.sid [weight=popwt], ivar(sid) time(year) gvar(effyear) m
> ethod(reg) notyet

csdid_plot
csdid_plot, group(2005) name(m1,replace) title("Group 2005")
csdid_plot, group(2006) name(m2,replace) title("Group 2006")
csdid_plot, group(2007) name(m3,replace) title("Group 2007")
csdid_plot, group(2008) name(m4,replace) title("Group 2008")
graph combine m1 m2 m3 m4, xcommon scale(0.8)

graph export "$output\4_Years_ES.png", as(png) name("Graph") replace


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* 3) Descomposición de Bacon para log(Burglary Rate)
*=========================================================================*/
* Opcion 1 (General)
* ssc install bacondecomp
* bacondecomp l_burglary post , stub(Bacon_) ddetail
* Opcion 2 (Like Cunningham book)
* install
net install ddtiming, from(https://tgoldring.com/code)
net get ddtiming

* bacon decomp graph
ddtiming l_burglary post, i(sid) t(year) ///
 legend(pos(7)) name(becondecomposition1)

* save graph
graph export "$output\Bacon_decomp.png", as(png) name("becondecomposition1") replace

*****************************************************************************
translate "$main/programs/PS6.do" "$output/Apendice.pdf", translator(txt2pdf) replace
```