ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS
MASTER IN BANKING AND FINANCE

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QUANTITATIVE METHODS

The objective of this class is the introduction of Quantitative Methods with emphasis on their applications on Decision Taking Decisions. The class is based on:

- lectures
  and
- practical applications with the employment of computer packages.

The lectures target to familiarize the class participants with the basic theoretical principles and the understanding of financial models.

The objective of the applications is to familiarize the students with the various estimation techniques, applied on real data, on the areas of Economics and Finance.

Given that the statistical and econometric analysis plays an important part in forming portfolios, in the rational decision making process of the Banking Sector and the Money and Capital Markets, in the practice of Macroeconomic Policy, as well as in the evaluation of Fund performance, the practical importance of this class is quite obvious.

The course is divided into the following parts:

- The preparatory part where the basic statistical and econometric notions are presented,
- the main theoretical section where econometric notions and models are thoroughly presented, and
- the applications part where various econometric packages are employed such as, R, Stata, Eviews, etc. (mainly Eviews)

Completing the course one would be able:

- to cast a problem in quantitative terms,
- to determine the appropriate procedure to solve it,
- to consider various alternative model or estimation procedures, and
- to employ the results for decisions making in the markets, the banking sector and, in general, in economics..

The applications include examples from the financial markets area such as:

- Evaluation of funds' performance
- Evaluation of credit risk, and
- Interest rate and exchange rate behavior.

Covered Topics

1. Random Variables. Covariance-Correlation dependence of random variables. Hypothesis Testing.
2. Linear Regression and hypothesis testing
3. Economic Applications, with emphasis on CAPM (*capital asset pricing model*).
4. Transformations of random variables and introduction of dummy variables.
5. Misspecification (autocorrelation, heteroskedasticity). Economic significance of heteroskedasticity with emphasis on portfolios and fund formation.
6. GMM and Maximum Likelihood.
7. Binary dependent variables (Logit, Probit)
8. Introduction to time series with emphasis on GARCH and VAR models.

Bibliography

1. C. Heij, P. De Boer, P. H. Franses. T. Kloek, and H. K. van Dijk, *Econometric Methods with applications in business and economics*, Cambridge University Press.
2. J. Johnston and J. DiNardo, *Econometric Methods*, 4th Edition, McGraw-Hill
3. Α. Ντέμος: Χρηματοοικονομική Οικονομετρία
4. Ε. Τζαβαλής Οικονομετρία

Performance Evaluation

Written Examination (100%)

January 2022

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