

# Report on Bachelor Thesis

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

<b>Student:</b>	<b>Adam Poloček</b>
<b>Advisor:</b>	<b>PhDr. Lucie Bryndová</b>
<b>Title of the thesis:</b>	<b>Efficiency of hospital cases and structural indicators</b>

## OVERALL ASSESSMENT:

### Short summary

The thesis deals with Czech hospital cost efficiency, which is proxied by the length of stay in a hospital. The author works with a unique dataset, provided by the cooperation with the Advance Healthcare Management Institute, and complemented by the author's extensive search of additional information on hospital characteristics (using also his right for free information from the health insurance funds). The dataset contains patient-level data (60 000 cases treated by internal medicine departments), enabling separation of patient-level characteristics and hospital-level characteristics influence.

The thesis is well structured and uses an appropriate analytical approach and methodology. The author shows high level of effort in finding the appropriate way to analyse the provided dataset. Though the analysis itself has some limitations (acknowledged by the author in the thesis), it can serve as an input into the current debates on Czech healthcare sector efficiency. I also acknowledge the author attempts to interpret his results with existing literature findings.

### Contribution

Though the topic itself does not allow for too original ideas, there is a clear value added of the thesis in analysing hospital efficiency on patient-level dataset, whereas previously this has been performed only on hospital-level data in the Czech Republic. In his analysis, the author separated effects of hospitals' structure from effects stemming from patients' health status. The analysis has some limitations (only 19 hospitals in the dataset) and some of its results are inconclusive, still it is a valuable contribution to the rather scarce domestic knowledge on this issue.

The author finds significant effect of hospital size and teaching status on length of stay, and, in line with international findings, confirms the effect of diagnoses, comorbidities and age. The author demonstrates critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics.

### Methods

The tools used are relevant to the research question being investigated, and adequate to the author's level of studies.

The author demonstrates understanding of the complexity of analysing a specific dataset. In his case the data is clustered, which is a feature the author is well aware of and in chapter 4.4 describes why he decided to apply a negative binomial multi-level model with patient-level variables and fixed effects for hospitals in the first stage, and estimated dependent variable model in the second stage explaining the fixed effects (hospital characteristics) from the first stage.

The multi-level model used by the author has some limitations as there are relatively few observations in the second stage (number of hospitals). The author is also aware of this fact and in the thesis argues for using negative binomial regression with cluster robust standard errors as well, and draws his conclusions on the outcomes of both models.

### Literature

The thesis demonstrates author's understanding and command of recent literature. The author quotes relevant literature in a proper way (though sometime the formatting made some parentheses missing). The thesis disposes of extensive literature overview, proving author's effort to find relevant international literature that would help him guide his model setting, support arguments for explanatory variables' selection, and last but not least be useful to interpret his results. For instance, this is demonstrated in Ch4.3 where the author explains why he chose length of stay as a proxy for inpatient care costs; or in Ch4.4 where the author presents various works using different approaches to analysing length of stay in hospitals.

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## Manuscript form

The structure of the thesis is good and clear to the reader. Chapters dispose of short introductions that follow the structure of the whole work and provide the reader with sufficient guidance throughout the thesis.

Unfortunately, the thesis contains a lot of typos and misspellings, several times also incomplete sentences or left-over words (including the thesis title page). It also uses some abbreviations that are not defined and not included in the acronym's list (including those featuring in abstract where no abbreviations should be used). The English language would benefit from some proof reading and editing; the sentences are not always grammatically correct (more specifically in the first half of the thesis). Figures are generally not referred to in the text, but their format and style is good and the sources are always marked, though in an uncommon way (directly in a figure's title). Tables, especially in chapter 4, would benefit from some kind of a frame, for instance, to separate them from the text.

The thesis would benefit from presenting the results in a more complex manner. It seems an appendix mentioned in 5.1 is missing - some data is collated to the A2 appendix, instead of creating a separate appendix, if these are the regression results? Though the author declares the patient-level results from both models were very similar, it would be more appropriate to include the two tables separately (in appendix) and clearly mark which results belong to which model. It is not clear from table 5.1 which model's results are presented in this particular table. Results on hospitals' fixed effects are not presented at all, but their magnitude would be interesting to know.

On the other hand, the thesis disposes with a complete and extensive bibliography, correctly referenced and quoted.

## Overall evaluation and suggested questions for the discussion during the defense

The results of the Urkund analysis do not indicate significant text similarity with other available sources – overall, the analysis showed 3% similarity with other text, but the similarities were identified uniquely due to the use of the IES thesis template.

***In my view, the thesis fulfils the requirements for a bachelor thesis at IES, Faculty of Social Sciences, Charles University, and I recommend it for the defense and suggest a grade A.***

*Suggested questions for the discussion during the defense:*

- What consequences does your research have for the Czech hospital sector in general? Do you think your results would change if also some privately-run hospitals were included in the analysis? Discuss whether the analysis results may alter if the dataset dispose of higher variety of hospitals, for instance in terms of their size.
- Discuss how do you interpret your results on hospital size as a significant cost-effective structural indicator in the light of findings of analyses from abroad. Is there a trade-off between quality and efficiency? Would you expect efficiency results to change if any adjustment for quality was included?
- In Ch4.2, the author describes how he selected the dataset used in the analysis, downscaling the original dataset by about a half. The description of what was left out is quite extensive. During the thesis presentation, please discuss what kind of hospital cases actually remained in the dataset, i.e. what hospital cases the analysis is focusing on.
- Choosing the “non MD” CEO category as the one represented in the intercept might have better interpretation over choosing the “only MD” CEO education category.

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## **SUMMARY OF POINTS AWARDED:**

<b>CATEGORY</b>	<b>POINTS</b>
<i>Contribution (max. 30 points)</i>	26
<i>Methods (max. 30 points)</i>	28
<i>Literature (max. 20 points)</i>	20
<i>Manuscript Form (max. 20 points)</i>	16
<b>TOTAL POINTS (max. 100 points)</b>	<b>90</b>
<b>GRADE (A – B – C – D – E – F)</b>	<b>B</b>

**NAME OF THE REFEREE: PhDr. Lucie Bryndová**

**DATE OF EVALUATION: August 26, 2021**

*Digitálně podepsáno (26.8.2021):  
Lucie Bryndová*

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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