

Report on Bachelor / Master Thesis

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

Student:	Ondřej Šváb
Advisor:	Petr Pleticha M.Sc.
Title of the thesis:	Best predictors of apartment prices: Empirical Evidence from Czechia

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

The bachelor thesis aims to show the best determinants and models for forecasting the apartment prices in the Czech Republic and its regions with the use of panel data (using yearly data from 2002 to 2017) and time series (using quarterly data from 2000 to 2018) from the Czech Statistical Office. The results suggest that out of the tested explanatory variables, the average wage, unemployment rate, natural population growth, and the building plot price seem to have the biggest impact on the apartment prices.

The best results are found by using the fixed effects, the first differences or the ordinary least squares method, using heteroskedasticity and autocorrelation consistent standard errors. Moreover, the lasso method was applied for dealing with multicollinearity and over-fitting, which are fixed by the variable selection. In most cases, the lasso improved prediction accuracy. However, the first difference regressions worsen the forecasts after the lasso penalisation.

Contribution

In the thesis, the author describes his contribution by using Penalised Least Squares method for the Czech housing data for the first time. I guess (also based on the literature review), the studied topic was already examined by other authors, but the thesis contributes to the literature by using more current data for the analysis. In general, the contribution of the author should be better described in the thesis.

Methods

There are two examined datasets: panel data created from 14 different Czech regions and time period 2002 - 2017 and aggregated time series data for the whole country for time period 2000 - 2018.

In panel data estimation, ordinary least squares (OLS) (under some specifications using also dummy variables for some regions and time periods), random effects, fixed effects and first difference regressions are used.

In time series approach, standard OLS regression, OLS regression with added time and seasonality trend are used. As an alternative to the time trend in the OLS regression, first differences are used.

Moreover the thesis estimates the models by using penalised least squares approach, particularly least absolute shrinkage and selection operator.

The used estimation methods are quite advanced for a bachelor thesis. From my point of view, more attention should be paid to autocorrelation in the data. The standard methods for panel data estimation like OLS and fixed effects are in this case biased. But they can be used as robustness check.

Literature

The literature review is adequate and well prepared. I would suggest to move the part dealing with methodology used in the literature from the literature overview part to the methodology part.

Manuscript form

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The thesis is written in English with some typing or grammar errors (in some cases the errors make it difficult to understand what the author wants to say). The structure as well as the format of the thesis is in general adequate. I would suggest moving the graphs and figures closer to the first place where the graph or figure is mentioned, sometimes the graph or figure is few pages below.

Summary and suggested questions for the discussion during the defense

The thesis is well prepared. It uses advanced estimation methods and adequate literature sources. Unfortunately, some sentences are difficult to understand due to language errors.

Suggested questions for the discussion during the defense:

- 1) Comment in more detail on the contribution of the thesis to the current literature.
- 2) Discuss the suitability of the used methods for autocorrelated dataset.

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

CATEGORY	POINTS
<i>Contribution</i> (max. 30 points)	27
<i>Methods</i> (max. 30 points)	29
<i>Literature</i> (max. 20 points)	19
<i>Manuscript Form</i> (max. 20 points)	16
TOTAL POINTS (max. 100 points)	91
GRADE (A – B – C – D – E – F)	A

NAME OF THE REFEREE: PhDr. Karolína Vozková

DATE OF EVALUATION: 16. 8. 2019

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.*

Strong Average Weak
30 15 0

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.*

Strong Average Weak
30 15 0

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

Strong Average Weak
20 10 0

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.*

Strong Average Weak
20 10 0

Overall grading:

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