UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Data Analysis and Tax Compliance

2425-2-F551MI048

Learning objectives

The aim of this course is to introduce students to the main statistical techniques used nationally and internationally to estimate tax risk and control tax evasion. The course will range from classification and regression models to group analysis segmentation models and will also make reference to modern machine learning models, highlighting pros and cons. The course will also explore AI tools used by tax authorities at different stages of the tax procedure, focusing on the the need to balance the general interest of raising revenue with the protection of taxpayers' rights.
At the end of the course, students will be able to understand which models and statistical tools have been used to support the determination of risk classes and estimates of tax evasion. Students will also learn how to interpret statistical outputs resulting from the application of complex models. To manage these tools, students are expected to master the legal requirements of tax assessment methods and tax compliance procedures. They will be able to critically assess the threats and opportunities related to automated decision making by tax authorities and propose appropriate improvements.

Contents

Data analaysis and tax compliance.
(see https://www.unimi.it/en/education/degree-programme-courses/2025/data-analysis-and-tax-compliance)

Detailed program

First Part (Prof. Sartori)

- The reasons and importance of tax law: an introduction and a definition of direct and indirect taxes;
- Introduction to income and consumption taxes;

- Tax evasion, tax avoidance and legitimate tax savings;
- Presumptive income taxation;
- Tax compliance and AI tax assistance;
- Tax audits and traditional methods of addressing tax evasion and avoidance;
- Tax audits and the use of artificial intelligence;
- Taxpayers rights in tax audits.
- Tax control framework and cooperative compliance;
- Analytical (or direct) tax assessments: a legal perspective;
- Indirect and standardized tax assessments: a legal perspective;
- The use of artificial intelligence in tax assessments

Second Part (Prof Salini)

- Introduction to inferential statistics, estimation theory, confidence intervals and hypothesis testing.
- Main supervised and unsupervised statistical learning techniques used in fiscal risk estimation (regression, classificazion, clustering, etc.).
- Focus on interpretive and predictive approaches, explainable and non-explainable methods.

Prerequisites

There are no special prerequisites for the first part.
For the second part, it is suggested to have already taken the Machine Learning course.

Teaching methods

Mainly lectures will be given. Case studies and practical exercises are also planned.

Assessment methods

The examination consists of an oral test for the first part and an oral test for the second part. The final grade will be the average of the marks for the two parts.

Textbooks and Reading Materials

Materials (slides, papers, datasets, examples) in the ARIEL website.

Second Part
James, et al. An introduction to statistical learning: with applications in R. Spinger, 2013.
James, et al. An introduction to statistical learning: with applications in python. Springer, 2023.

Sustainable Development Goals

PEACE, JUSTICE AND STRONG INSTITUTIONS