GV300 - Quantitative Political Analysis

University of Essex - Department of Government

Lorenzo Crippa

Week 20 – 10 February, 2020

Question 1

Deterring or Displacing Electoral Irregularities? Spillover Effects of Observers in a Randomized Field Experiment in Ghana

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This article studies the effect of domestic observers deployed to reduce irregularities in voter registration in a new democracy, and in particular, the response of political parties' agents to these observers. Because political parties operate over large areas and party agents may relocate away from observed registration centers, observers may displace rather than deter irregularities. We design and implement a large-scale two-level randomized field experiment in Ghana in 2008 taking into account these spillovers and find evidence for substantial irregularities: the registration increase is smaller in constituencies with observers; within these constituencies with observers, the increase is about one-sixth smaller on average in electoral areas with observers than in those without; but some of the deterred registrations appear to be displaced to nearby electoral areas. The finding of positive spillovers has implications for the measurement of electoral irregularities or analysis of data collected by observers.

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- What is M?
- Why this M? Is it any good?
- How is **random assignment** of M being carried out?
- How is **control** over confounding observables and unobservables carried out?
- Which features of the statistical analysis account for observables and unobservables?

Question 1(a)

(5 marks) The study randomly assign monitors to registration areas and treats smaller increases in registrations (over 2004 levels) at monitored sites (treatment), in contrast to un-monitored sites (control), as evidence of a decrease in fraud. Why is change in registrations a good or bad proxy for electoral fraud? Give 3-4 reasons to justify your answer.

Question 1(a)

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  - Label "free and fair" elections is given when intimidation and vote fraud is absent
  - Unobservable: history of international observers in elections, parties have adapted

Question 1(a)

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- Can it account for intimidation?
- Can't catch ballot stuffing $\rightarrow$ although this is rare
- Relationship between number of registered voters and number of eligible voters in a district?
- What's the meaning of a change in number of registered voters?

Question 1(b)

(5 marks) Randomizing instead of permitting the monitors to go wherever they want is designed to permit causal interpretation of the effects. Describe the randomization process in detail. Why would non-random assignment create bias in the estimate of the causal effect of monitors on electoral fraud? Give at least one reasons each for why the estimated effect may be biased up or down.

Question 1(b)

localized and general spillover effects.

First, within each region, we divided constituencies into blocks according to the difference in vote share won by the NPP candidate and the NDC candidate in the 2004 parliamentary elections. Parliamentary constituencies are political units which are not the same as administrative districts for which government data is made public, and at the time of the experiment, population and other data were not available at the constituency level. Consequently, we blocked only on the 2004 elections results in order to improve the efficiency of our estimates. Within each block, one constituency was randomly assigned to be a treatment constituency and two others to be control constituencies, so that there are competitive constituencies as well as stronghold constituencies for each party among both our treatment constituencies and our control constituencies. Although all regions were

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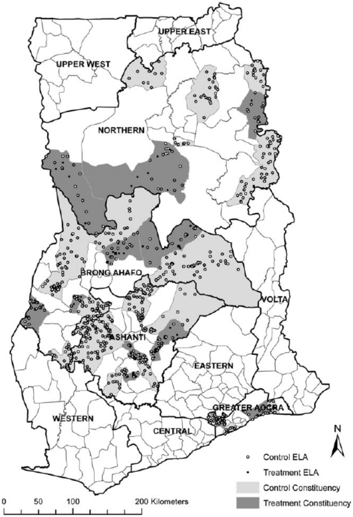
    3. Random assignment of ELAs within each CONs to treatment and control. ELAs in treatment CONs can only be treated (of course)
- Without random assignment, characteristics of ELA/CON would not be constant across those which received monitors and those which did not

Question 1(b)

FIGURE 1 Ghana, with Treatment and Control Constituencies and Electoral Areas



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    - competitiveness of election at site (ex-ante expectation: more fraud, overestimate of treatment effect)

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- By the way: what does this 2-level randomization allow us to measure? – local and global spill-overs

Question 1(b)

Table 1 Means of Variables by Treatment Assignment Status

	Assignment Status			Difference	
	$T^c = 1$ $T = 1$ (a)	$T^c = 1$ $T = 0$ (b)	$T^c = 0$ $T = 0$ (c)	(a)–(b)	(b)–(c)
Pretreatment Variables					
# Registered voters in electoral area in 2004	1899	2189	1799	-290 (375)	390 (252)
# Electoral areas in 5 km radius in same constituency	2.94	3.32	2.79	-0.38 (0.45)	0.53 (0.29)
# Electoral areas in 10 km radius in same constituency	7.53	7.84	7.22	-0.31 (0.78)	0.62 (0.53)
Distance to nearest electoral area in same constituency (km)	3.79	4.25	4.31	-0.46 (0.82)	-0.06 (0.87)
Spillover Variables					
# Electoral areas in 5 km radius assigned registration observer	0.75	0.84	0	-0.091 (0.137)	0.844 (0.041)
# Electoral areas in 10 km radius assigned registration observer	1.95	2.16	0	-0.213 (0.230)	2.16 (0.00)
Distance to nearest electoral area assigned a registration observer (km)	8.34	6.89	41.34	1.45 (1.00)	-34.45 (1.53)

Standard errors in parentheses. N=868 electoral areas.

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Check balance!

Question 1(b)

Table 2 Regression of Pretreatment Variables on Treatment Assignment

Dependent Variable:	(1) # Registered Voters in 2004	(2) # Electoral Areas in 5 km	(3) # Electoral Areas in 10 km
Treatment constituency (T^c)	-45 (569)	0.472 (0.435)	0.619 (1.119)
Electoral area assigned registration observer (T)	-102 (236)	-0.071 (0.377)	0.204 (0.483)
Block Fixed Effects	Yes	Yes	Yes
R^2	0.333	0.335	0.358
N	868	868	868

OLS. Disturbances clustered at the constituency level; robust standard errors in parentheses. Thirty-nine clusters.

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Assess randomization! Pre-treatment effect on changes in registration is 0!

Question 1(c)

(5 marks) Load "ghana.dta." The outcome variable in this dataset is the percent change in registration from the election in 2004 to the election 2008 for each electoral area (ELA), "percchangeregELA0804". You are also given an indicator for whether observers where assigned to the ELA ("Tela") and whether they visited the ELA ("Vela"). What is the treatment in this experiment? What is the manipulation in this experiment? Is the manipulation used here a good proxy for the treatment? Use variables "Vela" and "Tela" to assess whether the manipulation is any good. What could be reasons for a failure to treat?

Question 1(c)

```
tab Tela Vela

           |    =1 if visited ELA
 =1 if ELA |   during registration
  assigned |   (based on observer
        to |        reports)
 treatment |          0           1 |     Total
-----------+------------------------+----------
         0 |        766          25 |       791
         1 |         12          65 |        77
-----------+------------------------+----------
     Total |        778          90 |       868

```

We have 15% of cases where “Tela” is not equal to “Vela” in the treatment group (12 out of 77). The paper reports on difficulties to reach sites during rainy season.

Question 1(d)

(3 marks) Regress percent change in registrations on the treatment variable, that is, pick one of "Vela" or "Tela" as your independent variable. Explain why you would use one or the other as your operationalization of the treatment in this regression. Report and interpret the result.

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You had to report and interpret regression results, answer needs argument for either Tela or Vela and needs to mention the coefficient on Tela/Vela and the result of the hypothesis test over the coefficient of Tela/Vela.

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Let's see what you did!

Model

To investigate the full model, including the localized spillover effects of observers, we estimate the following:

$$\begin{aligned} Y_{ij} = {} & \beta_0 + \beta_1 T_{ij} + \beta_2 T_i^c + \sum_d \left(\beta_{3d} \cdot t_{dij}\right) \\ & + \sum_d \left(\beta_{4d} \cdot T_{ij} t_{dij}\right) + \sum_d \left(\beta_{5d} \cdot n_{dij}\right) \\ & + \sum_d \left(\beta_{6d} \cdot T_{ij} n_{dij}\right) + \mu_b + \epsilon_{ij} \end{aligned} \tag{1}$$

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- Outcome: Y_{ij} = percentage change in number of registered voters from 2004 to 2008 in ELA j and CON i
- M and M^c (here referred to as T and T^c) = assignment of observers to ELA and CON
- Spillover variables – ensuring that the Stable Unit Treatment Variable Assumption (SUTVA) is met

Question 1(e)

Question 1(e): (5 marks) Regress percent change in registrations on the indicator for whether an area was monitored and the number of monitored areas within 5km. The data set contains variables indicating the number of assigned monitors in ELAs within 5km ("assignedTin5C") and the number of monitors visiting ELAs within 5km ("visitedin5C"). Pick one of those variables depending on which variable you chose in (d) to operationalize the treatment ("Vela" or "Tela"). Interpret the result. What does this result tell us about how political parties responded to the presence of electoral monitors?

Question 1(e)

Table 3 Effect of Registration Observers on Percentage Change in Registration from 2004 to 2008, 5km/10km

Dependent Variable: Percentage change in number of registered voters from 2004 to 2008	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	IV	IV	IV
Treatment constituency (T^c)	-0.006	-0.042$^+$	-0.041$^+$	-0.003	-0.036	-0.036
	(0.016)	(0.022)	(0.024)	(0.017)	(0.022)	(0.024)
Electoral area assigned registration observer (T)	-0.016	-0.030*	-0.035*			
	(0.011)	(0.014)	(0.017)			
ELA visited by registration observer (V)				-0.022	-0.044*	-0.042$^+$
				(0.015)	(0.016)	(0.022)
# Electoral areas in 5 km assigned registration observer		0.028*	0.027**			
		(0.008)	(0.008)			
# Electoral areas in 5–10 km assigned registration observer		0.010	0.011			
		(0.006)	(0.007)			
$T*$ # Electoral areas in 5 km assigned registration observer		-0.007	-0.010			
		(0.012)	(0.017)			
$T*$ # Electoral areas in 5–10 km assigned registration observer		0.019***	0.013			
		(0.004)	(0.009)			
# Electoral areas in 5 km visited by registration observer					0.023*	0.023*
					(0.009)	(0.010)
# Electoral areas in 5–10 km visited by registration observer					0.005	0.005
					(0.006)	(0.007)
$V*$ # Electoral areas in 5 km visited by registration observer					-0.004	-0.001
					(0.013)	(0.019)
$V*$ # Electoral areas in 5–10 km visited by registration observer					0.019***	0.021
					(0.004)	(0.013)
# Electoral areas in 5 km			0.001			0.001
			(0.001)			(0.001)
# Electoral areas in 5–10 km			-0.001			-0.001
			(0.002)			(0.002)
$T*$ # Electoral areas in 5 km			0.003			
			(0.007)			
$T*$ # Electoral areas in 5–10 km			0.002			
			(0.005)			
$V*$ # Electoral areas in 5 km						-0.003
						(0.009)
$V*$ # Electoral areas in 5–10 km						-0.001
						(0.008)
Block fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.166	0.193	0.193	0.159	0.193	0.192
N	868	868	868	868	868	868

Disturbances clustered at the constituency level; robust standard errors in parentheses. Thirty-nine clusters. $^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$.

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- The variable "assignedTin5C" allows to talk about spill-overs to nearby ELAs.
- This gives us an indication of whether parties focussed their fraud activity on nearby ELAs as soon as observers showed up.

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- Measure non-compliance (assigned to receive observer vs observer visited)

Question 1(f)

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Could be displacement and not just deterrence (which is also the conclusion of the paper itself).

Question 1(g)

Question 1(g): (5 marks) Explain how the experiment and analysis of experimental data presented in this paper helps to meet the Stable Unit Treatment Variable Assumption (SUTVA).

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  1. T_i only affects $i \rightarrow$ no spill-overs: This study acknowledges that spill-over effects necessarily exist and tackles them through random assignment of observers to CON and then within treatment CON to ELAs (two-step randomization). The resulting indicators of observers in nearby ELAs of varying distance and nearby CON allows to measure the spillover effects.

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  2. effect of T_i homogenous among subjects: not debated
  3. T_i is invariant with respect to mechanism by which T_i is provided: not debated
  4. all possible states of the world are observed: registration as proxy for electoral fraud gives us observable measures of treatment and control group

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Question 1(h)

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- Blocked randomization means that treatment and control are randomly assigned within blocks (sub-samples sharing the same characteristics) and not within the full sample.
- In this study, researchers blocked on 2004 election result.
- They separate CONs in whether they had competitive or non-competitive elections in 2004 and randomly assigned to treatment and control within the set of competitive CONs and then again within the set of non-competitive CONs.
- Done to alleviate the influence competitive election potentially has on the treatment effect

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(5 marks) What is the research question, the dependent variable (Y), the experimental manipulation (M), and the intended treatment (T)?

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Are partisan messages effective in mobilizing turnout? Y: Turnout, M: partisan/non-partisan made salient in a message delivered via phone call, T: delivering a partisan message

Question 2(b)

(7 marks) In an ideal experiment, the experimenter would manipulate the partisan identity of subjects directly (i.e., randomly assign subject i to be either Republican or Democrat). Why is this not possible? How is the author dealing with this issue in implementing the presented experiment, i.e. what is his manipulation?

Question 2(b)

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- Partisanship emerges from socialization: impossible to replicate given limited resources.
- The author manipulates the salience of partisanship and hopes the effect is strong enough to enter subjects' considerations.
- The experiment has no control over whether subjects actually pick up on the partisan prime

Question 2(c)

(8 marks) Which observables is the author controlling for in this study and how is he implementing these controls in experimental design and statistical analysis?

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- Dummies for turnout in the past in the statistical model
- In the experimental design, the author includes Dem and Rep messages to control for potential differences in the treatment effect across groups of partisans
- Also, randomization is done by blocking on past turnout and only applied to partisans

Question 3

Unlike in observational studies, experiments allow the researcher to decide how many people will participate. The research will have to calculate how many people s/he needs to uncover a significant effect of the treatment on the outcome variable. S/he trie to assess the statistical power of the statistical test used in analyzing the data generated by an experiment. Recall what “power of a statistical test” means (Week 7, slide 32)

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The level of significance of a test is the $P(\text{Reject the null hypothesis}|\text{Null hypothesis is true})$ The event "the null hypothesis is false" is much harder to define than the event "the null hypothesis is true" (we don't really know what is out there in the world)

Question 3(b)

There is an obvious tradeoff between statistical power and costs of a study. Why is this the case? Why would you want a sample as large as you can afford because of statistical power? Explain the relationship between sample size and statistical power.

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Larger samples give more reliable results, a smaller variance of the estimated of the statistic of interest, and small samples often leave the null hypothesis unchallenged even if the null hypothesis is not true.

Question 3(c)

Read the experiment (link) and explain in your words how the researchers assess whether their experiment will have enough statistical power. What is the metric by which they judge whether it has enough statistical power?

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See R file for a power analysis

Conclusion

All clear? More questions?

Thanks and see you next week!