

# THE INFLUENCE OF MEDIA SENTIMENT ON ELECTRICITY PRICES IN GERMANY

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## Overview

In recent years, media sentiment has emerged as a crucial variable in modeling financial and energy markets. Unlike traditional financial metrics, media sentiment offers a comprehensive representation of multiple exogenous factors, such as challenges in the market and shifts in public opinion. Its role in forecasting stock prices in financial markets is well-established [1][2].

Energy markets share several characteristics with financial markets—such as standardized tradable products, derivatives, and financial instruments. But unlike financial assets, electricity is limited by storage and transportation constraints, calling for separate analysis. Short-term electricity prices, which directly impact companies and, in the medium term, consumers, are primarily driven by supply and demand dynamics. Stakeholders hedge against this volatility through futures, which reflect market expectations but often deviate from underlying fundamentals like the expected energy production costs [3][4].

Renewable energies play an increasingly significant role in the energy mix, with polarizing opinions about their integration and implications. This paper seeks to explore whether media coverage of renewable energies influences expectations about electricity prices.

This study contributes to the growing body of research investigating the relationship between media sentiment and energy prices. While previous studies have primarily focused on oil and gas prices [5][6], this analysis uniquely focuses on renewable energy and electricity prices, which are becoming increasingly relevant as the global energy mix transitions towards cleaner, more sustainable sources.

Additionally, the research aims to enhance understanding of energy futures, with a particular focus on the German Power Futures market traded on the European Energy Exchange (EEX), the most liquid futures market in Europe. While previous studies have examined various factors influencing electricity futures prices—such as energy production costs [7], seasonal trading patterns [8], and spillover effects from other futures markets [9]—the role of media sentiment remains unexplored. By addressing this gap, the study provides valuable insights into how media sentiment shapes market expectations and interacts with the evolving energy mix, particularly in Germany, a pioneer in the structural expansion of renewable energy.

## Methods

The study employs quantitative modeling with case study deep-dives to assess the relationship between media coverage of renewable energy and electricity prices. The core analysis involves a rolling horizon Ordinary Least Squares (OLS) regression. This method estimates the effect of renewable energy-related media sentiment on electricity prices, accounting for temporal dynamics and structural changes in the energy mix.

Key datasets include:

- Energy Market Data: Weekly, quarterly, and annual power futures data sourced from the EEX.
- Media Sentiment Data: Coverage of renewable energy in German media, obtained from leading databases such as Nexis and Factiva. Sentiment will be quantified using natural language processing (NLP) techniques to capture tone, frequency, and thematic focus.

Case studies of significant energy events complement the regression analysis. These events provide deeper insights into the relation of media sentiment and electricity prices, including spillover effects between different energy technologies.

## Results

The study aims to uncover:

1. Technology-Specific Impacts: Identification of which renewable energy technologies (e.g., wind, solar) exert the most significant influence on electricity prices.
2. Temporal Evolution: Insights into how the impact of media sentiment has evolved alongside the transformation of the energy mix.
3. Forecast Horizon Sensitivity: Determination of which forecast periods (e.g., monthly, quarterly, or annual) are most sensitive to media sentiment.

## Conclusions

Aside from filling the gap in the literature by applying media sentiment analysis to electricity markets, this research offers several practical applications for stakeholders in the energy market. First, incorporating media sentiment into electricity price forecasting models can enhance their accuracy and reliability. This improvement will benefit utilities, policymakers, and traders who rely on precise price forecasts to make informed decisions and develop effective strategies. Second, the study identifies arbitrage opportunities that arise from sentiment-driven price deviations, enabling market participants to optimize their trading strategies and improve overall market efficiency. Finally, industrial consumers, who are particularly vulnerable to electricity price volatility, can use the insights from this research to enhance their planning and risk management.

## References

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