Report on Bachelor / Master Thesis

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

Student:	Štěpán Svoboda
Advisor:	doc. PhDr. Ladislav Krištoufek, Ph.D.
Title of the thesis:	Short-term electricity price forecasting - evaluation of selected hybrid models

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

Author investigates short-term electricity price forecasting with focus on Nordpool market using intraday hourly prices in the period 2015-2016. The aim of the thesis is to compare 4 forecasting models (Support Vector Regression SVR, Autoregressive Integrated Moving Average ARIMA, hybrid model of the former 2 SVRARIMA and Pattern Sequence based Forecasting PSF) and their performance. Difference in predictive accuracy is tested by modified Diebold-Mariano test. Results suggest that PSF is not appropriate for intraday forecasting, while ARIMA outperforms both the hybrid model and SVR but the difference is very small.

Literature
Substantial part of the text is dedicated to literature review presenting different types of models used for price forecasting. However, 13 times repeated phrase ‘‘this is beyond the scope of this thesis‘‘ might not be very appealing to the intended audience. Literature cited in the thesis is relevant, recent and supported by the proper quoting. Adequate comparison of the results with the previous literature is not included in the text.

Methods
Chosen methods are appropriate for the selected hypothesis testing and highly exceed level of the student’s studies. General statements about electricity price are not supported by figures, time series tests and descriptive statistics of the original or transformed series constituting weak data description.

Contribution
I do not consider the review of current trends in the electricity price forecasting as a contribution as suggested in the thesis conclusion, proper literature review is a cornerstone in every research. I acknowledge the originality of the idea and the careful analysis of the implemented methods. Author critically investigates his research question and provides results while being aware of the need of further extensions.

Manuscript form
Poor quality of the manuscript is given by several factors. Proofreading was not performed carefully as there are missing commas, frequent typos, grammar mistakes and incorrect word division at the end of the lines. Words such as amazingly, wonderful should not appear in the academic text. Absence of the list of acronymes and some unexplained abbreviations in the text leave one for guessing of their meaning, List of figures is also missing and placement of the figures in the text is not appropriate. For instance, sentence starting on p.33 is cut after definite article by Figure 5 and then it continues on the next page. This is only non-exhaustive list of points that make manucript form below average.

Overall impression is worsened by the poor quality of the manuscript. I appreciate author‘s knowledge of more advanced econometrics that are usually part of the master level studies, however, effort to present understanding of complex methods came at the expense of the thesis form.Therefore, I recommend grade 2.

I suggest following questions to be answered during the defense**:**

1) Would you expect similar results for electricity markets other than Nordpool? Why? Why not?
2) Discuss the importance of market liquidity in price forecasting. Are the methods used suitable even for less liquid markets?
3) Provide detailed description of the original or transformed data.

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4) How does the intraday price forecast affect trading of energy companies?
5) What is the reason for choosing Akaike Information Criteria AIC when selecting ARIMA? Do you get the same result using Schwarz Criteria?

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

CATEGORY		**POINTS**
Contribution	*(max. 30 points)*	23
Methods	*(max. 30 points)*	25
Literature	*(max. 20 points)*	15
Manuscript Form	*(max. 20 points)*	7
TOTAL POINTS	*(max. 100 points)*	**70**
GRADE	**(1 – 2 – 3 – 4)**	**2**

NAME OF THE REFEREE: **Mgr. Júlia Jonášová**

DATE OF EVALUATION: **5.6.2017**

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Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

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*

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*

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*

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 POINTS	**GRADE**		
81 – 100	**1**	= excellent	= výborně
61 – 80	**2**	= good	= velmi dobře
41 – 60	**3**	= satisfactory	= dobře
0 – 40	**4**	= fail	= nedoporučuji k obhajobě