

Bachelor's Thesis Proposal

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Notes: Please enter the information from the proposal to the Student Information System (SIS) and submit the proposal signed by yourself and by the supervisor to the Academic Director ("garant") of the undergraduate program.

Proposed Topic:

Biofuels- economic and ecological impact.

Preliminary scope of work:

Research question and motivation

The issue of provision of energy for the vast population of planet Earth remains one of the biggest challenges for the humankind today. Sources such as fossil fuels are limited and will be depleted one day, so it is evident that we must seek for renewable resources to provide for our everyday needs. Even though complete depletion of fossil fuels is still quite far away, new energy resources are already on the scene. This is mainly due to environmental reasons, because fossil fuels are in fact believed to be the worst possibility from the ecological point of view. One of the frequently used renewable resources are biofuels, however these are subject to controversy because of their different impacts on the nature.

Contribution

The thesis will try to answer the question whether the use of biofuels is the right choice for the protection of the environment. If so, it will also try to find ways to minimize the negative externalities coming from their use. Its contribution to the issue will lay in the attempt to predict and discuss the role of the biofuels in the future. Moreover, it will examine possible economic and ecological effects of new legislation, such as the decision of the European Parliament to ban the subsidies on fuels made from palm oil. In practice, ideas of this thesis can help to study profoundly the overall effects of government actions in the field of fuels.

Methodology

The thesis will look at the issue from the global as well as regional perspective, hence working with both global and local data. This method will allow it to compare different markets and legislative approaches. It will try to examine potential relationships between economic and natural data. The thesis will test the effectivity of government subsidies and regulation and their environmental numerically quantifiable results, for example amount of pollution from transportation. Data will be continuously extracted from the Internet during the research, so that actual trends can be observed. Government agencies offer significant amounts of data, among others the Economic Research Service of the United States Department of Agriculture. The analysis of the data will be done with the use of statistical and mathematical softwares, for example Rstudio or Mathematica. Following hypothesis will be tested:

- 1) There is a positive association between the amount of land used for the production of biofuels and the price of basic foods.
- 2) Financial support of biofuels ameliorates the living conditions on Earth.
- 3) The amount of biofuel produced is positively correlated with the intensity of pesticide usage.

- 4) The same volume of natural gas compared to amount of biofuel would lead to higher ecological improvements.
- 5) The production of palm oil will not decrease significantly after the EU subsidies terminate.

Outline

The thesis consists of two main parts. In the first, the effect of government support of biofuels is studied. It examines how subsidies and tax cuts affect the price, demand, supply and other economic indicators of biofuels. It discusses the effects on the market and competition. In the second part, it will focus on the environmental impacts resulting from the production and use of biofuels, attempting to quantify what they actually bring to the ecosystem. Finally, it finds possible links between legislation and market mechanisms on one side and actual environmental phenomena on the other.

List of academic literature:

Bibliography

- 1) The Impacts of Biofuels on the Economy, Environment, and Poverty. David Zilberman
- 2) http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_consumption_of_pesticides
- 3) Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emission from Land-Use Change. Timothy Searchinger et al.
- 4) Beneficial Biofuels- The Food, Energy and Environment Trilemma. David Tilman et al.
- 5) Environmental, economic and energetic costs and benefits of biodiesel and ethanol biofuels. Jason Hill et al.