M.Sc. PROGRAM IN ECONOMIC
AND BUSINESS STRATEGY

UNIVERSITY OF PIRAEUS
DEPARTMENT OF ECONOMICS

METHODS OF ANALYZING UNCERTAINTY

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METHODS OF ANALYZING UNCERTAINTY

Course Description

The current course will provide a thorough presentation of quantitative analysis used in Economics/Finance to empirically identify the behavior of many economic/financial phenomena. The first part will concentrate on the problems that appear in regression analysis. The second part will analyze the classical issues in regression analysis. The third part will examine financial econometric issues specialized in time series analysis and the fourth part, will present the current contemporary issue in financial risk management with emphasis on bond, money markets and banking crises. Hence, the course is very important because it will help students to understand how econometrics works and how econometrics can be used for analyzing current financial issues. The methods that students will learn in this course will allow them to implement advanced quantitative analysis for modeling and forecasting, tools that are useful in the decision making process.

Course Prerequisites

The course will be taught in a self-contained way and therefore all materials needed for a good understanding of the concepts of this course will be presented in class. Students do not need to worry about their statistical or econometric background. The course will provide brief reviews of background concepts and small proofs when needed.

Textbooks

The following textbooks provide a good coverage of most of the topics presented in this course and they are strongly recommended in order of importance:

- Greene, W. H., Econometric Analysis, Prentice Hall, 2003.
- Johnston, J. and Dinardo, J., Econometric Methods, McGraw Hill, 1997.
- Newbol, P., Carlson, W. L. and Thorne, B. Statistics for Business and

Economics, 6th edition, Pearson Prentice Hall, 200
- McClave, T. J., Benson, P. G. and Sincish, T., Statistics for Business and Economics, 9th edition, Prentice Hall, 2005.
- Mills, T., The Econometric Modeling of Financial Time Series, Second Edition, Cambridge University Press, 1999.
- Pindyck, S. R. and Rubinfeld, L. D., Econometric Models and Economic Forecasts, McGraw Hill, 1998.
- Watsham, J. T. and Parramore, K., Quantitative Methods in Finance, International Thomson Business Press, 1997.
- Frank Fabozzi, and Franco Modigliani, 1996, Capital Markets, Institutions and Instruments, 2nd editions, Prentice Hall International, New Jersey, ISBN: 0-13- 509093-8.
- Bodie, Z., A Kane, and A Marcus, 1996, Investments, 3rd edition, Irwin.

In addition, lecture notes will be distributed to all of you as the course progresses for every subject covered in class. **However, you should understand that these lecture notes cannot, in any way, substitute a textbook.** The lecture notes are written in a way to assist you understand better the material covered in class.

Grading Procedures

There will be two exams on this course. One exam for parts I, II and III and another one for parts IV and V and each exam curries 50% of the total grade.

Course Outline

I. INTRODUCTION
1. What is Econometrics?
2. How Econometrics Works
3. Review on Regression analysis

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II. PROBLEMS IN REGRESSION ANALYSIS

1. Multicollinearity
2. Heteroscedasticity
3. Autocorrelation 4. No normality
5. Omitted variables I

II. ISSUES IN REGRESSION ANALYSIS

1. ARCH models
2. Dummy variables
3. Distributed lag models
4. Errors in variables (Expectations - Proxy variables - Instrumental variables)
5. Non-linear models
6. Estimating Demand Elasticities
7. Granger Causality

IV. ISSUES IN FINANCIAL TIME SERIES

1. Financial Time Series
2. Unit Root and non stationary issues
3. Random walk model
4. Cointegration analysis
5. VAR – VECM
6. Markov switching models

V. APPLICATIONS IN FINANCIAL RISK MANAGEMENT

1. Bond markets, Interest rate risk and immunization strategies
2. Financial futures and applications in risk management
3. Financial market efficiency, Theory, Tests and Anomalies
4. Financial and banking crises and risks
5. Banking management
6. Stress tests and assessment