

> Thursday, September 22th, 2022

14:00 - 15:30

FINANCE

RESEARCH
SEMINAR



EMPOWERING CHANGEMAKERS FOR A BETTER SOCIETY

‘CAN CLIMATE FACTORS AND ELECTRICITY DEMAND PREDICT CARBON EMISSIONS ALLOWANCES PRICES? EVIDENCE FROM THE FIRST THREE PHASES OF THE EU ETS’

EHSAN ESLAHI – IÉSEG SCHOOL OF MANAGEMENT



ABSTRACT

This study examines the predictive impact of climate conditions and electricity demand on hourly spot prices of emissions allowances during the first three phases of the European Union Emissions Trading System (EU ETS) (2005-2019). We propose an original methodology for constructing European-scale electricity demand and climate indices and characterize the relationship between those indices and emissions allowances prices by means of an advanced predictive modeling technique (Extreme Gradient Boosting). Empirical findings assert that electricity demand and the climate factors under study were of importance for estimating EUA prices during the first three phases of the EU ETS, with air temperature and electricity demand being most relevant to emissions allowances prices. Conversely, total precipitation and relative humidity proved to be the least relevant variables to the outcome. The results also indicate that the relationship between emissions allowances prices and their climatic predictors was not linear in the studied period. The paper contributes to the growing body of literature on the structural determinants of carbon prices in the EU ETS and enhances our understanding of the impact of climate variability-in the provision of renewable energy production-on the most prominent market-based measure to reduce CO₂ emissions in Europe.