Report on Bachelor / Master Thesis

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

Student:	**Roman Kalabiška**
Advisor:	**Petr Polak, MSc**
Title of the thesis:	**The consequences of the liberalization of the electricity market**

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

The present bachelor thesis was aimed at assessing the effect of liberalization of the Czech electricity market. It contains a descriptive part (24 pages long) and an empirical part (18 pages) together with an introduction and a conclusion.

The 25 page description covers the electricity market in the Czech Republic including the process of liberalization, structure of the market, the wholesale market including a long description of the different types of market places for trading different types of contracts to deliver electricity and players that provide those market places and price formation. Finally it covers the retail market including players on the retail market and price formation on this market.

The description introduces key characteristics of the electricity sector that affect the organisation of markets, e.g. natural monopolies of networks and the need for regulation. While the inability to store electricty was discussed, the linkage to the need to centrally coordinate supply and demand was unclear. Key points about liberalisation are covered, e.g. unbundling, customer choice and access to the network, with the aim of creating a single internal electricity market. Further insight would have been to discuss the need for some continual regulation of the potentially competitve segments of the sector, e.g. related to information provision to customers, terms for switching retail supplier, support for renewable genration, etc.

A largely comprehensive description of the roles of players is provided. In describing the role of the players it would have been interesting to create a link between the cost structure of power stations, the price at which producers would be willing to sell in the market and operational decisions. In most power markets, the TSO (transmission system operator) is ultimately responsible for managing the physical supply and demand for electricity on the network, in close coordination with the market operator – the market operator is described as having this role in the Czech Republic.

The description of the wholesale market contains many concepts relevant to the empirical analysis, namely a description of price setting, international trade and the multinational nature of power exchanges. However the description at 10 pages is long and the author does not draw out the relevance of this section for the empiral analysis.

The emprical section has three components, which investigate different effects of liberalisation in terms of market integration, and increased competition (as measured by margin and concentration).

The first component tests the **extent of market integration** by investigating the correlation of daily wholesale prices in different countries using the Pearson correlation cooefficient. The test is applied soundly, with a test for stationarity also applied. The author does not explain why he chose to use daily prices as opposed to 15 minute, half-hourly or hourly prices (depending on the market) or indeed forwards/futures prices. The author concludes that markets integrate regionally. It would have been good to explain the intuition behind why some markets may or may not be integrated or why some markets are experiencing higher prices than other markets using information on production technology, a comparison of capacity and demand, the extent of interconnection – this information is readily available, e.g. from ENTSO-E. As the author analises data for the period Jan 2013 to April 2016, no conclusions can be drawn as to the effect of liberalisation (the electricity market was formally liberalised in 2006) on market integration, i.e. no comparison of pre-liberalisation and post liberalisation market integration is made (I note that this may not to be possible using market data since power exchanges are typically formed post liberalisation). The author could also have

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investigated whether there has been any change in correlation over time to answer the stated question.

The seond part of the empirical work tests the **effect of liberalisation on gross retail margins and market power** in the household segment of the retail market. The gross margin is defined by the author as the difference between the price for future contracts (which can be viewed as a measure of the wholesale price) and the end-consumer price (D02d). The author concludes that the gross margin has not decreased but in fact has increased. The author also rightly concludes that there are limitations in the analysis by asserting that other factors affect the margin between the wholesale and retail price (e.g. a mark-up for forecasting error, etc.). The method used to estimate the margin is however not entirely correct as the author should have subtracted regulated costs and other components from the end-consumer price (which are the same across sellers but not across time). These include taxes and levies, the cost of distribution and transmission and in particular the charge to the support for renewable generation as regulated by ERU. For assesing market power, the author used the Lerner index with the marginal cost being approximated by the wholesale electricity price. Here I would suggest making the same adjustments as noted above to the margin between the wholesale price and end-consumer price. The author concludes that the index increases over time – I wonder what would be the result if the above adjustments were made? Also, the change to the index over time would need to be related to steps in liberalisation in order to draw conclusions about the effect of liberalisation on competition. I was also surprised not to see references to work in this area done by others, e.g. Ofgem in the British power market.

The author also analyses **market power and market concentration** by using HHIs and concentration ratios. The calculation is done in the right way and the author also describes the intuition behind his conclusions. Nevertheless, it was not clear to me whether the market shares relate to only the residential market or also cover the supply to industrial and commercial customers. Typically supply to different types of consumers are considered to be separate markets with very diferent customer characteristics. It appears that the author groups all retail supply into a single market by annual consumption – by this measure supply to industrial consumers would have a large weight compared to supply to household consumers. The author concludes that concentration decreased over time. However, this is not linked to specific steps in liberalisation.

In drawing conclusions, the author recognises the key point that the measures would need to describe the evolution since the beginning of liberalisation in order to understand the effect of liberalisation. The author suggests two interesting areas for further research. In particular, the author rightly suggested that analysis of the determinants of the wholesale price of electricity would be relevant as this could shed light as to why prices in different European markets differ.

Suggested question for the defense:

- Why is there a need to centrally coordinate supply and demand?

Overall: good, 2.

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

CATEGORY		**POINTS**
Literature	*(max. 20 points)*	16
Methods	*(max. 30 points)*	20
Contribution	*(max. 30 points)*	19
Manuscript Form	*(max. 20 points)*	18
TOTAL POINTS	*(max. 100 points)*	**73**
GRADE	**(1 – 2 – 3 – 4)**	**2**

NAME OF THE REFEREE: Petra Valickova

DATE OF EVALUATION: 2 June 2016

Petra Valičková

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