Report on **Bachelor / Master Thesis**

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

Student:	**Nikola Borýsková**
Advisor:	**Mgr. Barbara Pertold-Gebická, M.A., Ph.D.**
Title of the thesis:	**The effect of weather on high-stakes exam performance: The case of Czech Republic and Slovakia**

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

Short summary

The thesis studies the effect of weather on student performance in high-stakes admission exams held across 32 cities in the Czech Republic and Slovakia. Using detailed data from SCIO and localized weather records, the author estimates how conditions such as temperature, rainfall, and sunshine influence individual scores. The results suggest that temperature and rain are positively associated with performance, while few clouds correlate negatively. Mediation analysis shows that these effects are largely direct rather than channeled through sleep or commuting. My main problem with the thesis is that it effectively uses only 32 observations: these are the locations (cities) with potentially different weather conditions. Consequently, there is very limited variation to begin with (which I discussed with the student at the MA thesis seminar).

Contribution

This is an original and relatively well-executed study of a topic that receives little attention in Central Europe. The use of standardized test data from a single day across multiple cities is a strength, and so is the combination of daily and hourly weather data. The thesis adds value by going beyond temperature and including several other weather variables. It also examines heterogeneity by gender and test section. The work fits neatly into the growing literature on external influences in education outcomes and highlights a channel of inequality that is often ignored. However, I don't believe the main results, as I will elaborate below.

Methods

The student estimates a standard OLS model with weather data at the city level and outcomes at the individual level. While the number of students is large, the effective variation in weather comes from about 30 cities. Thus we start with some 30 degrees of freedom, and lose many when we include additional controls in OLS. I like this topic a lot, but simply by the nature of the dataset we are extremely limited in terms of what we can find and how strong our results can be. There is almost no statistical power. I think the author should discuss this in much more detail and should refrain from making strong conclusions from the correlations obtained in the thesis. It is almost completely irrelevant that we have thousands of students in the dataset: what matters here is variation in weather, and there is almost no variation. The reported standard errors are therefore not particularly credible. If I understand the thesis correctly, the author doesn't even cluster standard errors. This is such an important

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oversight that maybe I am just misunderstanding something. If we still find statistical significance (using properly clustered standard errors or wild bootstrap), then the lack of statistical power can be made into a strength: the correlation must really be strong if we can recover it using 30 observations. But I am not sure this is the case here.

Literature

The review is well organized and shows a good grasp of the field. It covers both lab and field evidence, discusses direct and indirect mechanisms, and draws on studies from several countries. The motivation for each hypothesis is clear and well connected to the cited work. The thesis also points out where prior evidence is mixed and where this study adds something new.

Manuscript form

The thesis is clearly written, logically structured, and free of major language errors. The figures and tables are informative and properly labeled. The style is academic but accessible. A few sections could be shortened without loss of content, but overall the writing is solid and polished.

Overall evaluation and suggested questions for the discussion during the defense

In my view, the thesis fulfills the requirements for a master's thesis at the IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade C. The results of the plagiarism software analysis do not indicate significant text similarity with other available sources.

Discussion at the defense should concentrate on the fact that there are effectively 32 observations and what does this mean for the results. My recommendation is C but please note that my prior is weak because I am not really sure if I understand the thesis correctly, also in light of my previous conversations with the author, in which we talked about these issues, and in the light of the thesis advisor who is extremely competent in this field. So it will be completely OK from my point of view if the committee decides for a better/worse grade based on more information available at the defense. But I would oppose a grade A because, at the very least, the treatment of statistical power is confusing in the final version of this thesis.

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

CATEGORY		**POINTS**
Contribution	*(max. 30 points)*	25
Methods	*(max. 30 points)*	18
Literature	*(max. 20 points)*	19
Manuscript Form	*(max. 20 points)*	18
TOTAL POINTS	*(max. 100 points)*	**80**
GRADE	**(A – B – C – D – E – F)**	**C**

NAME OF THE REFEREE: prof. PhDr. Tomáš Havránek, Ph.D.

DATE OF EVALUATION: 9.5.2025 Digitally signed, Tomas Havranek

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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**