20271 – Public Economics
Take-home assignment

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Rules Reply to each question providing the output of your analyses, together with a brief comment. Please provide also the do file used to produce your results. Send your answers and code **in a single pdf file** to salvatore.lattanzio@unibocconi.it **by midnight of 17 December 2024**. The assignment is worth **3 points**.

Data The data called `municipalities5k_2000_2015.dta` is a panel dataset where units of observations are Italian municipalities over time (years). Only municipalities with more than 5,000 residents are included. You can download the dataset from Blackboard. The list of variables included in the data follows:

Variable name	Storage type	Display format	Value label	Variable label
n_istat	long	%10.0g		Code municipality
year	float	%9.0g		Year
region	str21	%15s	*	Region
province	str21	%15s	*	Province
female	float	%9.0g		Female mayor
mv	double	%10.0g		Female margin of victory
lptot_total	float	%9.0g		Log per capita total expenditures
lpcor_total	float	%9.0g		Log per capita current expenditures
lpcap_total	float	%9.0g		Log per capita capital expenditures
lp_e_tax_fee	double	%10.0g		Log per capita taxes and fees
lp_e_other	double	%10.0g		Log per capita other revenues
share_fcons	float	%9.0g		Share female councillors
logpop	double	%10.0g		Log population
sh_hschool	double	%10.0g		Share high school
sh_illiteracy	double	%10.0g		Share illiterate
sh_empl	double	%10.0g		Employment rate
sh_young_old	double	%10.0g		Share children/elderly
hs_mayor	double	%10.0g		Mayor's education
north	double	%10.0g		North
south	double	%10.0g		South
right	double	%10.0g		Right
left	double	%10.0g		Left
litor	byte	%10.0g		Sea city
population	double	%10.0g		Population
pop_dens	double	%10.0g		Population density
			*	indicated variables have notes

Sorted by: n_istat year

Use this data to study the relationship between mayor's gender and municipalities' balance sheets.

Questions

Q1 Provide descriptive statistics (means, standard deviations, observations) for log per capita expenditures and revenues. Do you observe differences between municipalities run by male mayors and by female mayors? Explain why such differences cannot be interpreted as causal. *[0.10 points]*

Q2 Run an OLS regression of log per capita *total* expenditures on the female dummy. Then, estimate a regression controlling for covariates (choose which ones to include and justify why). Finally, estimate a regression with municipality fixed effects (keep controlling for the relevant time-varying covariates). Under what conditions can each of these estimates be interpreted as causal? *[0.35 points]*

Q3 What is (are) the identifying assumption(s) for the female margin of victory to be used as a running variable in a regression discontinuity design? Provide evidence that the appropriate design is sharp RDD in this case. *[0.10 points]*

Q4 Check discontinuities in baseline covariates at the threshold of 0 for the female margin of victory. Are there any significant discontinuities? (Hint: estimate RDDs for each covariate to evaluate the statistical significance of the discontinuity). *[0.20 points]*

Q5 Outline why it is important to verify the continuity of the running variable around the threshold, and explain what it means in this specific context. Show a graph with the density of the running variable. Is there any statistically significant discontinuity? *[0.25 points]*

Q6 Show the RD plots and estimates of the effect of female mayors on log per capita *total* expenditures using the following approaches:

- Parametric local linear regression with *optimal* bandwidth (write down the estimated equation)
- Parametric regression on the *full* sample with 2nd order polynomial fit on both sides of the threshold (write down the estimated equation)
- Non-parametric local linear regression with optimal bandwidth

What do you conclude? (Hint: use the features of the `rdrobust` command). *[0.75 points]*

Q7 Show how the estimates vary at different bandwidths (e.g., from 2 to 30%). Report a graph or a table with each estimate together with 95% confidence intervals. *[0.50 points]*

Q8 Gagliarducci and Paserman (2012) suggest that female mayors' policy-making is influenced by the share of women in the municipal council. Report heterogeneous effects using the variable `share_fcons` as a continuous variable and as a discrete variable (Hint: generate quartiles of the share and interact the female dummy with them as factor variables; see command `xtile`). *[0.75 points]*