

Report on Master Thesis

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

Student:	Jan Stuchlík
Advisor:	Barbara Pertold-Gebicka
Title of the thesis:	Demand for Gas: Evidence from the 2022 Energy Crisis

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

Please provide a short summary of the thesis, your assessment of each of the four key categories, and an overall evaluation and suggested questions for the discussion. The minimum length of the report is 300 words.

Short summary

The Master Thesis by Jan Stuchlík is devoted to estimating Czech households' responses to record-high gas prices and other energy sources in 2022. Jan takes advantage of the unique dataset, a monthly panel of Czech households, and fits a QUAIDS (Quadratic Almost Ideal Demand System) to these data. This allows him to obtain own-price and cross-price elasticities of demand for various good categories. Interestingly, he finds that the cross-price elasticities have in most cases (for most goods categories) opposite signs in reaction to the price of gas than in reaction to the price of electricity.

Contribution

This thesis makes an essential contribution to the literature on the energy crisis. It is the first attempt at estimating the reaction of Czech households to the sharp increase in energy prices happening in 2022.

Methods

First, it has to be stressed that the author uses unique data: a monthly panel of Czech households including self-reported information on household-level expenditures on different categories of goods and services. This data is ideally suited for the kind of analysis that is performed in the thesis.

Jan did a thorough literature review to find inspiration, and as a result, he has decided to use the QUAIDS (Quadratic Almost Ideal Demand System) to model household demand. This approach has been used to model consumer demand in comparable situations, and I consider it a good choice. One of the assumptions of QUAIDS is that prices are exogenous. While this assumption might be problematic in usual times, the sudden increase in the price of energy which we witnessed in 2022 can be safely considered as exogenous. Parameters of the QUAIDS model are estimated using the iterated feasible generalized nonlinear least squares (FGNLS), and standard errors of the estimates were adjusted for clusters in households (because of the panel structure of the data, each household is observed multiple times).

Both the use of QUAIDS and FGNLS to estimate it are well beyond the scope of the master study program at IES.

Literature

The literature review is adequate. The author presents and discusses different approaches towards modeling consumer demand (systems) and different methods that can be used to estimate the parameters of such models. He also presents studies discussing the reactions of consumers (households) to the recent energy crisis.

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Manuscript form

The manuscript is well organized, consecutive parts of the thesis relate one to another, and the whole manuscript is written using a good command of English.

Overall evaluation and suggested questions for the discussion during the defense

Overall, this is a very good master's thesis satisfying all the requirements necessary for a successful defense at IES. Nevertheless, the thesis is not without flaws. It seems that the author put a lot of effort into understanding and applying the QUAIDS model (which definitely was not an easy job), and little time was left for carefully understanding, discussing, and potentially improving the obtained estimates. One of the issues that could be addressed if there was no time is dealing with households that do not consume gas (are not connected to the gas network) or use gas only for cooking but not for heating. Another issue is the comparison of the estimated cross-price elasticities for gas and electricity, which look not intuitive at places.

All in all, however, the thesis fulfills the requirements for a master thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade B. The results of the Turnitin analysis do not indicate significant text similarity with other available sources

Questions:

1. Can you explain the shape of the housing price curve in Figure 2? What drives the dip in housing prices during the last quarter of 2022? Could it affect your results?
2. In the thesis, you estimate the elasticities of demand during the energy crisis. Could you compare them to respective estimates for the Czech Republic in 'normal times'?
3. Is there a way to adjust the QUAIDS model so that it accounts for the fact that a significant share of households do not use gas at all?
4. Estimates of „gamma“ coefficients for gas and electricity, in most cases, bear opposite signs. Could you explain why?

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

CATEGORY	POINTS
<i>Contribution</i> (max. 30 points)	18
<i>Methods</i> (max. 30 points)	27
<i>Literature</i> (max. 20 points)	18
<i>Manuscript Form</i> (max. 20 points)	15
TOTAL POINTS (max. 100 points)	88
GRADE (A – B – C – D – E – F)	B

NAME OF THE REFEREE: *Barbara Pertold-Gebicka*

DATE OF EVALUATION: **24.1.2024**

Digitálně podepsáno (24.1.2024)
Barbara Pertold-Gebicka

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