Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	**Bc. Kristina Kubíková**
Advisor:	**PhDr. Miroslav Palanský, Ph.D.**
Title of the thesis:	**The Effect of Rainfall on Voter Turnout: Evidence from the Czech Republic**

OVERALL ASSESSMENT *(provided in English, Czech, or Slovak):*

Short summary
The thesis aims to estimate the effect of precipitation on voter turnout in various elections in the Czech Republic. The author analyzes two datasets, one for districts and the other containing a sample of 600 municipalities. The author compares the effects in two different elections – the Chamber of Deputies (between the period 2006-2017) and the European Parliament (2004-2019), to illustrate how the importance of the elections impacts the estimate.

Contribution
The political economics literature analyzing voter turnout in elections is extensive. Some studies explore the effects of weather (also rain) on voters casting their ballot in elections. Nevertheless, this seems to be the first study analyzing this effect in the Czech Republic. In addition, the author compares the effects in different elections and considers the tightness of political contests.

Methods
The author applies several methods. She runs the baseline pooled OLS for the whole dataset, including all the elections that took place in the Czech Republic from 2004 to 2020. Then, using the district-level data, she estimates the fixed effect model for elections to the Chamber of Deputies and European Parliament. Finally, she constructs the Difference-in-difference model for municipality-level data; she matches municipalities using the method of balanced k-means clusters.

I am not convinced about the value-added of the Diff-in-diff approach for the sample of municipalities. Differences in precipitation might affect voter turnout for different precipitation levels differently. For example, if the difference is 2 mm, it is important whether we compare no precipitation at all and 2 mm, or heavy rain between 8 mm and 6 mm. While the difference in the first situation might significantly impact voter turnout, in the second situation, it just rains a bit more and might not be relevant for the voter's decision whether to cast her vote or not at all. I don't understand why the author also did not apply the fixed-effect model for municipality data. With Diff-in-diff, the author analyzes approximately 800 observations after matching, while more than 10,000 observations are available.

Once the author has the data, I expect her also to run models for municipal elections (possibly regional). I find it problematic to include senate elections as they are always held together with other (more important) elections.

In the methodological part, equation (5.2), introducing the fixed effect model, is incorrect. There should be the individual effect + (possibly also time fixed effect if included) and random error.

Despite running the OLS model and stating on page 28 that "…all the assumptions that are made for OLS are also applicable to DID. ", the author never mentions which assumptions must hold.

In equations 6.1-6.3, the author derives numerical effects of precipitation on voter turnout that stem from the model (3) in Table 6.2. I am worried that it is not correct. Model (3) also includes the interaction of the precipitation variable with the closeness that seems to be neglected in calculations. Theoretically, the values would be valid for the zero closeness variable. The same holds for interpreting the precipitation effect on the voting turnout for European Parliament elections.
I also have a few comments on how the dataset is introduced and variables are defined. When introducing the dataset at the beginning of the Data chapter, the author should say how many units of observations (probably 76 districts – it is nowhere in the thesis) the author includes and which elections are taken into account. A reader learns some information later from descriptive statistics.

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Variable closeness – there are no descriptive statistics for this variable – does it express a difference in obtained votes (as written in the thesis) or a difference in percentage points (which I find more comparable across elections)?

Population stability – greater values mean that more people move into the district. So maybe a different name would be more suitable. There might also be an asymmetric effect on the turnout for positive values (when people tend to move to the district) and negative values (when people tend to move out of the district).

The author states that "…political fragmentation and capital expenditures will not be used in this research. They are both only available on the level of the Czech Republic as a whole…. "
I don't say that I suggest including these variables, but they are definitely available at the level of municipalities.

Regarding the dataset of municipalities, it would be great to see a map with dots to get a picture which municipalities were included. Presenting some histograms showing municipalities' characteristics – distribution according to population-- would also help.

Literature
The author demonstrates a good command of literature on determinants of voter turnout. But sometimes, she presents some findings that she does not support with specific source:
"Some studies show that population density is negatively affecting voter turnout as people in rural areas have higher civic duty then in urban areas (Preuss, 1981). Others show the effect as positive, saying that living in areas with higher population density might increase the effect of word-of-mouth and the people might encourage each other to go and cast their ballots. "

At the beginning of the literature review, the author states: *"Basically, anything can influence whether the voter decides to cast the ballot or not. "*I think this statement lacks consideration, and the author should have avoided it.
She also states, "..Previous research shows that determinants such as education, income, age or even home ownership have a positive effect on voter turnout… " without any reference to the literature. Later, on page 12, she admits that the effect of age is not linear – "..young voters typically tend to abstain, as well as elderly people that start to withdraw from social life ". These are two different statements about the effect of the age variable.

The first page of articles generated by Google Scholar for "rainfall+voter turnout "shows three more studies analyzing the effect of rainfall on voter turnout that are relevant and could have been included:

Leslie, P.A., Arı, B. (2018). Could rainfall have swung the result of the Brexit referendum? *Political Geography*, 65, 134-142.

Horiuchi ,Y., Kang, W.C. (2018). Why Should the Republicans Pray for Rain? Electoral Consequences of Rainfall Revisited. *American Politics Research*, 46(5), 869-889.

Eisinga, R., Te Grotenhuis, M. & Pelzer, B. (2012). Weather conditions and voter turnout in Dutch national parliament elections, 1971–2010. *Int J Biometeorol,* **56**, 783–786.

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Manuscript form
The thesis is structured well. But I don't find it useful to include subsection 2.2, which presents some basic information about the Czech Republic and its climate. I find it rather disturbing, and it does not have a value-added for the thesis.

Some paragraphs in chapters 2 and 3 are pretty long, making it harder for a reader to follow the text. When the author refers to tables and graphs, she does not use their numbers.

Typos occur here and there in the thesis (e.g., whether – weather, then-than, menage-manage, precifpitation…). Page 3 states, "..This paper.. ", but it is the thesis.

Overall evaluation and suggested questions for the discussion during the defense

The thesis is an interesting piece of work with a certain contribution. During the defense, I think the author should explain why she opted for the Diff-in-diff model. In my view, the thesis fulfills the requirements for a master thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade C. The results of the Urkund analysis do not indicate significant text similarity with other available sources.

I suggest two more questions that might be discussed during the defense.

1. Could you please interpret the counterintuitive findings you found for the relation of closeness and precipitation in the case of European Parliamentary elections?
2. On page 10, you state that the effect of precipitation will vary for different parts of Czechia. But you did not consider it in your analysis. Could it be relevant?

***SUMMARY OF POINTS AWARDED** (for details, see below):*

CATEGORY		**POINTS**
Contribution	*(max. 30 points)*	25
Methods	*(max. 30 points)*	25
Literature	*(max. 20 points)*	15
Manuscript Form	*(max. 20 points)*	15
TOTAL POINTS	*(max. 100 points)*	**80**
GRADE	**(A – B – C – D – E – F)**	**C**

NAME OF THE REFEREE: PhDr. Lenka Šťastná, Ph.D.

DATE OF EVALUATION: 7.9.2022

Digitally signed (7.9.2022)
Lenka Šťastná

Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Overall grading:

TOTAL	**GRADE**
91 – 100	**A**
81 - 90	**B**
71 - 80	**C**
61 – 70	**D**
51 – 60	**E**
0 – 50	**F**