Predictive Analysis for Decision Making

Introduction

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Predictive Analysis for Decision Making

Introducing the Module

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ABOUT THE COURSE

- Focus: econometric modelling of financial issues using big data.
- Methods: statistical and mathematical, a bit of computing, research and analytical skills.
- Level of the course:
  - Advanced compared to Data Analytics
  - Mix of theory and applied
  - Introduces methods to complement those in other courses such as Artificial Intelligence and Big Data

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Aims and Objectives

- Discuss the concept and methods of prediction analytics using the proper terminology.
- Identify and properly state research problems related to prediction analytics in different business settings.
- Critically discuss alternative prediction approaches and methods and choose the right prediction models for a prediction exercise, implement them, and prepare predictions.
- Formulate managerial guidelines and make recommendations.
- Use specialised software (Python/ R/ IBM SPSS and SPSS Modeller/ MATLAB/ EViews) to solve real world problems.

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Indicative Content

- The following are the broader areas the module this years aims to cover
  - Predictive Modelling: conceptual framework and methodological issues.
  - Extending Linear Model (including endogeneity issue).
  - Time Series Models.

  Optional Topics
  - Generalised Linear Models (If time allows)
  - Introducing Text Analytics (If time allows).

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Teaching Structure and Assessment

- Weekly onsite.
- Structure
  - Lecture: (from 1 hour to 2 hours, depending on the topic).
  - Seminar: alternate between theoretical and applied. Bring your laptops.
- Assessment
  - CW (2000 words): Due on 11/04/2024 at 1pm UK time. 40% of the final mark.
  - Empirical Report (3000 words): Mini project due on 09/05/2024 at 1pm UK time. 60% of the final mark.
  - Both are will be made available in due course.

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Reading and Key Text

- **Depends on the topic but some are often used:**
  - Efron, B., and Hastie, T. (2021). *Computer Age Statistical Inference*. Cambridge: Cambridge University Press.
  - Diebold, F. X. (2019). *Econometric Data Science: A predictive Modelling Approach*. Online Manuscript. Available at: https://www.sas.upenn.edu/~fdiebold/Teaching104/Econometrics.pdf
  - Bekes, G., and Kezdi, G. (2020). *Data Analysis for Business, Economics, and Policy*. Cambridge: Cambridge University Press.
  - Brooks, C. (2014) Introductory Econometrics for Finance, Cambridge University Press.
  - Zaki, M. J., and Meira, W. (2020). *Data Mining and Machine Learning: Fundamental Concepts and Algorithm*. Cambridge: Cambridge University Press.

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