Lehrstuhl für Wirtschaftliche Staatswissenschaften, insbesondere Energiewirtschaftslehre

Bachelor Thesis

Backtesting of stated policy scenarios: A comparative analysis of past projections and real-world outcomes

Scenarios and projections play an important supporting role in decision and policy making. The World Energy Outlook (WEO) provides a comprehensive analysis of global energy markets, offering forecasts and scenarios for the coming decades. The report includes detailed information on current trends in energy production, demand, efficiency, and supply security. Analysing the accuracy of past projections is crucial for scenario users and developers alike. It provides valuable insights into current projection uncertainties, allowing users to gain a more nuanced understanding of reliability.

The aim of this bachelor thesis is to comprehensively analyse the projections of the WEO, focusing on the past development of energy scenarios, including the demand for renewable energy, coal and gas. The thesis should use the methodological approach of Wachtmeister et al. (2018), which compiles the projections of oil production, oil prices and upstream investments from the WEO and examines the revisions and accuracy of past projections. The main objective is to analyse the historical projections of the WEO and compare them with current data to assess the accuracy of the projections.

Key tasks and objectives of the thesis

- Conduct a thorough review of the World Energy Outlook reports and relevant literature on energy scenario forecasts
- Collect and compile relevant data from the World Energy Outlook reports and other sources for comparison with the current energy landscape
- Use statistical methods and analytical tools to compare historical WEO predictions with current data, focusing on issues such as revisions and accuracy

Your profile

- Student of economics, best with a focus on macroeconomics and an interest in the energy sector
- Analytical thinking and the ability to carry out independent scientific work

Literature

- Wachtmeister, H., Henke, P., & Höök, M. (2018): Oil projections in retrospect: Revisions, accuracy and current uncertainty. *Applied Energy*, *220*, 138-153.
- Liao, H., Cai, J. W., Yang, D. W., & Wei, Y. M. (2016): Why did the historical energy forecasting succeed or fail? A case study on IEA's projection. *Technological Forecasting and Social Change*, *107*, 90-96.
- IEA (2022): **World Energy Outlook** 2010, IEA, Paris

Contact

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Topics

- Modelling
- Energy scenario forecasting

Methods

- Literature review
- Data analysis