DATA ANALYSIS IN ACCOUNTING AND FINANCE

Lecturer: Associate Professor Leonidas S. Rompolis
Office: 12 Derigni street, 6th floor, 10434, Athens
Tel: 210 8203465, **Email:** rompolis@aueb.gr

Sessions: 8 X 3 hours each + 3 X 3 hours each of tutorials

Course assessment: 3 hours final examination (75%) and a compulsory group project (25%). The project grade is applicable given that you have obtained a pass mark (50%) in the final examination.

EDUCATIONAL AIM

This course can be considered as an introduction to Econometrics. Its aim is to present the basic theory Econometrics and how this can be rigorously applied to a variety of problems arising from Economics, Finance and Business Administration. Topics to be covered include the simple and multiple linear regression models, parameters estimation using least squares and the basic tools of statistical inference (hypothesis tests and confidence intervals). The course also studies a number of methods that examine the adequacy of an econometric model based on measures of fit, forecasting accuracy and residual analysis. Finally, it examines the notion of heteroscedasticity and autocorrelation and suggests various ways to dealt with them. In this course, econometric theory is combined with econometric practice by showing its use with software package EViews.

EDUCATIONAL OBJECTIVES

- Introduce students to the theory and practice of econometric analysis.
- Explain to them how to rigorously apply econometrics tools to reach robust conclusions on a variety of problems of Economics, Finance and Business Administration.

The course will make it possible for participants:
- To acquire a clear understanding of the basic tools of econometric analysis and how to apply them in practice in order to reach valuable conclusions on a variety of problems.

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- To be able to conduct an independent econometric analysis. This is particularly important for their master thesis.

<u>LEARNING OUTCOMES</u>

On completing the course participants will be able to:
- Construct an econometric model, estimate its parameters and conduct statistical inference on them.
- Examine the adequacy of the model and its goodness-of-fit.
- Generalize the original model, if necessary, in various directions.
- Use the model to obtain predictions of key economic and financial variables.
- Understand the notion of heteroscedasticity and autocorrelation and how these two properties can be modeled (or taken into account) when conducting an econometric analysis.

<u>LECTURE SEQUENCE AND DETAILED TOPICS TO BE COVERED</u>

Lecture 1: An introduction to econometrics **(Ch.1)**.[1]

Lecture 2: **The simple linear regression model**. Presentation of the model, assumptions of the model, the least squares estimator, the properties of the least square estimator **(Ch.2)**.

Lecture 3: **Inference on the simple regression model**. Confidence intervals and hypothesis tests **(Ch.3)**.

Lecture 4: **Further inference on the simple regression model**. Prediction, goodness-of-fit, modelling issues **(Ch.4)**.

Lecture 5: **The multiple regression model**. Presentation of the model, assumptions of the model, the least squares estimator, the properties of the estimator, hypothesis tests, goodness-of-fit **(Ch.5)**.

Lecture 6: **Further inference on the multiple regression model**. Joint hypothesis tests, model specification, collinearity and insignificance, prediction, indicator variables **(Ch.6-7)**.

Lecture 7: **Heteroscecasticity**. The nature of heteroscedasticity, Heteroscedasticity tests, robust standard errors, generalized least squares **(Ch.8)**.

Lecture 8: **Time-series regression**. Autocorrelation, autocorrelation tests, estimation with autocorrelated error terms, autoregressive models, forecasting **(Ch.9)**.

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[1] The chapters correspond to the book "Principles of Econometrics".

BIBLIOGRAPHY

- *Griffiths, Hill and Lim, "Principles of Econometrics", 5th edition, Wiley.*
- Wooldridge, "Introductory Econometrics: A Modern Approach", 6th edition, Cengage Learning.
- Gujarati and Porter, "Basic Econometrics", 5th edition, McGraw Hill.
- Vogelvang, "Econometrics: Theory and Applications with EViews", 1st edition, Prentice Hall.