

Report on Master Thesis

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

Student:	Bc. Jakub Nikodym
Advisor:	Doc. PhDr. Ladislav Krištofek, Ph.D.
Title of the thesis:	Application of machine learning methods for estimating apartment prices in the Czech Republic

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

Please provide your assessment of each of the following four categories, summary and suggested questions for the discussion. The minimum length of the report is 300 words.

The thesis studies apartment prices in the Czech Republic with a use of non-standard techniques, as the title suggests, which are now gaining more and more attention in economics and finance coming mostly from engineering and data science. The thesis builds on the knowledge learnt during the IES studies and the data science course but goes well beyond the standard curriculum.

Contribution

The thesis presents original research on the topic which in general can be seen as rather standard but the way the topic is approached is quite unique. The author has build a unique dataset, which had been tedious, but used for great purpose. Comparison of various machine learning techniques ensures that the results rather robust but it also shows that not all techniques are ideal for this type of analysis (the tree-based methods clearly dominate both in training and testing samples). Overall, I see the thesis as original and contributive. The only limitation is a rather short time window analyzed but this is given mostly by the nature of the data and the way they are collected. As there are no readily available datasets that would allow for a longer-term analysis, I do not see this as the author's mistake.

Methods

The author uses a toolbox of machine learning methods (decision trees, random forests and nearest neighbours methods) and compares their accuracy with more standard econometric models of OLS and LASSO. All these are handled well, in addition to the demanding text processing.

Literature

The thesis covers the topical literature very well and presents it in a logical manner. I see no issues here.

Manuscript form

There are some typos here and there; but the thesis is well structured and it reads nicely.

Summary and suggested questions for the discussion during the defense

This is an excellent thesis that deserves grade A and I gladly suggest it for a defense. I believe the main results of the thesis can be published either in an economics or data science journal. If the presentation is confident and excellent as well, I believe it would deserve the director's distinction.

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

CATEGORY	POINTS
<i>Contribution (max. 30 points)</i>	30
<i>Methods (max. 30 points)</i>	30
<i>Literature (max. 20 points)</i>	20
<i>Manuscript Form (max. 20 points)</i>	19
TOTAL POINTS (max. 100 points)	99*
GRADE (A – B – C – D – E – F)	A

NAME OF THE REFEREE:

doc. PhDr. Ladislav Krištofek, Ph.D.

DATE OF EVALUATION: 5.9.2019

Referee Signature