Research Seminar Series in Economic Sciences, 2022-2023

Speaker: Dr. Ilias Kampouris, *Abu Dhabi University*

Webpage: https://www.adu.ac.ae/study/colleges/college-of-business/FacultyDetail/dr-ilias-kampouris

Title: "The role of Artificial Intelligence to predict the energy prices: Early Warning Systems with Machine Learning"

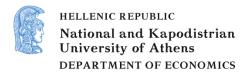**Date & Time:** Thursday, February 9th, 2023, 17:00 - 18:30

Webex Link: https://uoa.webex.com/uoa/j.php?MTID=m6f2d44769f2375bf2090852c432d9ac6

Url: https://www.econ.uoa.gr/ereynitika_seminaria_research_seminars/

Abstract: The COVID-19 pandemic has inflicted the global economy and caused substantial financial losses. The energy sector was heavily affected and resulted in energy prices massively tumbling. The Russian invasion of Ukraine has fueled the energy maker more volatile. In such uncertain contexts, an Early Warning System (EWS) would efficiently contribute to stabilizing market swings. It will leverage the ability to control operating costs and pave the way for smooth economic recovery. Within this framework, we deploy Machine Learning (ML) models to forecast energy equity prices by employing uncertainty indices as a proxy for predicting energy market volatility. We empirically examine the comparative effectiveness of prevalent ML models and conventional approaches (regression) to forecast the energy equity prices by utilizing the daily data from 1/6/2011 to 18/1/2022 for four US uncertainty and eight energy equity indices. Results show that the Nonlinear Autoregressive with External (Exogenous) parameters (NARX) of Neural Networks (NN) scored significantly better accuracy than all other (25) ML models and conventional approaches. The study outcomes are beneficial for policymakers, governments, market regulators, investors, hedge and mutual funds, and corporations. They improve stakeholders' resilience to exogenous shocks, blaze the recovery path, and provide evidence-based for assets allocation strategies.

Organizers: Dimitris Kenourgios, *Professor*
George Dotsis, *Assoc. Professor*
Frago Kourandi, *Assist. Professor*

Thank you.

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