Contribution ID: **37** Type: **Poster**

Machine Learning-Based Examination of ESG Factors in Stock Predictions

Thursday 24 April 2025 11:30 (30 minutes)

This paper explores the relationship between carbon reduction efforts, ESG factors and financial performance. Machine learning models are applied to multi-industry data to assess whether carbon-related ESG attributes - such as carbon emissions and participation in emissions trading schemes - enhance the prediction of stock returns. The analysis also considers the concept of a carbon premium, understood as the excess return investors may require from firms with high greenhouse gas emissions. The findings indicate that, although such ESG indicators are widely disclosed, their inclusion does not consistently improve model accuracy and, in some cases, diminishes predictive performance due to data gaps and increased complexity. The results suggest that ESG-related factors, particularly those linked to carbon emissions, may not directly or immediately influence a firm's financial returns, underscoring the need for more comprehensive data to evaluate their long-term significance.

Authors: STAŃKOWSKI, Daniel (Warsaw University of Technology); Mr ŚLUSARCZYK, Daniel (Warsaw University of Technology); Mr TĘCZA, Paweł (Warsaw University of Technology)

Presenters: STAŃKOWSKI, Daniel (Warsaw University of Technology); Mr ŚLUSARCZYK, Daniel (Warsaw University of Technology); Mr TĘCZA, Paweł (Warsaw University of Technology)

Session Classification: Session C (Poster)