Econ 4140 Econometrics Game
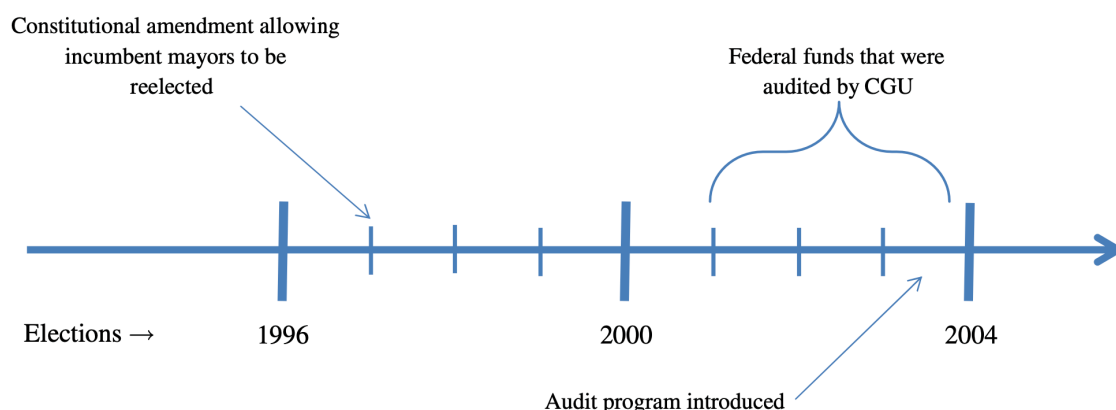## Effect of electoral accountability on corruption?

Background
- The abuse of entrusted power by politicians through rent-seeking and corruption is a threat to many modern democracies
- In economics, the study of electoral accountability and corruption is a very important topic
- Hypothesis: When a mayor is facing **re-election (they have re-election incentive and are more accountable by the electorate)**, they tend to be more "disciplined" and corrupt less.
- We use a very interesting dataset from Brazil to verify this hypothesis.

Brazil's institutional background and anticorruption campaign

- In 1997, Brazil changed their constitution to allow mayors to serve **at most two terms.** In other words, incumbent first-term mayors face re-election incentives, while incumbent second-term mayors do not have re-election incentives.
- In 2003, the *controladoria Geral da união* (CGU) introduced an ambitious anticorruption program that audits municipalities for their use of federal funds. These audit reports provide objective measures of corruption at the municipal level for the 2001–2004 electoral term.
- The audit reports were available in the beginning of 2004 for 496 municipalities randomly selected across the first 11 lotteries of the anticorruption program
- These audit report data, combined with the constitutional amendment, allow us to compare the corruption levels between municipalities where mayors are in their first term to those where mayors are in their second term
- A timeline of events is as follows:

Constitutional amendment allowing incumbent mayors to be reelected

Federal funds that were audited by CGU

Elections →   1996   2000   2004

Audit program introduced

Causal Question

• What is the causal effect of re-election incentives on corruption?
• Use the provided real dataset from Brazil to answer this question.

Key points to think about:
1. What is the treatment in this dataset?   First/ second term
2. What is the identification strategy you need to rely on and why?
3. How robust is your causal estimates to
(A) the inclusion of different control variables?
(B) the use of different machine learning methods?
(C) whether the treatment effect is homogeneous or heterogeneous?
(D) different definitions of corruption levels?
4. If you can correctly write out the codes for debiased ML **without** using the DoubleML package, that would be a bonus.

Your final report should try to clearly answer the above questions and present your estimates. Please submit your codes as well.

Available resources

1. Dataset: **corruptiondata.dta**.
2. Explanations of variables in the dataset, attached at the end.

Hint:

Outcome: amount of corruption for each mayor. You may focus on (one or several of) the following three measures of corruption measures.
• Share of audited resources found involve corruption [*pcorrupt*]
• Share of audited items found to involve corruption [*ncorrupt_os*]
• Amount of corruption, i. e., the number of irregularities associated with corruption [*valor_corrupt*]

Covariates: Several possible sets of covariates to consider:

Mayoral characteristics: age, gender, schooling level and party affiliation

Municipal characteristics: log of population, percentage of the population that has at least a secondary education, percentage of the population that lives in an urban sector, new municipality indicator, log of GDP per capita in 2002, the Gini coefficient, and the log of the amount of resources sent to the municipality.

Political and judicial characteristics: the effective number of political parties in the legislature, the number of legislators divided by the number of voters, the share of the legislature that is of the same party as the mayor, and whether the municipality is judiciary district

Other dummies to consider:

state dummies, lottery dummies

You may also consider other covariates provided in the dataset as you see appropriate

Explanations of all the possible variables in the dataset

Variable name	Definition	Primary source
uf	state code	www.ipeadata.gov.br
nsorteio	lottery number	www.cgu.gov.br
totrecursos	Total resources audited	www.cgu.gov.br
tot_os	Number of service items audited	www.cgu.gov.br
pop	Population in 2000	www.ipeadata.gov.br
purb	Share of population living in urban areas 2000	www.ipeadata.gov.br
p_secundario	Share of population over 18 years old with at least a secondary education	www.ipeadata.gov.br
pib_capita_02	real GDP per capita in 2002 in 2001 dollars	www.ipeadata.gov.br
op_01_04	Indicator if municipality used participatory budgeting in 2001-2004 administration	www.ibge.gov.br
reeleito	mayor in the second-term of office	www.tse.gov.br
ENEP2000	Effective number of parties in 2000 mayor elections	www.tse.gov.br
ENLP2000	Effective number of parties in2000 legislative elections	www.tse.gov.br
pref_idade_tse	Age of the mayor	www.tse.gov.br
comarca	Indicator if municipality had a judiciary district	www.ibge.gov.br
reeleito_2004	Indicator if mayor was re-elected in 2004	www.tse.gov.br
p_cad_pref	Proportion of legislators who are from the party as the mayor	www.tse.gov.br
rec_transf_correntes	total current transfers received	www.ipeadata.gov.br
gini_ipea	Gini coefficient for income	www.ipeadata.gov.br
fiscalizacoes	total service items audited	www.cgu.gov.br
valor_fiscalizado	value audited	www.cgu.gov.br
winmargin2000	margin of victory in 2000	www.tse.gov.br
winmargin2000_inclost	margin of victory of incumbent in loss	www.tse.gov.br
incumbent	indicator if incumbent loss	www.tse.gov.br
vereador9600	indicator if mayor was a legislator during 1996-2000	www.tse.gov.br
pmismanagement	proportion of irregularities associated with mismanagement	www.cgu.gov.br
elected1	indicator if the mayor is predicted to be reelected in 2005	n/a

first	first-term mayor	www.tse.gov.br
lpib02	log of GDP per capita	www.ipeadata.gov.br
lpop	log of population in 2000	www.ipeadata.gov.br
pref_masc	mayor is a male	www.tse.gov.br
party_d*	indicators of party affiliation	www.tse.gov.br
pref_escola	mayor's schooling level	www.tse.gov.br
sorteio*	lottery dummies	www.cgu.gov.br
media2	indicator if municipality has a AM radio station and local newspapers	www.ibge.gov.br
exp_prefeito	indicator if mayor was previously a mayor in a non-consecutive term	www.tse.gov.br
uf_d*	state dummies	www.ibge.gov.br
vereador_eleit	Number of legislators per voter	
mun_novo	Indicator if new municipality	www.ibge.gov.br
samepartygov98	Indicator if mayor is same party as the 1998 governor	www.tse.gov.br
lfunc_activ	Number of active employees (logs)	www.ibge.gov.br
ncorrupt	Number of violations involving corruption	www.cgu.gov.br
ncorrupt_os	Share of audited items found to involve corruption	www.cgu.gov.br
valor_corrupt	Amount of corruption	www.cgu.gov.br
pcorrupt	Share of audited resources found involve corruption	www.cgu.gov.br
dcorrupt_desvio	Indicator if municipality committed corruption by diverting funds	www.cgu.gov.br
dcorrupt_licitacao	Indicator if municipality committed corruption by illegally procuring goods and services	www.cgu.gov.br
dcorrupt_superfat	Indicator if municipality committed corruption by over-invoicing goods and services	www.cgu.gov.br
ncorrupt_desvio	Number of violations involving the diversion of funds	www.cgu.gov.br
ncorrupt_licitacao	Number of violations involving illegal procurement practices	www.cgu.gov.br
ncorrupt_superfat	Number of violations involving over-invoicing of goods and services	www.cgu.gov.br
corrupt_desvio	Amount of audited resources involving the diversion of funds	www.cgu.gov.br
corrupt_licitacao	Amount of audited resources involving illegal procurement practices	www.cgu.gov.br
corrupt_superfat	Amount of audited resources involving over-invoicing of goods and services	www.cgu.gov.br
pcorrupt_desvio	Share of audited resources involving the diversion of funds	www.cgu.gov.br
pcorrupt_licitacao	Share of audited resources involving illegal procurement practices	www.cgu.gov.br
pcorrupt_superfat	Share of audited resources involving over-invoicing of goods and services	www.cgu.gov.br
shcorrupt_desvio	Share of audited service items involving the	www.cgu.gov.br

	diversion of funds	
shcorrupt_licitacao	Share of audited service items involving illegal procurement practices	www.cgu.gov.br
shcorrupt_superfat	Share of audited service items involving over-invoicing of goods and services	www.cgu.gov.br
dcorrupt	Indicator if corruption was detected in the municipality	www.cgu.gov.br
dmismanagement	Indicator if acts of mismanagement were detected in the municipality	www.cgu.gov.br