

## **M.Sc in Applied Economic Analysis**

### **Special Topics in Business Economics**

#### **Syllabus**

This course covers research methods in applied empirical industrial organization and business economics. The primary focus will be on the use of econometric analysis and data both for descriptive and measurement purposes, and to test the predictions of economic theories. Papers that demonstrate the various methods will be discussed in detail with an emphasis on data, sources of identification, and estimation techniques. In some cases, familiarity with theoretical concepts covered in applied micro-econometrics and macro-econometrics courses will be helpful; however, such knowledge is not assumed and the important points will be covered in class.

**Course Time:** Friday, 17:00-20:00 in PAM 2

**Office Hours:** Monday and Friday 16:00-17:00

**Web page:** <https://eclass.upatras.gr/modules/auth/opencourses.php?fc=63>

#### **Course Requirements:**

Students are expected to read all required readings before each class and to attend all classes as class participation is important. Requirements include applied exercises, an empirical research paper, and class participation. There will be homework, mid and final exams.

#### **Software and Programs:**

Latex, STATA, DEAP and R are required for this course.

#### **Target Student:**

This course is intended for students seeking careers as business consultants and specialized staff. This course seeks to answer the question

“What does the CEO need to know about the economics of a firm?” and offers additional knowledge for students that desire to work in firm environment.

### **Provisional Course Outline**

We will not follow any particular text. However, the following books are highly recommended as references and background reading. Moreover an extensive review of the literature lists is given in each lecture. The reading list is intended for your future reference as well as the course and includes more than we will cover in the course. The most important readings are starred.

### **Suggested References**

Cabral, Luis. Introduction to Industrial Organization, MIT Press, Cambridge, 2000).

Tirole, J., (1993). “The Theory of Industrial Organization”, MIT Press, London.

Coelli, T. J., Rao, D. S. P., O'Donnell, C. J., & Battese, G. E. (2005). An introduction to efficiency and productivity analysis. Springer Science & Business Media.

Online Book: Church. J. and Ware, R., (2000). “Industrial Organization: A Strategic Approach”, McGraw-Hill, Boston.

Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2000). Economics of Strategy. John Wiley&Sons. New York.

Carlton, D. W. and Perloff, . J.M. (2005). “Modern Industrial Organization”. Pearson/Addison Wesley, Boston.

Fried, Harold O., CA Knox Lovell, and Shelton S. Schmidt, eds. The measurement of productive efficiency and productivity growth. Oxford University Press, 2008.

Harold, O., ed. The Measurement of Productive Efficiency: Techniques and Applications: Techniques and Applications. Oxford University Press, 1993.

### Lectures Outline

#### *Lecture 1: Production, Technology and cost functions (Basic definitions)*

S.C. Kumbhakar and C.A. Knox Lovell (2000) Stochastic Frontier Analysis (Cambridge University Press) ISBN: 0521481848

Greene W H (1998) Frontier Production Functions in H. Peasaran and P. Schmidt (eds) Handbook of Applied Econometrics, volume 2, microeconomics (Blackwells)

An Introduction to Efficiency and Productivity Analysis (2<sup>nd</sup> Ed.) Coelli, Rao, O'Donnell and Battese Springer, 2005.

#### *Lecture 2: Production, Technology and cost functions (Using linear programming to estimate efficiency)*

Cooper WW, Seiford LM, Tone 2nd K, editors. Data envelopment analysis: a comprehensive text with models, applications, references and DEA-solver software. Boston: Kluwer; 2007.

Cooper WW, Park KS, Yu G. IDEA and AR-IDEA: models for dealing with imprecise data in DEA. Management Science 1999b;45:597–607.

Debreu G. The coefficient of resource utilization. Econometrica. 1951;19:273–92.

Emrouznejad A, Parker BR, Tavares G. Evaluation of research in efficiency and productivity: a survey and analysis of the first 30 years of scholarly literature in DEA. Soc Econ Plann Sci.2008;42:151–7.

Fare R, Grosskopf S, Lovell CAK. The measurement of efficiency of production. Boston: Kluwer Nijhoff Publishing Co.; 1985.

Fare R, Grosskopf S, Lovell CAK. Production frontiers. Cambridge: Cambridge University Press; 1994.

#### *Lecture 3: Production, Technology and cost functions (Translog production functions and estimation of efficiency)*

Battese, G.E., Broca, S.S., 1997. Functional forms of stochastic frontier production functions and models for technical inefficiency effects: a

comparative study for wheat farmers in Pakistan. *Journal of Productivity Analysis* 8, 395-414.

Battese, G. E., Coelli, T., 1992. Frontier production functions, technical efficiency and panel data: with application to paddy farmers in India. *Journal of Productivity Analysis* 3 (12), 153-69.

Battese, G.E. Coelli, T., 1995. A model for technical inefficiency effects in a stochastic frontier production function for panel data. *Empirical Economics* 20, 325-32.

Coelli, Tim J., 1996. *A Guide to FRONTIER Version 4.1: A Computer Program for Stochastic Frontier Production and Cost Function Estimation*. Armidale, NSW, Australia: Department of Econometrics, University of New England.

Farrell, M.J., 1957. The Measurement of Productive Efficiency. *Journal of the Royal Statistical Society Series A*, 1957, 120, 253-90.

Huang, C.J. Liu, J.T., 1994. Estimation of a non-neutral stochastic frontier function, *Journal of Productivity Analysis* 15, 171-180.

Kounetas, K., and Tsekouras, K., 2010. Are the Energy Efficiency Technologies Efficient? *Economic Modeling* 29, 1798-1808

Griliches, Zvi and Jacques Mairesse. 1995. "Production Functions: The Search for Identification," NBER Working Paper No.w5067.

Olley, Steve and Ariel Pakes. 1996. "The Dynamics of Productivity in the Telecommunications Industry," *Econometrica*, 64(6), 1263-97.

*Lecture 4: Production, Technology and cost functions (Productivity, technological, technical and scale change)*

Balk, M. B., .Scale efficiency and Productivity Change, *Journal of Productivity Analysis* 15 (2001), 159-183

Caves, D., Christensen, L. and Diewert, E. (1982) The economic theory of index numbers and the measurement of input, output, and productivity, *Econometrica*, 50, 1393-414.

Ji, Y., & Lee, C. (2010). "Data Envelopment Analysis", *The Stata Journal*, 10(no.2), pp.267-280.

Fare, R., Grosskopf, S., Norris, M. & Zhang, Z. (1994). "Productivity Growth, technical progress and efficiency change in industrialized countries", *American Economic Review*, 84(no.1), pp.66-83.

Fare, R. and Grosskopf, S. (1998) Malmquist productivity indices: a survey of theory and practice, in *Essays in Honor of Sten Malmquist* (Eds) R. Fare, S. Grosskopf, and R. Russell, Kluwer Academic Publishers, Dordrecht.

Fare, R. and Primont, D. (1995) *Multi-output Production and Duality: Theory and Applications*, Kluwer Academic Publishers, Dordrecht.

Fare, R., Grosskopf, S. and Norris, M. (1997) Productivity growth, technical progress, and efficiency change in industrialized countries: reply, *American Economic Review*, 87, 1040–43.

Fare, R., Grosskopf, S. and Lee, W. (2001) Productivity and technical change: the case of Taiwan, *Applied Economics*, 33, 1911–25.

#### *Lecture 5: Survival and Firm size*

Hall, Bronwyn H. 1987. "The Relationship between Firm Size and Firm Growth in the U.S. Manufacturing Sector," *Journal of Industrial Economics* (June): 212-236.

Schmalensee, Richard. 1989. "Inter-Industry Studies of Structure and Performance," in Schmalensee and Willig (eds.), *Handbook of Industrial Organization*, Volume II: 951-1010. Amsterdam: North-Holland.

Bresnahan, Timothy. 1989. "Empirical Studies of Industries with Market Power," in Schmalensee and Willig (eds.), *Handbook of Industrial Organization*, Volume II: 1011-1058. Amsterdam: North-Holland.

Simon, Herbert, and C. Bonini. 1958. "The Size Distribution of Business Firms," *American Economic Review* 48(4): 607-17.

#### *Lecture 6: Market Performance (Profitability and Growth)*

Dennis W. Carlton and Jeffrey M. Perloff, "Industry Structure and Performance," Chapter 8, *Modern Industrial Organization* (Reading, Mass.: Addison-Wesley, 2000.)

F.M. Scherer and David Ross, "Market Structure and Performance," Chapter 11, *Industrial Market Structure and Economic Performance* (Boston: Houghton Mifflin, 1990). Joe Bain, "Relation of Profit Rate to Industry Concentration: American Manufacturing 1936-1940," *Quarterly Journal of Economics*, Vol. 65 (August 1951), pp. pp. 293-324.

H. Michael Mann, "Seller Concentration, Barriers to Entry, and Rates of Return in Thirty Industries," *Review of Economics and Statistics*, Vol. 48 (1966), pp. 296-307.

W.S. Commanor and T.A. Wilson, "Advertising, Market Structure and Performance," *Review of Economics and Statistics*, Vol. XLIX (November 1967), pp. 423-440.

Norman R. Collins and Lee E. Preston, "Price-Cost Margins and Industry Structure," *Review of Economics and Statistics*, Vol. 51 (1969), pp. 271-86.

Leonard W. Weiss, editor, *Concentration and Price* (Cambridge, Mass.: MIT Press, 1989).

*Lecture 7-8: Price in established market, price discrimination and pricing in a new product*

Clay, Karen, Ramayya Krishnan, and Eric Wolff 2001. "Prices and Price Dispersion on the Web: Evidence from the Online Book Industry," *Journal of Industrial Economics*, 49(4):521-540.

Clerides, Sofronis. 2004. "Price Discrimination with Differentiated Products: Definition and Identification," *Economic Inquiry*, 42(3): 402-412.

Cohen, Andrew. 2008. "Package Size and Price Discrimination in the Paper Towel Market," *International Journal of Industrial Organization*, 26, 502-51

Shepard, Andrea. 1991. "Price Discrimination and Retail Configuration," *Journal of Political Economy* 99 (February): 30-53.

Stavins, J., 2001 "Price Discrimination in the Airline Market: the Effect of Market Concentration," *Review of Economics and Statistics*, 83(1):200–202

*Lecture 9-10: Market structure, entry and exit*

Bresnahan, Timothy, and Peter Reiss. 1990. "Entry in Monopoly Markets," *Review of Economics Studies*: 531-553.

Berry, S. 1992. "Estimation of a Model of Entry in the Airline Industry," *Econometrica* 60(4): 889-918.

Rust, John. 1987. "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher," *Econometrica* 55(5): 999-1033.

Pakes, Ariel. 1986. "Patents as Options: Some Estimates of the Value of Holding European Patent Stocks," *Econometrica* 54(4): 755-784.

Joe Bain, *Barriers to New Competition* (Cambridge, Mass.: Harvard University Press, 1956).

Michael Waterson, "A Consideration of the Effects of Potential Entry," *Economic Theory of the Industry* (Cambridge: Cambridge University Press, 1984), Chapter 4, pp. 56-81.

A.K. Dixit, "The Role of Investment in Entry-Deterrence," *Economic Journal*, Vol. 90, No. 357 (March 1980), pp. 95-106.

Joseph Stiglitz, "Technological Change, Sunk Costs, and Competition," *Brookings Papers on Economic Activity* 1987:3, pp. 883-947.

*Lecture 11: Business Strategy-Advertising (Advertising and price competition, advertising intensity, uncertainty in advertising)*

Milyo, J. and Joel Waldfogel. 1999. "The Effect of Price Advertising on Prices: Evidence in the Wake of 44 Liquormart," *American Economic Review* 89: 1081-96.

Nicholas Kaldor, "Economic Aspects of Advertising," *Review of Economic Studies*, Vol. 18 (1940-41), pp. 1-27.

Robert Dorfman and Peter O. Steiner, "Optimal Advertising and Optimal Quality," *American Economic Review*, Vol. 44, No. 5 (December 1954), pp. 826-36.

Marc Nerlove and Kenneth J. Arrow, "Optimal Advertising Policy Under Dynamic Conditions," *Economica*, Vol. 29 (1962), pp. 129-42.

William S. Comanor and Thomas A. Wilson, "The Effect of Advertising on Competition: A Survey," *Journal of Economic Literature*, Vol. 17 (1979), pp. 453-76.

*Lecture 12: Business Strategy-Innovation and R&D (Role of R&D in competition, incentives for R&D and innovation)*

Amir, R., "Modelling Imperfectly Appropriable R&D with Spillovers," *International Journal of Industrial Organization* 18, 1013-1032 (2000).

D'Aspremont, C. and A. Jacquemin, "Cooperative and Noncooperative R&D in a Duopoly with Spillovers," *American Economic Review* 78, 1133-1137 (1988).

Bloch, F., "Endogenous Structures of Association in Oligopolies," *Rand Journal of Economics* 26, 537-556 (1995).

Goyal, S. and S. Joshi, "Networks of Collaboration in Oligopolies," *Games and Economic Behavior* 43, 57-85 (2003).

Goyal, S. and J.L. Moraga-Conzalez, "R&D Networks," *Rand Journal of Economics* 32(4), 686-707 (2001).

Kamien, M., E. Muller and I. Zang, "Research Joint Ventures, and R&D Cartels" *American Economic Review* 82, 1293-1306 (1992).

Kamien, M. and I. Zang, "Competing Research Joint Ventures," *Journal of Economics and Management Strategy* 2, 23-40 (1993).

Katz, M., "An Analysis of Cooperative Research and Development," *Rand Journal of Economics* 17, 527-543 (1986).

### **Student Assessment and Course Grading**

The final grade has three components:

Final Exams 60%

Two Essays 30%

Problem sets-Paper presentations 10%

The substantial writing component part of this course is satisfied by the problem sets and your final project. The requirements for these and for the



other components of the course grade are described below, along with additional guidelines for writing the course paper.

### **Case problem sets**

Each student will *individually* prepare 2-6 possible problem sets that answer a question about specific topics in our lectures case. They must be handed during the relevant class to count. You will be provided with writing feedback on these write-ups. Altogether these count for 5% of your grade. Note that your write-up should concern *only* the case question from the syllabus. The responsiveness of your write-up to the question is an element in the grading of these short papers.

### **Paper Presentations**

- Paper presentations (using Latex) can be written cooperatively, in groups of up to five students. Each group will manage a presentation and discussion of their paper. This presentation will be peer-graded (graded by the class) for 5 % of each student's grade.
- Group members will usually receive the same grade for their presentation so that they can efficiently allocate their group resources.
- Non-group members (the rest of the class) receive participation assessment on the basis of their evaluations of the presentations. You will be asked to grade all the final paper presentations other than your own, confidentially.
- We will allocate at least 15 minutes per paper.
- The goal of the group should be to convince the class that their analysis and major conclusions are accurate and correct.
- Class participants should approach presentations like cases.
- Groups should start with a brief (e.g. 5 minutes) summary of their paper's major finding(s) and methods.
- Groups face one major concern: sparking a discussion if one doesn't start automatically. This is often a concern for the best papers because they are sufficiently convincing that no one will have any issues to discuss. In this

case, presenters are free to turn the tables and ask questions of the class -- run the discussion like a case and ask questions. For example, "we faced the following issue ... how would you go about resolving it?"

- Everyone should be professional at all times: all criticism should be constructive.

### **Final Paper Project**

Each student will *individually* prepare two final paper projects. You will choose a topic early in the course with the objective of preparing a paper on this topic. An initial project proposal and a first draft must be finished by the dates listed on the schedule. The professor will provide comments, criticisms and suggestions for further work, and you will prepare a substantially-revised final version of your project. Submission dates are listed on the schedule and are not negotiable. The final project is a 10 page (either single-spaced or 1.5 spaced, 12 point font) analysis of a competitive situation or industry practice. The due date is a hard deadline. The final projects accounts for 30% (15%+15%) of your grade. An important aspect of business communication is the elimination of the extraneous.

- The paper's focus should be on analysis, with industry description provided to support that analysis. A common mistake is too much description, too little analysis.
- Do not choose a situation from a case reading from this or another class. Do not revise a paper you wrote for another course as a project without discussing it with me - it would have to be a new paper to be approved.
- Paper must be handed in or emailed to me by 5PM on the deadline day, in Latex format.

<b>Paper Project</b>	<b>Date of Departure</b>	<b>Date of submission</b>
<b>First paper project</b>	6/11/2015	15/12/2015
<b>Second paper project</b>	6/12/2015	15/1/2016

### **Class Participation**

Class participation counts for 100% of your grade. Participation means more than attendance, although obviously you aren't participating if you aren't in attendance. Besides simple attendance there are two other areas of class participation.

First, each of you is responsible for the material in the readings and students are encouraged to participate in class discussions. I may occasionally cold call if no one volunteers. Quality of class participation is more important than quantity. In asking questions or contribution to a discussion, do not be afraid to make mistakes when you have prepared for class. Everyone is well aware that, to come up with a good idea, it generally takes ten bad ideas.

Finally, the grades for the in-class presentations of final papers by each group are based on evaluations by the other students in the class. Thoughtful, organized evaluations will earn more points than simple *pro forma* comments.

### **Expectations from students:**

I have four main expectations of students:

1. I expect that you come prepared. Postgraduates are expected to contribute meaningfully in setting the direction of business economics.
2. I expect that you remain engaged. When your fellow students are speaking, I expect you to be paying attention to them. I do not want you on your phone, your tablet, or your laptop during class.
3. I expect that you treat others with respect. Being respectful does not mean that we cannot disagree. It does mean that we do so without name-calling or mocking.
4. Students enrolled in this class are expected to adhere to the terms of the university's honor code. One thing this means is that where individual and original work is required, as in the case write-ups, a student's work must be his or her own.