

Modeling macroeconomic effects of energy saving investments

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Background

Denmark has a commitment to be independent of non-renewables by 2050. In this respect, much change is expected in the energy sector. Therefore, a thorough understanding of how the economy reacts to different energy investments is necessary; furthermore, a better understanding of how different energy investment choices are incentivized is needed.

The research in this field is needed especially for policy makers, who have an obligation to make society independent on non-renewables and wish to do this in the most efficient way. This project wishes to serve as guidance for this purpose.

Research questions

The overall research question of this project is:

- *How do different energy investment scenarios affect the economy?*

In order to answer this question, I will first address the sub-questions:

- *How does energy consumption change across households/industries (heterogeneity in preferences)? And how can this heterogeneity be implemented in a macroeconomic model?*
- *Which types of energy related questions are the different macroeconomic models, which are used today, relevant for answering?*

Method

The project will primarily be based on quantitative research. The overall question will be approached in three steps.

1. I will find patterns in consumption for both households and industries. For households I use survey data collected by DEA containing information on energy appliances and use. For industries I use time-series data from Statistics Denmark.
2. In this step I develop an energy-economic model where the patterns revealed in the first step are included. Part of this step includes getting a general understanding of how and when different model methods can be utilized in an energy-economic context. The energy-economic model will be calibrated to fit the Danish economy and will be specified in a way that addresses specific questions about energy investments.
3. Finally, I will use the model developed in the second step to answer different questions about energy investments. Focus will be on changes that can be caused by policy changes.



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Project

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Partners

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