

## *Abstracts*

# **Analysis of the Effect on Industries and Households of Increases in Electricity Prices Due to the Feed-in Tariff System: A Quantitative Evaluation Based on Analysis of Related Industries**

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Japan introduced a Feed-in Tariff System (FIT) in July 2012 as a measure for promoting the adoption of recyclable energy. However, while FIT is effective in spreading use of recyclable energy in the short-term, in countries such as Germany where it has already been implemented, increases in electricity costs due to escalating FIT purchasing costs are causing an increase in the burden on citizens and other problems.

Using an industry-association table, this paper verifies the degree to which industries and households have been affected by increases in electricity prices in Japan due to FIT from an impartial perspective.

The analysis results showed that, in the case that exemptions are not considered, there is an increase in burden of 0.122%, and in sectors that consume electricity in large amounts, there is a relatively large price appreciation rate. Furthermore, in the case that exemptions are implemented, the average price appreciation rate fell to 0.106%. Although the impact of price increases was slightly alleviated, the more enterprises in an industry obtained exemption certification, the greater the mitigation effects.

In contrast, with regard to the effect on households, the overall impact was a cost increase of 382 yen/month in the case of no exemptions and of 359 yen/month in the case that exemptions are implemented. Comparing the results for different regions, proportionally direct and indirect effects were generally half-and-half, but there was a tendency for the percentage of direct effects to increase the lower a region's electricity prices. In addition, the results for different income brackets showed that the lower the household income, the more the direct effects of the cost burden increased. These results suggest that as the FIT levy increases, the problem of cost burden regressivity also arises.

## **An Ontological Consideration of Energy Problems**

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Held on October 23, 2014, the Nihon University College of Economics Institute of Business Research 60<sup>th</sup> Anniversary Symposium was thankfully a resounding success. I was in charge of the planning and operation of the symposium's centerpiece, a lecture session entitled "Consideration of Energy Issues and Recommendations", and I was able to fulfill my duties in part through a report at the beginning of the session on the motivation and background behind it. However, due to time restraints and other factors, it was not possible to discuss all of the issues concerning energy during the session.

When we consider the broad spectrum of energy-related issues, this outcome could be said to have been a natural consequence. During the symposium, brief and specific recommendations were presented concerning how energy is supplied in Japan with regard to policies and systems, science and technology, and research and development, providing meaningful perspectives for considering energy issues. In a manner of speaking, these recommendations and perspectives addressed "positive" energy issues.

However, energy issues also include critical and difficult problems, such as the protection, preservation, and restoration of the global environment—that is to say, negative issues concerning the imposition of energy consumption (or load) are also prominent, and this problem space is not single-leaved. It is not possible to discuss these problems as issues of control in terms of simply maximizing (or minimizing, or optimizing) objective function.

In this way, discussing the entire picture concerning complex and compound energy issues is naturally something far from the capacity of this author, but I would like to complete my remaining duties by identifying key words for various related concepts and reporting the results of my ontological consideration of the relationships between these.

"Ontology" is a system for developing main concepts (key words) in lexical spaces with correlative links. If parameters are created for each concept while gradually introducing functions into their mutual relationships, it is possible to approach an extremely loose and unsophisticated meta-level energy

equation system. In ontology construction and experimenting with equation systems, I endeavored to minimize the risk of losing validity while collaborating with symposium speakers and obtaining their comments and advice.