



**ILADES–GEORGETOWN UNIVERSITY / UAH**  
**MASTER OF ARTS IN ECONOMICS/MAGISTER EN ECONOMÍA**  
**SYLLABI OF COURSES OFFERED IN FALL 2015 AND SPRING 2016**

Core Courses	Semester	Click on Course Code for Syllabus
Microeconomics I	1	ECIL 601
Macroeconomics I	1	ECIL 605
Econometrics I	1	ECIL 613
Quantitative Methods	1	ECIL 646
Microeconomics II	2	ECIL 602
Macroeconomics II	2	ECIL 606
Econometrics II	2	ECIL 614

Elective Courses (3 required)	Semester	Click on Course Code for Syllabus
Econometrics III	2	ECIL 616
Economics of Social Policies I	2	ECIL 626
Industrial Organization	2	ECIL 631
Topics in Industrial Organization	3	ECIL 632
International Macroeconomics and Finance	3	ECIL 641
Labor Economics	3	ECIL 661
Natural Resources and Environmental Economics	3	ECIL 682

# MICROECONOMICS I

## FALL 2015

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**PROF. LUCAS NAVARRO**

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**TEACHING ASSISTANTS:**

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**Jesús Villero** [villeroj@gmail.com](mailto:villeroj@gmail.com) [jmv77@georgetown.edu](mailto:jmv77@georgetown.edu)

### I. Objectives

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This course develops the basic Microeconomic theory that is a prerequisite for further study of microeconomics and for field courses. By the end of the course students should be able to understand the theory of demand and supply, partial and general equilibrium concepts, market failure and the efficiency properties of the equilibrium. Given that the course is highly abstract and mathematical; students are expected to have sufficient mathematical background presumably covered in any Math Economics undergraduate course.

### II. Schedule

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**Classes:** Tuesdays (D23) and Thursdays (D23) 1:30-3:00 pm

**Recitations:** Viernes (FEN meeting room), 10:00-11:20 am

**Office hours:** by appointment

### III. Assessment

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<b>Test 1 (25%)</b>	Late September/early October
<b>Test 2 (25%)</b>	Late October/early November
<b>Problems (15%)</b>	4-5 over the semester
<b>Exam (35%)</b>	Late November/early December

### IV. Textbooks

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Required textbooks:

- [Jehle, G. y P. Reny, \*Advanced Microeconomic Theory\*](#), Prentice Hall, 2011 [**JR11**]
- [Mas-Colell, A.; Whinston, M.; y J. Green, \*Microeconomic Theory\*](#), Oxford University Press, 1995. [**MWG95**]
- Varian, H. (1992), [Microeconomic Analysis](#), W.W. Norton & Company [**V92**]

Other recommended references:

- Kreps, D (2012), *Microeconomic Foundations I: Choice and Competitive Markets*, Princeton University Press.
- “Student Guide” available in <https://sites.google.com/a/stanford.edu/microfoundations1/>
- [Rubinstein, A., \*Lecture Notes in Microeconomic Theory\*](#), Updated 2011

Intermediate micro reference textbooks:

- Varian, H. *Intermediate Microeconomics*. W.W. Norton.

- Nechyba, T. *Microeconomics. An intuitive approach with calculus*. South-Western publishing, 2010.

Econ Math references that can be useful:

- Simon C. y L. Blume. *Mathematics for Economists*. W. W. Norton, 1994
- de la Fuente A. *Mathematical methods and models for economists*. Cambridge University Press, 2000.

## V. Course outline

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### 1. Consumer Choice and Classical Demand Theory

- Choice, Preferences and Utility
- Utility Maximization Problem and Expenditure Minimization Problem
- Indirect Utility Function and Expenditure Function
- Duality.
- Welfare Evaluations of Economic Changes (Compensating and Equivalent Variations)

*References*

**JR11**, Chapter 1; Sections 2.1-2.2; **MWG95**, Sections 1A-B, 2A-E, 3A-E, 3G and 3I; **V92**, Chapters 7-10

### 2. Production

- Technology and Production Sets
- Profit Maximization and Cost Minimization
- Duality

*References*

**JR11**, Chapter 3; **MWG95**, Sections 5A-D and 5F; **V92**, Chapters 1-6

### 3. Partial Equilibrium in Competitive Markets

- Partial Equilibrium Competitive Analysis
- Welfare Theorems in a Partial Equilibrium Context
- Free Entry and Long Run Partial Competitive Equilibrium

*References*

**JR11**, Chapter 4; **MWG95**, Sections 10A, 10C- F; **V92**, Chapter 13

### 4. Externalities and Public Goods

- Bilateral Externalities
- Public Goods

*References*

**MWG95**, Sections 11A-C; **V92**, Chapters 23-24

### 5. General Equilibrium

- Pure Exchange Economy
- Welfare Properties of the Equilibrium
- Existence and Uniqueness of the Equilibrium

*References*

**JR11**, Section 5.1; **MWG95**, Sections 15A-B, 16A-F, 17A-C and 17F; **V92**, Chapters 17, 21-22

# MACROECONOMICS I

## FALL 2015

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**PROF. MAURICIO M. TEJADA**  
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### I. Objectives

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This course presents an introduction to macroeconomic modeling, focusing on economic growth theory and its applications. In particular, it introduces a series of macroeconomic general equilibrium models, both deterministic and stochastic, which shed some light on the process of growth and the sources of differences in income among countries. The course objectives are: (1) to familiarize students with a set of questions that are central to macroeconomics, (2) to provide students with useful tools for macroeconomic dynamic analysis, (3) to provide students with one of the workhorses of modern macroeconomics, the neoclassical growth model, and (4) to familiarize students with the use of computers to numerically solve dynamic general equilibrium models.

### II. Class Schedule and Course Webpage

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**Class Schedule:** Classes are held on Tuesday and Thursday from 11:30 to 12:50 AM in classroom D23. Attendance is not mandatory.

**Office Hours:** By appointment.

**Course Webpage:** It is the obligation of the student to visit the course website (<http://virtual.uahurtado.cl>) frequently. Any communication related to the course will be posted on the website. The test scores will be communicated via email.

### III. Course Requirements

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The final grade for the course will be determined according to the following scheme:

- First Midterm: 30 points.
- Second Midterm: 30 points.
- Final Exam: 30 points.
- Assignments: 10 points.

The maximum possible score of the course is 100 points, which result from a simple addition of the points in each of the above-mentioned items.

### IV. Bibliography

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Different chapters of the following textbooks will be covered:

- [A] Acemoglu, D., 2009. *Introduction to Modern Economic Growth*. Princeton University Press.
- [AC] Adda, J., and Cooper, R., 2003. *Dynamic Economics: Quantitative Methods and Applications*. The MIT Press.
- [BA] Barro, R., and Sala-i-Martin, X., 2004. *Economic Growth*. The MIT Press 2nd Ed.
- [LS] Ljungqvist, L., and Sargent, T., 2004. *Recursive Macroeconomic Theory*. The MIT Press 2nd Ed.
- [NFR] Novales, A., Fernández, E., and Ruíz, J., 2009. *Economic Growth: Theory and Numerical Solution Methods*. Springer.
- [HM] Heer, B., and Maussner, A., 2009. *Dynamic General Equilibrium Modeling: Computational Methods and Applications*. Springer
- [MS] Marimon, R., and Scott, A., 2004. *Computational Methods for the Study of Dynamic Economics*. Oxford University Press.

Additional material will be distributed for those topics not covered in the textbooks above.

## V. Software

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Assignments and practical modules require the use of numerical analysis software. There are several in the market: Matlab, Octave, Julia, Python (with Numpy and Scipy), Scilab, R, etc. The students are free to choose their preferred software. However, the use of Matlab is highly suggested since, although it is not free and open access (like the others in the list), it is the most widely used software in macroeconomics. Therefore, there is a vast collection of codes on the web that be used as example references. Octave is the free alternative to Matlab and the coding language is very similar.

## VI. Course Outline

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### 1. An Introduction to Economic Growth

This introduction presents and discusses the most important stylized facts concerning economic growth and shows the great disparities in terms of per capita income among countries. It also briefly discusses the distribution of income among countries and why it has become so uneven in the last 30 years or so.

- [A] Chapter 1, [BA] Introduction.
- Jones, Charles (1997), “On The Evolution of the World Income Distribution”, *Journal of Economic Perspectives* vol. 11, pp. 19-36.
- Quah, Danny (1997), “Empirics for Growth and Distribution: Stratification, Polarization and Convergence Clubs”, *Journal of Economic Growth* vol. 2, pp. 27-60.

### 2. The Solow-Swan Model

The Solow -Swan model is the starting point of the modern theory of economic growth and is one of the foundations of the workhorse model of modern macroeconomic theory. This chapter

characterizes the model, its steady state and golden rule of capital accumulation. Transitional dynamics of the model are also discussed, emphasizing the concepts of stability and speed of transition to the steady state. Difference equation methods are discussed as a mathematical tool. Finally, the relationship between the data and the model and the growth accounting methodology is briefly discussed.

- [A] Chapters 2 y 3, [BA] Chapters 1 y 10, [NFR] Chapter 2.
- Hall, Robert, and Charles Jones (1999), “Why Do Some Countries Produce So Much More Output than Others?”, *Quarterly Journal of Economics* vol. 114, pp. 83-116.
- Klenow, Peter J. and Andres Rodriguez-Clare (1997), “The Neoclassical Revival in Growth Economics: Has It Gone Too Far?”, *NBER Macroeconomics Annual*, pp. 73-103.
- Mankiw, N. Gregory, David Romer, and David N. Weil (1992), “A Contribution to the Empirics of Economic Growth”, *Quarterly Journal of Economics* vol. 107(2), pp. 407-37.
- Solow, Robert (1956), “A Contribution to the Theory of Economic Growth”, *Quarterly Journal of Economics* vol. 70, pp. 65-94.
- Solow, Robert (2001), “*Growth Theory: An Exposition*” 2nd Ed. New York, Oxford University.

### 3. The Neoclassical Growth Model

The neoclassical growth model is the workhorse model of modern macroeconomics and differs from the Solow-Swan model in that it explicitly incorporates optimizing consumer behavior. This type of model requires additional mathematical tools, so in this chapter the basics of dynamic optimization (optimal control and dynamic programming) are introduced. The neoclassical growth model will be presented from both the Social Planner and the Decentralized Markets approach. This allows for the introduction of an application of the welfare theorems in a dynamic context and with an infinite planning horizon. As in the case of the Solow-Swan, the steady state, the transition dynamics and methods to solve the model numerically will also be presented.

- [A] Chapters 5 al 8, [AC] Chapters 2 y 3, [BA] Chapters 2 y 3, [NFR] Chapters 3 al 5, [HM] Chapters 1, 3 y 4.
- Cass, David (1966), “Optimum Growth in an Aggregative Model of Capital Accumulation: A Turnpike Theorem”, *Econometrica* vol. 34, pp. 833-850.
- Lucas, Robert, Jr. (1990), “Why Doesn't Capital Flow from Rich to Poor Countries?” *American Economic Review* vol. 80, pp. 92-96.
- Ramsey, F. P. (1928), “A Mathematical Theory of Saving”, *Economic Journal* vol. 38, pp. 543-559.
- Skiba, A. K. (1978), “Optimal Growth with a Convex-Concave Production Function”, *Econometrica* vol. 46, pp. 527-539.

### 4. Endogenous Growth Models

In this chapter various models of sustained growth, as variants of the neoclassical growth model, will be introduced. These models are known as endogenous growth models. The first generation endogenous growth model is presented in the first part. The AK model with technology, human capital model and the model that incorporates the government belong to this group. In a second part, the second-generation endogenous models, based on knowledge and endogenous technological shocks, are discussed. In this case, the process of research and development and technological changes are incorporated into the models.

- [A] Chapters 10 al 13, [BA] Chapters 4 al 6, [NFR] Chapters 6 y 7.
- Barro, Robert (1990), “Government Spending in a Simple Model of Endogenous Growth”, *Journal of Political Economy* vol. 98, pp. S103-S125.
- Barro, Robert, and Xavier Sala-i-Martin (1992), “Public Finance in Models of Economic Growth”, *Review of Economic Studies* vol. 59, pp. 645-662.
- Lucas, Robert Jr. (1993), “Making a Miracle”, *Econometrica* vol. 61, pp. 251-272.
- Lucas, Robert Jr. (1988), “On the Mechanics of Economic Development”, *Journal of Monetary Economics* vol. 22, pp. 3-42.
- Jones, Larry and Rodolfo Manuelli (1990), “A Convex Model of Equilibrium Growth”, *Journal of Political Economy* vol. 98, pp. 1008-1038.
- Jones, Charles (1995), “R&D-Based Models of Economic Growth” *Journal of Political Economy* vol. 103, pp. 759-784.
- Rebelo, Sergio (1991), “Long-Run Policy Analysis and Growth”, *Journal of Political Economy* vol. 99, pp. 500-521.
- Romer, Paul (1986), “Increasing Returns and Long-Run Growth”, *Journal of Political Economy* vol. 94, pp. S1002-S1037.
- Romer, Paul (1990), “Endogenous Technological Change”, *Journal of Political Economy* vol. 98, pp. 71-102.
- Young, Alwyn (1993), “Invention and Bounded Learning by Doing” *Journal of Political Economy* vol. 101, pp. 443-472.

## 5. The Stochastic Growth Model

This chapter introduces the stochastic growth models. First, the optimal growth model under uncertainty (the Brock-Mirman model) is discussed. This is followed by the review of the canonical model of real business cycle as an application. As in the case of the neoclassical growth model, additional mathematical tools will be required; thus, the foundations of dynamic optimization in a context of uncertainty will be discussed (stochastic optimal control and dynamic programming). Finally, numerical solution methods for this class of models will be presented (with emphasis on perturbation methods).

- [A] Chapters 16 y 17, [AC] Chapters 2, 3 y 5, [NFR] Chapters 5, [HM] Chapters 2 al 4, [MS] Chapters 2 al 4, [LS] Chapters 2 y 5.
- Blanchard, Olivier and Charles Kahn (1980), “The Solution of Linear Difference Models under Rational Expectations”, *Econometrica* vol. 48, pp. 1305-1311.
- Brock, William and Leonard Mirman (1972), “Optimal Economic Growth under Uncertainty: Discounted Case”, *Journal Economic Theory* vol. 4, pp. 479-513.
- Cooley, Thomas and Edward Prescott (1995), “Economic growth and business cycles”, in: Cooley, T. (Ed.), *Frontiers of Business Cycle Research*. Princeton University Press, pp. 1–20.
- Hansen, Gary (1985), “Indivisible Labor and the Business Cycle”, *Journal of Monetary Economics* vol. 56, pp. 309-327.
- King, Robert, Plosser, Charles, and Sergio Rebelo (1988), “Production, growth and business cycles”, *Journal of Monetary Economics*, vol. 21, pp. 1995–232.
- King, Robert, Plosser, Charles, and Sergio Rebelo (2002), “Production, growth and business cycles: Technical appendix”, *Computational Economics*, vol. 20, pp. 87–116.
- Klein, Paul (2000), “Using the Generalized Schur form to Solve a Multivariate Linear Rational Expectations Model”, *Journal of Economic Dynamics and Control* vol. 24, pp.1405-1423.

- Kydland, Finn and Edward Prescott (1982), “Time to Build and Aggregate Fluctuations”, *Econometrica* vol. 50, pp. 1345-1370.
- Plosser, Charles (1989), “Understanding real business cycles”, *Journal of Economic Perspectives*, vol. 3, pp. 51–77.
- Rebelo, Sergio (2005), “Real Business Cycle Models: Past, Present and Future”, *The Scandinavian Journal of Economics*, Vol. 107, pp. 217-238.
- Sims, Christopher (2002), “Solving linear rational expectations models”, *Computational Economics*, vol. 20, pp. 1–20.
- Uhlig, Harald, (1997), “A Toolkit for Analyzing Nonlinear Dynamic Stochastic Models Easily” *Unpublished Manuscript*.

## 6. Heterogeneous Agents Growth Model

*If time permits*, an introduction to neoclassical growth models in which the assumption of the representative agent is lifted will be presented. In particular, the optimal allocations in a model with idiosyncratic risk (but without aggregate risk) will be discussed. Additionally, a brief discussion of the numerical solution methods in this context will be presented.

- [HM] Chapter 7.
- Aiyagari, S. Rao (1994) “Uninsured Indiosyncratic Risk and Aggregate Saving”, *Quarterly Journal of Economics* vol. 109, pp. 659-684.
- Huggett, Mark (1993), “The Risk-Free Rate in Heterogeneous-Agent Incomplete-Insurance Economies”, *Journal of Economic Dynamics and Control* vol. 17, pp. 953- 969.



# ECONOMETRICS I

## FALL 2015

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**PROF. RAMIRO DE ELEJALDE**

E-mail: [rdeelej@uahurtado.cl](mailto:rdeelej@uahurtado.cl)

### I. Objective

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This is an intermediate level course in Applied Econometrics. Topics include specification, estimation, and inference in the context of linear models (ordinary least squares, instrumental variables, and generalized method of moments) and non-linear models (binary dependent variable models). This course will also cover basic asymptotic distribution theory necessary for the analysis of linear and nonlinear models. Inference techniques used in the linear regression framework such as t and F tests will be extended to include Wald, Lagrange multiplier and likelihood ratio tests.

### II. Schedule

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**Classes:** Tuesday and Thursdays: 10:00 -11:20 AM

**Office Hours:** by appointment

### III. Course Requirements/Grading

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Assignments (30%), two midterm exams (20% each), and a final exam (30%).

### IV. Textbooks

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- Angrist, J. D. and J-S Pischke (2009), *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press. [AP]
- Hansen, B. (2014), *Econometrics*. [H]  
(Available in <http://www.ssc.wisc.edu/~bhansen/econometrics/Econometrics.pdf>)
- Hayashi, Fumio (2000), *Econometrics*. Princeton University Press. [HY]
- Stock, J. H. and M.W. Watson (2006), *Introduction to econometrics*, 2nd Edition. Addison-Wesley. [SW]
- Wooldridge, J. M. (2001), *Econometric Analysis of Cross Section and Panel Data*. MIT Press. [W]
- Cameron, A. C. and P. K. Trivedi (2009), *Microeconometrics using Stata*. Stata Press. (Useful for the empirical exercises in the assignments.)

### V. Course Outline

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#### 1. Introduction

Research questions.  
Causal relationships and the experimental ideal.  
Data structures.

Review of statistics.

*References*

**SW**, Chapter 1, 2 and 3.

**W**, Chapter 1.

**2. Conditional expectations and the linear regression model**

Conditional expectations.

Linear regression model.

*References*

**AP**, Chapter 3.1.1, 3.1.2.

**W**, Chapter 2.

**3. Basic asymptotic theory**

Asymptotic properties of the estimators.

Convergence in probability and consistency.

Convergence in distribution and the asymptotic distribution. Asymptotic efficiency.

Small sample properties of the estimators.

*References*

**HN**, Chapter 5.

**W**, Chapter 3.

**4. Linear regression model: Ordinary Least Squares (OLS) estimation**

OLS estimator.

Asymptotic properties of OLS.

Homoscedasticity assumption.

Estimation of the variance-covariance matrix.

Omitted variables bias.

*References*

**AP**, Chapter 3.1.3, 3.2.2.

**SW**, Chapter 6.

**W**, Chapter 4.1, 4.2 (except 4.2.4) and 4.3.1.

**5. Linear regression model: Ordinary Least Squares (OLS) inference**

OLS inference.

Wald test.

Consistency.

Relationship with F-test and t-test.

*References*

**SW**, Chapter 7.

**W**, Chapter 3.5, 4.2.3.

## 6. Additional topics

Functional form.

Omitted variables bias. OLS solution: Proxy variable.

Measurement error.

Generalized least squares (GLS) and Feasible GLS (FGLS). Testing for Heteroskedasticity.

Internal and external validity.

### *References*

**AP**, Chapter 3.2.3.

**SW**, Chapter 8, 9.

**W**, Chapter 4.3.2,4.4.

## 7. Instrumental variables (IV) and Two-stage least squares (2SLS)

IV and 2SLS estimators.

Asymptotic properties of IV and 2SLS.

Homoscedasticity.

Estimation of the variance-covariance matrix.

Endogeneity and Overidentification tests.

Weak instruments.

### *References*

**AP**, Chapter 5.

**SW**, Chapter 12.

**W**, Chapter 5.

## 8. Binary dependent variable

Linear probability model.

Probit and Logit.

Estimation: Non-linear least squares (NLS) and Maximum likelihood (ML) estimators.

Marginal effects.

Goodness of fit.

Inference. Likelihood ratio test.

### *References*

**SW**, Chapter 11.

**W**, Chapter 15.

## 9. Estimation of system of equations (time permitting)

System OLS (SOLS).

Feasible Generalized Least Squares (FGLS).

System IV (SIV).

GMM for multiple equations.

### *References*

**HY**, Chapter 4.

**W**, Chapter 7, 8, 9.

# QUANTITATIVE METHODS

## FALL 2015

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**PROF. CARLOS PONCE**

E-mail: [cjponcebruera@gmail.com](mailto:cjponcebruera@gmail.com)

Lectures: Mondays and Wednesdays 11:30–12:50 (D23)

Office hours: TBA

**TEACHING ASSISTANT:**

Raúl Rubin de Celis

Email: [raul.rc.loz@gmail.com](mailto:raul.rc.loz@gmail.com)

Recitation: Thursday 16:30-17:50

### **I. Objective**

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The objective of the course is to expose students to the uses of mathematics in economics. We will approach mathematics as a way of demonstrating relationships and formalizing concepts.

### **II. Assessment**

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Midterms: Second week of September and third week of November.

Final exam: TBA

Homework: Approximately five problem sets will be distributed in class every three weeks or so, depending on lecture progress.

Grading: A student's overall grade will be calculated as follows:

Overall = 0.4 midterm average + 0.3 final + 0.3 homework average

### **III. Readings**

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There is no mandatory book for this course. Students with different backgrounds will be able to choose a book with the most suitable level of exposition. The following is a list of some books in alphabetic order:

1. Carter, M. Foundations of Mathematical Economics. (Harlow: Pearson Prentice Hall, 2011, 3rd Edition). A comprehensive and long book that integrates exercises and economic applications for microeconomic. Very hard reading for master students.
2. Dixit, A.K. Optimization in economics theory. (Oxford: Oxford University Press, 1990). This textbook covers the essentials of optimization in a very intuitive manner. It also offers many useful examples.
3. Jehle, G. and P. Reny. Advanced-Microeconomic Theory. (MIT Press: Cambridge, Massachusetts London, England, 2001). An excellent short book for microeconomics. It contains a very clear and well-ordered appendix that includes much of the material covered in this course.
4. Rangarajan, S. A first course in optimization theory. (Cambridge: Cambridge University Press, 1996). A very rigorous and advanced book although startlingly clear. It has an excellent treatment of dynamic programming.
5. Simon, C.P. and L. Blume. Mathematics for economists. (New York: W.W Norton, 1994). A voluminous book that covers most of the standard topics in mathematical economics but for dynamic programming. The level of difficulty is in between the two books listed below.

6. Sydsæter, K., P. Hammond and A. Strøm. Essential Mathematics for Economic Analysis. (Harlow: Pearson Prentice Hall, 2012, 4th Edition). A useful review of basic math with applications to economic analysis.

7. Sydsæter, K., P. Hammond, A. Seierstad and A. Strøm. Further mathematics for economic analysis. (Harlow: Pearson Prentice Hall, 2008, 2nd Edition). This book covers every topic of the course. The book is harder to read than the previous one.

#### **IV. Tentative Outline**

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1. Preliminaries. Optimization Problems: A presentation. Sets, Euclidean spaces and functions. 2 Lectures.

2. Functions and Related Sets. Inner product in Euclidean spaces. Level sets, upper and lower level sets of functions. Linear functions. Lines, planes and hyperplanes. Convex sets and convex cones. Economics examples: indifference curves, better and worse sets, and constant returns to scale. 4 lectures.

3. Basic Analysis. Norm and distance in Euclidean spaces. Open sets, closed sets, and compact sets. Continuous functions. Extreme value theorem. Differentiable functions. Homogeneous and homothetic functions. 5 lectures.

4. Unconstrained Optimization. Definitions and first order conditions. Second order conditions. Convex functions: Uniqueness and sufficient conditions. Optimal value function and envelope theorem. Implicit functions and comparative statics. 4 lectures.

5. Constrained Optimization I. Equality Constraints. The theorem of Lagrange. Second order conditions. Convexity and sufficient conditions. Economic interpretation of the Lagrange multipliers. Value function and envelope theorem. Implicit function and comparative statics. 5 lectures.

6. Constrained Optimization II. Inequality constraints. The theorem of Kuhn-Tucker. Second order conditions. Convex and quasi-convex functions: Uniqueness and sufficient conditions. Interpretation of the multipliers. Value function and envelope theorem. Implicit function and comparative statics. 6 lectures.

7. Discrete Time Optimization. Dynamic Programming: Finite and infinite horizon. Histories and strategies: Markovian strategies and value functions. The principle of optimality, backwards induction and Bellman equation. 5 lectures.

# MICROECONOMICS II

## SPRING 2016

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**PROF. ANETT ERDMANN**

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**TEACHING ASSISTANT:**

**José Villegas** [bto1989@hotmail.com](mailto:bto1989@hotmail.com) [jav68@georgetown.edu](mailto:jav68@georgetown.edu)

### **I. Course Objectives**

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The course requires a basic understanding of probability theory, real analysis and mathematical modelling in social science. The lectures are organized in 6 sections, each having its own references. Students with different backgrounds can choose the textbook reference with the most suitable level of exposition. Additionally, selected original papers are provided (for those students who wish to go into a topic in more depth) and applied papers are discussed in class to sensitize students to the broad range of the applicability of game theory. The lectures are complemented by exercise classes and at the end of sections 2,3,4 and 5 students are required to solve a problem set (in groups up to 3 students).

### **II. Assessment**

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The course assessment is composed of 4 problem sets (30%), a midterm exam (30%) and the final exam (40%).

### **III. Readings**

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Selection of standard textbooks (from undergraduate to graduate level):

GIBBONS, R. (1992). *Un primer curso de teoría de juegos*. Antoni Bosch editor.

BINMORE, K. (1982). *Teoría de Juegos*. Chancellor Press, Londres.

OSBORNE, M.J. (2000). *An Introduction to Game Theory*. Oxford University Press, Oxford.

FUDENBERG, D. and J.TIROLE (1991). *Game Theory*. The MIT Press.

MYERSON, R. (1997). *Game Theory: Analysis of Conflict*. Harvard University Press.

### **IV. Outline**

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#### 1 Introduction and Decision-Theoretic Foundations

- **Topics:** Basic concept from decision theory: lotteries, expected utility, risk aversion, equivalent representations; history of game theory, assumptions of rationality and intelligence.

- **References:** Osborne, Chapter 1; Binmore, Chapter 0; Mas-Colell et al. (1996), Chapter 6A-C; Myerson, Chapter 1.1-1.5.

## 2 Static Games with Complete Information

- **Topics:** Games in strategic form, Nash equilibrium concept (Nash, 1951), dominated strategies, mixed strategies, focal points, zero-sum games, applications.
- **References:** Gibbons, Chapter 1; Fudenberg and Tirole, Chapter 1; Myerson, sections 2.3, 2.5, 3.1-3.5, 3.8, 3.12, 3.13;

NASH, J. (1951). *Noncooperative Games*. Annals of Mathematics, Vol. 54.  
(Original article where Nash presents his equilibrium concept and the proof of existence based on Brouwer's fixed point theorem)

### **Selected applied paper:**

Palacios-Huerta, I. (2003). *Professionals Play Minimax*. Review of Economic Studies, Vol. 70.

Walker, M. and J. Wooders (2001). *Minimax Play at Wimbledon*. American Economic Review, Vol. 91.

## 3 Sequential Games of Complete Information

- **Topics:** Games in extensive-form, backward induction, sequential equilibrium, subgame perfect Nash equilibrium (Selten, 1975), applications equilibrium refinements: trembling-hand perfect equilibria concept, proper equilibrium concept (Myerson, 1978), trust and reciprocity.
- **References:** Gibbons, Chapter 2.1, 2.2; Fudenberg and Tirole, Sections 3.5, 3.6, 8.3, 8.4 and Chapter 11; Myerson, Sections 2.1, 2.2, 2.4, 2.6, Chapters 4 and 5;

SELTEN, R. (1975). *Reexamination of the Perfectness Concept for Equilibrium Points in Extensive Games*. International Journal of Game Theory, Vol. 4.  
(The concept of a subgame perfect equilibrium.);

MYERSON, R. (1978). *Refinements of the Nash Equilibrium Concept*. International Journal of Game Theory, Vol. 7.  
(The concept of proper equilibrium.)

**Selected applied paper** (reference for class room investment game):

Berg, J., Dickhaut, J. and K. McCabe (1995). *Trust, Reciprocity, and Social History*. Games and Economic Behavior, Vol. 10, pp. 122-142.

#### 4 Repeated Games of Complete Information I (Supergames)

- **Topics:** Cooperation and threats in infinitely repeated games (with special focus on the 'grim trigger strategy' and the folk-theorem (Friedman, 1971) as well as the 'stick and carrot strategy' as subgame perfect equilibrium (Abreu, 1988)); learning and evolutionary stability, applications.
- **References:** Gibbons, Chapter 2.3, 2.4; Fudenberg and Tirole, Chapter 5; Binmore, Chapter 9; Myerson, Chapter 7 and section 3.7;

FRIEDMAN, J.W. (1971). *A non-cooperative equilibrium for supergames*. Review of Economic Studies, Vol. 38.

(The 'grim trigger strategy' of permanent punishment and the proof of the Folk-theorem.)

ABREU, D. (1988). *On the Theory of Infinitely Repeated Games with Discounting*. Econometrica, Vol. 56.

(The 'stick and carrot' strategy as a simple subgame perfect equilibria.)

GREEN, E.J. and R.H. PORTER (1984). *Noncooperative Collusion under Imperfect Price Information*. Econometrica, Vol. 52, No. 1, pp. 87-100.

ROTEMBERG, J.J. and G. SALONER (1986). *A Supergame-Theoretic Model of Price Wars during Booms*. The American Economic Review, Vol. 76, No. 3, pp. 390-407.

#### **Selected applied papers:**

Bo, P.D. (2005). *Cooperation under the Shadow of the Future: Experimental Evidence from Infinitely Repeated Games*. The American Economic Review, Vol. 95, No. 5, pp. 1591-1604.

Albæk, S., Møllgaard, P. and P.B. Overgaard (1997). *Government-Assisted Oligopoly Coordination? A Concrete Case*. The Journal of Industrial Economics, Vol. 45, No. 4, pp. 429-443.

Ciliberto, F. and J.W. Williams (2014). *Does Multimarket Contact Facilitate Tacit Collusion? Inference on Conduct Parameters in the Airline Industry*. RAND Journal of Economics, Vol. 45, No. 4, pp. 764-791.



## 5 Static Games of Incomplete Information

- **Topics:** Games in bayesian form (Harsanyi, 1967), the bayesian Nash equilibrium and applications.
- **References:** Gibbons, Chapter 3; Binmore, Chapter 10,11.; Fudenberg and Tirole, Chapter 6; Myerson, Sections 2.8, 2.9, 3.9, 3.10;

HARSANYI, J. (1967). *Games with Incomplete Information Played by Bayesian Players, I-III*. Management Science, Vol. 14.

### **Selected applied paper:**

Seim, K. (2006). *An empirical model of firm entry with endogenous product-type choice*. The Rand Journal of Economics, Vol. 37, No. 3, pp. 619-640.

## 6 Dynamic Games of Incomplete Information

- **Topics:** Perfect bayesian Nash equilibrium, Blackwell approachability, signaling games (Spence, 1973), multi-stage games.
- **References:** Gibbons, Chapter 4; Fudenberg and Tirole, section 8.2, 8.3.4 and 11.2; Myerson, section 7.9;

SPENCE, M. (1973). *Job market signaling*. The Quarterly Journal of Economics, Vol. 87, No. 3, pp. 355-374.

# MACROECONOMICS II

## SPRING 2016

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**PROF. CARLOS J. GARCÍA T.**

Web: <https://sites.google.com/site/carlosjosegarciat/home>

E-mail: [cgarcia@uahurtado.cl](mailto:cgarcia@uahurtado.cl)

### I. Course Objectives

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The course offers an introduction on advanced business cycle analysis. The focus is on dynamic stochastic general equilibrium models (DSGE) and its empirical implementation from the beginning of the course (calibration, simulations, and econometrics).

The following topics will be addressed: Micro-founded approach to analyze key determinants of the business cycle such as household's consumption, labor supply, investment, money, credit, and pricing decisions. Moreover I will look at the design of monetary, fiscal and optimal policy in both closed and open economies.

The analytical approaches will be evaluated in depth with assignment implemented with Matlab® and Dynare®.

Thus, the course is organized around two objectives for the students:(i) to acquire a sufficient theoretical knowledge to simulate and estimate macroeconomic models, and (ii) to implement some of these methods through Matlab® and Dynare® programming.

### II. Administrative Information

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**Class Time:**

**Room Number:**

**TA:** Gabriel Ruiz and Sebastián Olate

**Office Hours:** I will hold office hours in my office on Tuesdays between 4:00 p.m. and 5:00 p.m. and by appointment: [cgarcia@uahurtado.cl](mailto:cgarcia@uahurtado.cl)

**Office:** Erasmo Escala 1835 of. 206

**Phone:** +56 (2) 2889 7368

### III. Grading

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The course is designed for students in the Master's program with a basic knowledge of macroeconomics and a basic working knowledge in quantitative methods.

A midterm (30%) and a final exam (40%), five assignments (15%), and a paper presentation (15%) at the end of the semester (see list at the end of this document).

### IV. The textbooks for the course.

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[DD] Dejong David, and Chetan Dave, Structural Macroeconometrics, (Princeton, Segunda Edición, 2011).

- [JG] Galí J., *Monetary Policy, Inflation, and the Business Cycle* (Princeton University Press, 2008).
- [LS] Ljungqvist, L., Sargent, T., *Recursive Macroeconomic Theory*. (Cambridge, Mass.: MIT Press, Tercera Edición, 2011).
- [M] Miao, Junjun, *Economics Dynamics in Discrete Time*, (Cambridge, Mass.: MIT Press, , 2014).
- [CV] Végh, C., *Open Macro in Developing Countries*, (Cambridge, Mass.: MIT Press, 2013).
- [W] *Wickens, M.I, Macroeconomic Theory*. (Princeton, New Jersey: Princeton University Press, 2012).

## V. Syllabus and Readings

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### 1. Solutions, approximation and econometrics Methods.

[M] 1, 2.

Dynamic Programming:

[LT] 2, 3, 4

[M] 5, 6, 7.

Econometrics:

Maximum Likelihood for DSGE

[DD] 8.

Bayesian econometrics for DSGE

[DD] 9.

[M] 9.

Aruoba, B, Fernández-Villaverde, J., Rubio-Ramírez, J., 2006, “Comparing Solution Methods for Dynamic Equilibrium Economies,” *Journal of Economic Dynamics & Control*, vol. 30(12) pp. 2477–2508.

<http://economics.sas.upenn.edu/~jesusfv/comparison.pdf>

Uribe, M., Schmitt-Grohe, S., 2004, “Solving Dynamic General Equilibrium Models Using a Second-Order Approximation to the Policy Function,” *Journal of Economic Dynamics and Control*, vol. 28, pp. 755-775.

[http://www.econ.duke.edu/~uribe/2nd\\_order.htm](http://www.econ.duke.edu/~uribe/2nd_order.htm)

### 2. Complete Markets and RBC models.

[M] 13-14.

[W] 2, 3, 4, 16

[JG] 2

King, R., Rebelo, S., 1999, "Resuscitating Real Business Cycles," J. Taylor and M. Woodford (ed.) *en Handbook of Macroeconomics*, vol. 1B, North-Holland, chapter 14, pp. 927-1007 Elsevier.

<http://www.nber.org/papers/w7534.pdf>

### **3. Consumption, Labor Supply, and Investment.**

[JG] 2

Christiano, L., Eichenbaum, M., and C. Evans., 2005, "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy," Journal of Political Economy, University of Chicago Press, vol. 113(1), pp. 1-45.

(<http://www.faculty.econ.nwu.edu/faculty/eichenbaum/research/paperaugust262003.pdf>)

Galí, J., J.D. López-Salido and J. Vallés., 2004, "Rule of Thumb Consumers and the Design of Interest Rate Rules," Journal of Money, Credit, and Banking, vol. 36(4), pp. 739-764.

([http://www.econ.upf.edu/crei/people/gali/pdf\\_files/glv.m.pdf](http://www.econ.upf.edu/crei/people/gali/pdf_files/glv.m.pdf))

Greewood, J., Z. Hercowitz, y G. Huffman., 1988, "Investment Capacity Utilization and the Real Business Cycle," American Economic Review vol. 78, pp. 402-417.

(<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.156.6377&rep=rep1&type=pdf>)

Hansen, G., 1985, "Indivisible Labor and the Business Cycle," Journal of Monetary Economics, vol. 16(3), pp. 309-327.

(<http://individual.utoronto.ca/zheli/C9.pdf>)

### **6. Money.**

[W] 8

### **7. Sticky Prices.**

[JG] 3.

Eichenbaum, M., Jaimovich, N., Rebelo, S., 2011, "Reference Prices, Costs and Nominal Rigidities," American Economic Review, vol. 101(1), pp. 234-262.

(<http://www.kellogg.northwestern.edu/faculty/rebelo/htm/reference.pdf>)

Erceg, C.J., D.W. Henderson, y A.T. Levin., 2000, "Optimal Monetary Policy with Staggered Wage and Price Contracts," Journal of Monetary Economics, vol. 46, pp. 281-313.

(<http://www.federalreserve.gov/pubs/ifdp/1999/640/ifdp640.pdf>)

Kehoe, P., Midrigan, V., 2010, "Prices are Sticky After All," NBER Working Paper No. 16364

(<http://www.nber.org/papers/w16364>)

## **8. Monetary Policy.**

[JG] 4, 5.

[M] 19.

[W] 14

Christiano, L., Eichenbaum, M., and C. Evans., 2005, “Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy,” *Journal of Political Economy*, University of Chicago Press, vol. 113(1), pp. 1-45.

(<http://benoitmojon.com/pdf/Christiano%20%20Eichenbaum%20Evans%202005%20JPE.pdf>)

Galí, J., 2003, “New Perspectives on Monetary Policy, Inflation, and the Business Cycle,” en *Advances in Economic Theory*, editado por: M. Dewatripont, L. Hansen, and S. Turnovsky, vol. III, 151-197, Cambridge University Press.

([http://www.econ.upf.edu/crei/people/gali/pdf\\_files/wcpaper.pdf](http://www.econ.upf.edu/crei/people/gali/pdf_files/wcpaper.pdf))

## **9. Fiscal Policy.**

Christiano, L., Eichenbaum, M., Rebelo, S., 2011, “When is the Government Spending Multiplier Large?,” *Journal of Political Economy*, vol. 119(1), pp. 78-121.

(<http://www.kellogg.northwestern.edu/faculty/rebelo/htm/multiplier.pdf>)

Galí, J., J. David López-Salido y Javier Vallés., 2007, “Understanding the Effects of Government Spending on Consumption,” *Journal of the European Economic Association*, vol. 5(1), pp. 227-270

(<http://www.crei.cat/people/gali/glv07jeea.pdf>)

García, C.J, Restrepo, J, Tanner, E., 2011, “Fiscal Rules in a volatile world: a welfare-based approach,” *Journal of Policy Modeling*, vol. 33(4), pp. 649-676.

(<http://www.imf.org/external/pubs/ft/wp/2011/wp1156.pdf>)

García, C.J, Mejía, J., 2011, “Optimal Macroeconomic Stabilization Policy of Food, Metal, and Energy Cycles in Small Open Economies,” ILADES-Georgetown University, I-284.

(<http://fen.uahurtado.cl/wp-content/uploads/2010/07/I-284-Garc%C3%ADa-Mejia.pdf>)

Uribe, M. y S. Schmitt-Grohe., 2005, “Optimal Fiscal and Monetary Policy in a Medium-Scale Macroeconomic Model,” *NBER Macroeconomic Annual 2005*, vol. 20, pp 282-462.

(<http://www.nber.org/papers/w11417.pdf>)

## **12. Optimal Policy**

[MW] 14

[JG] 6

[CV] 10, 11.

Christiano, L., 2009, apuntes “Ramsey-optimal policy”

(<http://faculty.wcas.northwestern.edu/~lchrist/d16/d1609/syllabus.htm>)

Blanchard, O, Galí, J., 2007. “Real Wage Rigidities and the New Keynesian Model.” *Journal of Money, Credit, and Banking* (39)1: 35-65.

(<http://www.nber.org/papers/w11806.pdf>)

García, CJ, Gonzalez, W, Sepulveda, A., “Decreasing Returns, Risk Premium Shocks, and Optimal Monetary Policy,” ILADES-Georgetown University, I-307.

(<http://fen.uahurtado.cl/wp-content/uploads/2010/07/I-307.pdf>)

### **13. Unemployment**

[W] 10

Galí, J., 2011, “Monetary Policy and Unemployment,” B. Friedman and M. Woodfords (eds.) *Handbook of Monetary Economics*, vol. 3, pp. 487-546.

(<http://www.nber.org/papers/w15871.pdf>)

Galí, J., F. Smets, Wouters, R., 2011, “Unemployment in an Estimated New Keynesian Model,” *NBER Macroeconomics*, University of Chicago Press, vol. 26(1), pp. 329-360.

([http://www.nbp.pl/publikacje/materialy\\_i\\_studia/106\\_en.pdf](http://www.nbp.pl/publikacje/materialy_i_studia/106_en.pdf))

Gertler, M, Trigari A., 2009, “Unemployment Dynamics with Staggered Nash Wage Bargaining,” *Journal of Political Economy*, University of Chicago Press, vol. 117(1), pp. 38-86.

(<http://repec.org/sed2005/up.20249.1107510841.pdf>)

Shimer, R., 2009, “Convergence in macroeconomics: the labor wedge,” *American Economic Journal: Macroeconomics*, vol. 1(1), pp. 280-297.

(<http://www.tau.ac.il/~yashiv/shimer.pdf>)

### **14. Financial Markets and Business Fluctuations.**

[W] 12, 15.

Bernanke, B., Gertler, M., Gilchrist, S., 1999, “The financial accelerator in a quantitative business cycle framework,” In: Taylor, J., Woodford, M. (Eds.), *Handbook of Macroeconomics*, vol. 1, pp. 1341-1393.

(<http://www.econ.nyu.edu/user/gertlerm/BGGHandbook.pdf>)

Christiano, L., Motto R., Rostagno, 2010, "Financial Factors in Economic Fluctuations," Working paper series 1192, European Central Bank.

(<http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1192.pdf>)

Gertler, M., N. Kiyotaki., 2010, "Financial Intermediation and Credit Policy in Business Cycle Analysis," Handbook of Monetary Economics, vol. 3(1), pp. 547-599.

([http://www.frbsf.org/economic-research/files/gertler\\_kiyotaki.pdf](http://www.frbsf.org/economic-research/files/gertler_kiyotaki.pdf))

Gertler, M, Karadi, P., 2011. "A model of unconventional monetary policy," Journal of Monetary Economics, vol. 58(1), pp. 17-34.

(<http://www.carnegie-rochester.rochester.edu/april10-pdfs/Gertler%20Karadi.pdf>)

Jermann, U., Vincenzo, Q. 2012, "Macroeconomic Effects of Financial Shocks," American Economic Review, vol. 102(1), pp. 238-71.

(<http://www-bcf.usc.edu/~quadrini/papers/CSpap.pdf>)

Kiyotaki, N. Moore, J., 1997, "Credit Cycles," Journal of Political Economy, vol. 105(2), pp. 211-248.

(<http://www-users.york.ac.uk/~psm509/ULB2012/KiyotakiMooreJPE1997.pdf>)

#### **14. Open Economy.**

[W] 13

[JG] 7

[CV] 6, 7, 8, 9.

García, CJ, Gonzalez, W., 2014, "Why does monetary policy respond to the real exchange rate in small open economies? A Bayesian perspective," Empirical Economics, Springer, vol. 46(3), pp. 789-825.

(<http://fen.uahurtado.cl/wp-content/uploads/2010/07/I-287.pdf>)

García, CJ, Gonzalez, W., 2013, "Exchange Rate Intervention in Small Open Economies: The Role of Risk Premium and Commodity Price Shocks," International Review of Economics & Finance, Elsevier, vol. 25, pp. 424-447.

García, CJ, Restrepo, J., Scott, R., 2011, "How much should inflation targeters care about the exchange rate?," Journal of International Money and Finance, vol. 30(7), pp 1590-1617.

Smets, F. y R. Wouter, 2002, "Openness, Imperfect Exchange Rate Pass-through and Monetary Policy," Journal of Monetary Economics, vol. 49(5), pp 947-981.

(<https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp128.pdf>)

# ECONOMETRICS II

## SPRING 2016

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**PROF. MARCELA PERTICARA**

E-mail: [mperticara@uahurtado.cl](mailto:mperticara@uahurtado.cl)

### I. Objective

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This course is a graduate level introduction to microeconometrics. The course includes a review of core methods (including ML estimation), linear panel data models, limited dependent variable models, and some topics in program evaluation.

### II. Schedule

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**Classes:** Tuesdays and Thursdays. 16:30 -17:50 pm (Room K52/K58)

**Office Hours:** Tuesday and Thursdays, 15.00-16.00 pm.

### III. Evaluation

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A midterm exam (30%); three assignments (5% each); a paper replication and presentation (15%); final exam (40%).

### IV. Textbooks/References

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There is no a unique textbook for this course. Most of the material covered in this course is covered in the following books:

- Angrist, J. and J. Pischke, 2009. Mostly Harmless Econometrics. Princeton University Press. [A-P]
- Cameron, A. y P. Trivedi, 2005. Microeconometrics. Methods and Applications. Cambridge University Press. [C-T]
- Wooldridge, J. M., 2010. Econometric Analysis of Cross Section and Panel Data. Massachusetts Institute of Technology, Second Edition. [W]

Students are also expected to consult the following readings.

- Amemiya, T. (1981), "Qualitative Response Models: A Survey", Journal of Economic Literature 19.
- Amemiya, T. (1984), "Tobit Models: A Survey", Journal of Econometrics 24.
- (\*) Angrist, J.D. y A.B. Krueger (2001), "Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments", Journal of Economic Perspectives 15.
- (\*) Banerjee, A. (2007), "Inside the Machine: Toward a New Development Economics," Boston Review, (March/April).
- (\*) Banerjee, A. and E. Duflo (2009), "The Experimental Approach to Development Economics," Annual Review of Economics.



- Blundell, R. y M. Costa Dias (2000), “Evaluation Methods for Non-Experimental Data”, Fiscal Studies 21(4).
- Deaton, A. (1985), “Panel Data from a Series of Repeated Cross-Sections”, Journal of Econometrics 30.
- (\*) Deaton, A. (2009), “Instruments of Development: Randomization in the Tropics, and the Search for the Elusive Keys to Economic Development,” NBER Working Paper, No. w14690, (January).
- (\*) Duflo, E. (2005), “Field Experiments in Development Economics,” Advances in Economic Theory and Econometrics, Eds. Richard Blundell, Whitney Newey, Torsten Persson, Cambridge University Press, Volume 2(42), see also BREAD Policy Paper No. 002.
- (\*) Duflo, E., R. Glennerster and M. Kremer (2008), “Using Randomization in Development Economics Research: A Toolkit” Handbook of Development Economics, Volume 4.
- Heckman, J.J. (1978), “Sample Selection Bias as a Specification Error”, Econometrica 46.
- (\*) Imbens, G. (2009), “Better LATE than Nothing,” NBER Working Paper No. w14896, (April).
- (\*) Imbens, G. (2011) “Advance Topics in Impact Evaluation”, Class notes.
- (\*) Imbens, G. and J. Wooldridge (2009), “Recent Developments in the Econometrics of Program Evaluation,” Journal of Economic Literature, Vol. 47, No. 1, (March), pp. 5-86.
- Kennedy, P.E. (2002), “Sinning in the Basement: What are the Rules? The Ten Commandments of Applied Econometrics”, Journal of Economic Surveys 16(4).

## V. Course Outline

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### 1. Core Methods. A short review

- a. Review – OLS and IV as moment estimators.
- b. GMM
- c. Maximum Likelihood.

#### *References*

W, 4, 5, 13, 14  
C-T, Chapters 4,5,6.

### 2. Panel data models

- a. Unobserved effects linear panel data models. The basics: OLS, random effects, fixed effects, and first differencing.
- b. Additional topics
  - i. GMM approach.
  - ii. Instrumental variables methods in RE and FE models.
  - iii. Hausman and Taylor approach.

#### *References*

AP, Chapter 5  
W, Chapters 10; 11

### **3. Non-linear models**

- a. Binary data models (Logit-Probit).
- b. Self-selection: Heckit.
- c. Censored data models: Tobit.

#### *References*

**W**, Chapters 15, 17, 19.

**C-T**, Chapters 14 y 16.

### **4. Estimation average treatment effects**

- a. A counterfactual setting and the self-selection problem.
- b. Methods assuming ignorability of treatment.
  - i. Regression methods.
  - ii. Methods based on the propensity score.
- c. Instrumental variable estimation for ATE and LATE.
- d. Regression discontinuity designs.
- e. Basic Topics on Random Control Trials: design and analysis.

#### *Referencias*

**W**, Chapter 21

**AP**, Chapter 6

(\*) Papers listed in bibliography

# ECONOMETRICS III

## SPRING 2016

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### PROF. DANILO LEIVA, CENTRAL BANK OF CHILE

Daniilo Leiva-León is a senior economist at the Research Department of the Central Bank of Chile. He has a PhD in Economics from the University of Alicante (2013). Previously, he worked as a senior analyst at the International Economics Department of the Bank of Canada. He is the author of a number of articles published in academic journals, such as *Journal of Econometrics*, *Macroeconomic Dynamics*, *Studies in Nonlinear Dynamics and Econometrics*, among others. His main fields of research are Applied Macroeconomics, Business Cycles, Forecasting, Monetary Policy, and Empirical Finance.

E-mail: [dleiva@bcentral.cl](mailto:dleiva@bcentral.cl)

### I. Objective

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Economists at central banks, private firms, government and academic institutions, face on a daily basis the need to analyze the causal relationships between the main economic and financial variables to contrast different theories, make predictions, and assess the impact of policies. This course presents the economic motivation, statistical background and practical use of the main models used to analyze the behavior of time series.

### II. Bibliography

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- James D. Hamilton. “Time Series Analysis”, Princeton University Press, (1994). (*Hmt*)
- Helmut Lütkepohl. “New Introduction to Multiple Time Series Analysis”, Springer, (2006). (*Ltk*)
- Walter Enders. “Applied Econometric Time Series”, John Wiley and Sons Inc, (2001), tercera edición. (*Edr*)
- Chang-Jin Kim, Charles R. Nelson. “State-Space Models With Regime Switching: Classical and Gibbs-Sampling Approaches With Applications”. MIT Press (1999). (*K&N*)

### III. Outline

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1. Stationary Univariate Models
  - 1.1 Basic concepts
  - 1.2 MA models (*Hmt: Ch. 3*)
  - 1.3 AR models (*Hmt: Ch. 3*)
  - 1.4 ARMA models (*Hmt: Ch. 3*)
  - 1.5 Forecasting (*Hmt: Ch. 4*)
  - 1.6 Maximum likelihood estimation (*Hmt: Ch. 5*)
  - 1.7 Application: Forecasting macroeconomic Variables
2. Stationary Multivariate Models
  - 2.1 Introduction to vector autoregressions (VAR) models (*Ltk: Ch. 2.1*)
  - 2.2 Forecasting (*Ltk: Ch. 2.2*)
  - 2.3 Granger causality (*Ltk: Ch. 2.3*)
  - 2.4 Impulse response function (*Ltk: Ch. 2.3*)
  - 2.5 Variance decomposition (*Ltk: Ch. 2.3*)

- 2.6 Maximum Likelihood Estimation (*Ltk: Ch. 3.1 – 3.4*)
- 2.7 Application: The effects of monetary policy shocks
- 3. Nonstationary Models
  - 3.1 Processes with stochastic trends (*Eds: Ch. 4*)
  - 3.2 Unit root tests (*Eds: Ch. 4*)
  - 3.3 Cointegration tests (*Eds: Ch. 6*)
  - 3.4 Error correction model (*Eds: Ch. 6*)
  - 3.5 Conditional heteroscedastic models (*Eds: Ch. 3*)
  - 3.6 Maximum likelihood estimation (*Eds: Ch. 3*)
  - 3.7 Application: Forecasting volatility in stock markets
- 4. State Space Models
  - 3.1 Introduction (*Ltk: Ch. 18.1*)
  - 3.2 State space representation (*K&N: Ch. 3*)
  - 3.3 The Kalman filter (*K&N: Ch. 3*)
  - 3.4 Maximum likelihood estimation (*K&N: Ch. 3*)
  - 3.5 Aplicación: Construction of coincident indexes of economic activity
- 5. Markov-switching Models
  - 4.1 Introduction (*Hmt: Ch. 22.1 – 22.3*)
  - 4.2 Regime changes in time series (*K&N: Ch. 4*)
  - 4.3 The Hamilton filter (*K&N: Ch. 4*)
  - 4.4 Maximum likelihood estimation (*K&N: Ch. 4*)
  - 4.5 Application: Identifying business cycles turning points
- 6. State Space Models with Markov-switching
  - 6.1 Introduction (*K&N: Cap. 5*)
  - 6.2 Combination between Kalman and Hamilton filter (*K&N: Cap. 5*)
  - 6.3 Maximum Likelihood Estimation (*K&N: Ch. 5*)
  - 6.4 Application: Real-time nowcasting nominal GDP under structural breaks

# ECONOMICS OF SOCIAL POLICIES I

## SPRING 2016

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**PROF. EUGENIO GIOLITO**

**E-mail:** [egiolito@uahurtado.cl](mailto:egiolito@uahurtado.cl)

### **I. Objectives**

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In this class we will try to study different topics on Development Microeconomics. The idea is to go over the most relevant theoretical and empirical literature on rural economies, health, human capital, migration and poverty in development countries. Our main goal will be that the students acquire familiarity in the research methods of this area in order to prepare for future research work.

### **II. Logistics**

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**Lectures:** Tuesdays-Thursdays 11:30-12:50.

**Office hours:** by appointment

### **III. Class Evaluation**

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The final grade of the class will be determined from problem sets (50%) and a take home final exam (50%). Problem sets will be handed out every other Thursday. Students can work in groups of up to four people for the problem sets.

### **IV. Readings**

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#### General:

Ray, Debraj, Development Economics (1998), Princeton University Press.

Bardhan, Pranab and Christopher Udry, Development Microeconomics. Oxford: Oxford University Press, 1999.

Ray, Debraj, Selected Lecture Notes for a Graduate Development Course.  
<http://www.econ.nyu.edu/user/debraj/Courses/GrDev13/Notes/10dnote.pdf>

#### Readings on Empirical Methodology:

Angrist, Josh and Alan Krueger (1999), "[Empirical Strategies in Labor Economics](#)," chapter 23 in Ashenfelter and Card, Handbook of Labor Economics, vol. 3.

Duflo, Esther, Rachel Glennerster and Michael Kremer, "[Randomization in Development Economics Research: A Toolkit](#)" in Handbook of Development Economics, vol. 4.

Imbens, Guido and Jeffrey M. Wooldridge (2008). "[Recent Developments in the Econometrics of Program Evaluation](#)," *Journal of Economic Literature* 2009, 47:1, 5–86.

## V. Outline

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### 1. Introduction

Ray, Chapters 1 and 2

Acemoglu, Daron, Simon Johnson, and James A. Robinson (2001), "The Colonial Origins of Comparative Development: An Empirical Investigation", *American Economic Review*, 91(5), 1369-1401.

Acemoglu, Daron, Simon Johnson, and James A. Robinson (2002), "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution", *Quarterly Journal of Economics*, 117(4), 1231-1294.

\*Banerjee, Abhijit and Esther Duflo (2006), "Economic Lives of the Poor", *Journal of Economic Perspectives*, Vol. 21 (1), pp. 141-167.

\*\*Banerjee, Abhijit and Esther Duflo (2008), "What is Middle Class About the Middle Classes Around the World?" *Journal of Economic Perspectives*, Vol. 22 (4), pp. 3-28.

Bills, Mark, and Pete Klenow. "Does Schooling Cause Growth?" *American Economic Review* 90, no. 5 (2000): 1160-1183.

Caselli, Francesco (2005), "Accounting for Cross-Country Income Differences." Chapter 9 del Handbook of Economic Growth.

De Long, J. Bradford, "Productivity Growth, Convergence, and Welfare: Comment". *American Economic Review*, Vol. 78, No. 5 (Dec., 1988), pp. 1138-1154

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### 2. Inequality

Ray, Chapters 6 and 7

Banerjee, Abhijit, et al. 2001. "Inequality, Control Rights, and Rent Seeking: Sugar Cooperatives in Maharashtra". *Journal of Political Economy* 109(1): 138-190.

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Sen, Amartya (2000) "Social Justice and the Distribution of Income," Chapter 1 in Handbook of Income Distribution, vol. 1, pp. 59-85.

### 3. Poverty

Ray, Chapters 8 and 13

Besley, T., and R. Kanbur (1988), "Food Subsidies and Poverty Alleviation," *Economic Journal* 98, no. 392: 701-719.

\*\*Dasgupta, Partha and Debraj Ray (1986), "Inequality as a Determinant of Malnutrition and Unemployment: Theory," *The Economic Journal*, Vol. 96 (384), pp. 1011-1034.

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#### 4. Family, Fertility and Population Growth

Ray, Chapter 9.

Bardhan and Udry, Chapter 3.

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## 5. Health

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## 6. Education

### Private and Social Returns of Education

- Acemoglu, Daron, and David Autor (2010), "The Basic Theory of Human Capital". Chapter 1 in *Lectures in Labor Economics*. <http://economics.mit.edu/files/4689>.
- Abdulkadiroglu, Atila, Joshua Angrist and Parag Pathak, 2014. "The Elite Illusion: Achievement Effects at Boston and New York Exam Schools," *Econometrica*, Econometric Society, vol. 82(1), pages 137-196, 01.
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## Education Quality

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## Education Policy

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- \*Urquiola, Miguel and Chang-Tai Hsieh, "The Effects of Generalized School Choice on Achievement and Stratification: Evidence from Chile's School Voucher Program," *Journal of Public Economics*, 90, 1477-1503, 2006.

## 7. Land

Ray, Chapter 12

\*Baland, Jean-Marie, and James Robinson (2008), "Land and Power: Theory and Evidence from Chile." *American Economic Review* 98(5): 1737-1765.

\*\*Banerjee, Abhijit, Paul Gertler and Maitresh Ghatak (2002), "Empowerment and Efficiency: Tenancy Reform in West Bengal," *Journal of Political Economy*, Vol. 110 (2), pp. 239-280.

\*Field, Erica (2007), "Entitled to Work: Urban Property Rights and Labor Supply in Peru," *Quarterly Journal of Economics*, Vol. 122, No. 4, Pages 1561-1602.

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Shaban, Radwan (1987) "Testing between Competing Models of Sharecropping," *Journal of Political Economy*, Vol. 95 (5), pp. 893-920.

## 8. Labor and Migration

Ray, Chapter 13

Besley, Timothy, and Robin Burgess. "Can Labor Regulation Hinder Economic Performance? Evidence from India." *Quarterly Journal of Economics* 109, no. 1 (2004): 91-134

\*\*Benjamin, Dwayne (1992), "Household Composition, Labor Markets, and Labor Demand: Testing for Separation in Agricultural Household Models," *Econometrica* 60:287-322.

World Bank (2007): [World Development Report 2008](#), (Chapters 3 and 9).

Munshi, Kaivan (2003) "Networks in the Modern Economy: Mexican Migrants in the U.S. Labor Market." *Quarterly Journal of Economics*, 118(2): 549-599.

Yang, D. (2008) "[International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks](#)," *The Economic Journal*, 118: 591-630(1)(2): S29-S59.

Lucas, Robert E. Jr. (2004) "Life Earnings and Rural-Urban Migration," *Journal of Political Economy* 11(2): S29-S59.

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Munshi, K., and M. R. Rosenzweig. (2009) "[Why is Mobility in India So Low? Social Insurance, Inequality, and Growth](#)." NBER Working Paper No. 14850.

## 9. Credit Markets

Ray, Chapter 14

Banerjee, Abhijit and Esther Duflo (2012), "[Do Firms Want to Borrow More? Testing Credit Constraints Using a Directed Lending Program](#)," mimeo, MIT

\*\*Banerjee, Abhijit, and Sendhil Mullainathan. "[The Shape of Temptation: Implications for the Economic Lives of the Poor](#)." NBER Working Paper No. 14850.

Besley, T., Coate, S., and Loury, G. (1993) "The economics of rotating savings and credit associations," *American Economic Review*, 83(4): 792-810.

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Murdoch, Jonathan (1999) "The Microfinance Promise," *Journal of Economic Literature*, 37(4): 1569-1614.

Pitt, Mark and Shahidur Khandker (1998) "The Impact of Group-based Credit Programs on Poor Households in Bangladesh: Does the Gender of Participants Matter?" *Journal of Political Economy*, 106(5): 958-996.

## 10. Technology

Banerjee, Abhijit (1992) "A Simple Model of Herd Behavior," *Quarterly Journal of Economics*, 107 (3): 797-817.

Conley, Timothy, and Christopher Udry (2010) "Learning about a New Technology: Pineapple in Ghana," *American Economic Review*, 100(1): 35-69.

Duflo, Esther, Michael Kremer, and Jonathan Robinson (2008), "How High Are Rates of Return to Fertilizer? Evidence from Field Experiments in Kenya," *American Economic Review*, Vol. 98, No. 2, Papers and Proceedings

Duflo, Esther, Michael Kremer, and Jonathan Robinson (2010). "[Nudging Farmers to Use Fertilizer: Theory and Experimental Evidence from Kenya](#)", working paper.

\*\*Foster A.D. and M.R. Rosenzweig (1995) "Learning by Doing and Learning from Others: Human Capital and Technical Change in Agriculture," *Journal of Political Economy*, 103(6): 1176-1209.

Jensen, R. (2008) "The Digital Divide: Information (Technology), Market Performance and Welfare in the South Indian Fisheries Sector," *Quarterly Journal of Economics*, 122(3): 879-924.

# INDUSTRIAL ORGANIZATION

## SPRING 2016

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**PROF. EDUARDO SAAVEDRA**

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### I. Objective

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This course covers the modern theory of industrial organization (IO) and empirical tools applied to industrial organization issues. The theoretical part of the course emphasizes the strategic behavior of economic agents with market power, the practice in different industries and the application of these issues to competition policy (antitrust). The empirical part of the course covers the estimation of static models of supply and demand and its applications to antitrust issues like the identification of conduct, simulation of the effects of mergers, valuation of new goods, etc.

It is expected that at the end of this course the student must be able to model different situations of imperfect competition, analyze specific cases of anticompetitive practices, in particular with emphasis in applications to competition policy issues.

### II. Schedule

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**Classes:** Monday and Friday: 18:00 - 19:20

**Office Hours:** by appointment

### III. Course Requirements/Grading

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- Part I : 3 assignments (50%)
- Part II : 3 assignments (50%)

### IV. Textbooks

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- Armstrong, M. and R. Porter (eds.) (2007) Handbook of Industrial Organization, Vol 3, North Holland. [AP07]
- Motta, M. (2004) Competition Policy. Theory and Practice, Cambridge University Press. [M04]
- Davis, P. and E. Garcés (2009) Quantitative Techniques for Competition and Antitrust Analysis, Princeton University Press. [DG09]

## V. Course Outline

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(\*) denotes required reading.

### **PART I: Theoretical I.O. and Competition Policy**

#### **1. Monopoly**

- A. Pricing Strategies (linear, multi-products, multi-periods, discriminatory pricing)
- B. Market Power (definitions, welfare and market concentration)

##### *References*

(\*) **M04**, ch. 2 and 3.

Stole, L. (2007), “Price Discrimination and Competition”, ch. 34 in **AP07**.

McAfee, P., J. McMillan, and M. Whinston (1989), “Multiproduct Monopoly, Commodity Bundling, and Correlation of Values”, *Quarterly Journal of Economics* 104: 371-83.

#### **2. Models of Oligopolic Competition**

- A. Basic Models (Cournot, Bertrand, Edgeworth, Stigler, Saloner)
- B. Models of Exogenous Product Differentiation (Hotelling, Salop, Chamberlin-Robinson)
- C. Models of Endogenous Product Differentiation (Switching Costs)

##### *References*

(\*) Vives, X. (1999), Oligopoly Pricing. *Old Ideas and New Tools*, MIT Press. Chapters 4-7.

Farrell, J. and P. Klemperer (2007), “Coordination and Lock-In: Competition with Switching Costs and Network Effects”, ch. 31 in **AP07**.

Salop, S. (1979), “Monopolistic Competition with Outside Goods”, *Bell Journal of Economics* 10: 141-156.

#### **3. Industry Concentration**

- A. Market definition and Market Structure
- B. Collusion
- C. Horizontal Mergers

##### *References*

(\*) **M04**, chapter 4.

(\*) Whinston, M. (2007), “Antitrust Policy toward Horizontal Mergers”, chapter 36 in **AP07**.

(\*) Sutton, J. (2007), “Market Structure: Theory and Evidence”, chapter 34 in **AP07**.

Agostini, C.; E. Saavedra and M. Willington (2011), “Collusion on Private Health Insurance Coverage in Chile”. *Journal of Competition Law and Economics* 7(1): 205-240.

Agostini, C., E. Saavedra and M. Willington (2014), “Economies of Scale and Merger Efficiencies: Empirical Evidence from the Chilean Pension Funds Market”, *Journal of Competition Law and Economics* 10(1): 137-159.

Baker, J. and T. Bresnahan (2008), “Economic Evidence in Antitrust: Defining Markets and Measuring Market Power”, in P. Buccirossi (ed.) *Handbook of Antitrust Economics*, MIT Press.

McAfee, P. and M. Williams (1992), “Horizontal Mergers and Antitrust Policy”, *Journal of Industrial Economics* 40(2): 181-187.

- Fershtman, C. and A. Pakes (2000), “A Dynamic Oligopoly with Collusion and Price Wars”, *Rand Journal of Economics* 31 (Summer): 207-236.
- Kaplow, L. (2010). “Why (Ever) Define Markets?”, *Harvard Law Review* 124: 437-517.

#### 4. Anticompetitive Practices

- A. Entry (Barriers, Strategic Precommitment and Limit Pricing)
- B. Exclusionary Practices (Predation, Rebates)
- C. Essential Facilities (Margin Squeeze, Sabotage)

##### References

- (\*) **M04**, chapter 7.
- (\*) Fumagalli, C. and M. Motta (2013), “A Simple Theory of Predation”, *Journal of Law and Economics* 56(3): 595-631.
- (\*) Mandy, D. and D. Sappington (2007), “Incentives for Sabotage in Vertically-Related Industries”, *Journal of Regulatory Economics* 31(3): 235-260.
- Agostini, C. and E. Saavedra (2010), “Foreclosure de Competidores y Conductas Excluserias en la Etapa de Distribución de Productos Durables (*Preying for Time*)” in Libre Competencia y Retail: Un Análisis Crítico, N. Nehme and P. Montt (eds.), Legal Publishing.
- Balmaceda, F. and E. Saavedra (2006), “Vertical Integration and Shared Facilities in Unregulated Industries”, *Journal of Industrial Economics Notes & Comments*, Vol. LIV, N° 4.
- Dixit, A. (1980), “The Role of Investment in Entry Deterrence”, *Economic Journal* 90: 95-106.
- Kobayashi, B. (2009). “The Law and Economics of Predatory Pricing”, in Antitrust Law and Economics, K. Hylton (ed.), Edward Elgar Publishing.
- Kreps, D. and R. Wilson (1982), “Reputation and Imperfect Information”, *Journal of Economic Theory* 27: 253-279.
- Milgrom, P. and J. Roberts (1982), “Predation, Reputation and Entry Deterrence”, *Journal of Economic Theory* 27: 280-312.
- O’Donoghue, R. y J. Padilla (2013). “The Law and Economics of Article 102 TFEU”, Hart Publishing. Capítulos 5 al 10.

## PART II: NEW Empirical I.O.

#### 5. Review of Econometrics and traditional approach in empirical IO

- A. Traditional empirical methods for IO: Structure-Conduct-Performance
- B. Estimation of supply and demand under perfect competition
- C. Review of Econometrics and Generalized Method of Moments (GMM)

##### References

- (\*) **DG09**, chapters 2, 6 and 9.
- Cameron, A. and P. Trivedi (2005), Microeconometrics: Methods and Applications, Cambridge University Press.
- Schmalensee, R. (1989), “Inter-industry Studies of Structure and Performance”, in Handbook of Industrial Organization, R. Schmalensee and R. Willig eds. North Holland, vol. 2. Chapter 16.

## 6. Estimation of supply and demand: Homogeneous goods

- A. Cournot model
- B. Identification of conduct
- C. Applications (Collusion and price wars, and measurement of market power).

### References

- (\*) **DG09**, chapters 2 and 6.
- (\*) Genesove, D. and W. Mullin (1998), "Testing Static Oligopoly Models: Conduct and Cost in the Sugar Industry, 1890-1914", *RAND Journal of Economics* 29: 355-377.
- (\*) Puller, Steven L. (2007), "Pricing and firm conduct in California's deregulated electricity market", *The Review of Economics and Statistics* 89(1): 75-87.
- (\*) Röllner, Lars-Hendrik, and Frode Steen (2006), "On the workings of a cartel: Evidence from the Norwegian cement industry." *The American Economic Review* 96(1): 321-338.
- Bresnahan, T. (1989), "Empirical Studies of Industries with Market Power", in Handbook of Industrial Organization, vol. 2 (op. cit). Chapter 17.

## 7. Estimation of supply and demand: Differentiated Products I

- A. Multilevel budgeting and AIDS model.
- B. Application: Estimation of the demand for beer.
- C. Measurement of welfare effects.
- D. Applications (Valuation of new goods, Intellectual Property Rights, and Welfare).

### References

- (\*) **DG09**, Chapters 2 and 6.
- (\*) Chaudhuri, S., P. Goldberg and P. Jia (2006), "Estimating the Effects of Global Patent Protection in Pharmaceuticals: A Case Study of Quinolones in India," *American Economic Review* 96: 1477-1514.
- (\*) Hausman, J., G. Leonard and J. Zona (1994), "Competitive Analysis with Differentiated Products", *Annales D'Economie et de Statistique* 34: 159-80.
- (\*) Rojas, Christian (2008), "Price Competition in US Brewing", *The Journal of Industrial Economics* 56(1): 1-31.
- Deaton, A. and J. Muellbauer (1980), "An Almost Ideal Demand System", *American Economic Review* 70: 312-326.
- Gasmi, Farid, Jean Jacques Laffont, and Quang Vuong (1992), "Econometric Analysis of Collusive Behavior in a Soft Drink Market", *Journal of Economics & Management Strategy* 1(2): 277-311.
- Hausman, J. (1981), "Exact consumer's surplus and deadweight loss", *The American Economic Review* 71(4): 662-676.
- Hausman, J. (1997), "Valuing the Effect of Regulation on New Services in Telecommunications", *Brookings Papers on Economic Activity. Microeconomics* 1997: 1-54.
- Hausman, J. (1997), "Valuation of New Goods under Perfect and Imperfect Competition", in The Economics of New Goods, T. Bresnahan and R. Gordon (eds.), NBER. Chapter 5.
- Hausman, J. A., and G. K. Leonard, (2002). "The competitive effects of a new product introduction: A case study", *The Journal of Industrial Economics* 50(3): 237-263.

## 8. Estimation of supply and demand: Differentiated Products II

- A. Simple models: Vertical model and Logit model.
- B. Simultaneity problem: Introduction of unobserved characteristics.
- C. More realistic substitution patterns: Nested Logit model and Random Coefficients model.
- D. BLP model.
- E. Pricing equation.
- F. Applications (Estimation of markups, market power, and simulation of mergers).

### *References*

- (\*) **DG09**, chapter 9.
- (\*) Akerberg, D., L. Benkard, S. Berry, and A. Pakes (2007), “Econometric Tools for Analyzing Market Outcomes,” in *Handbook of Econometrics*, ed. by J.J.Heckman and E.Leamer, Elsevier, vol. 6A, chap. 63.
- (\*) Gaynor, M., and W. B. Vogt (2003), “Competition among Hospitals”, *RAND Journal of Economics* 34(4): 764–785.
- (\*) Nevo. A. (2001), “Measuring Market Power in the Ready-to-Eat Cereal Industry”, *Econometrica* 69: 307-342.
- Berry, S., J. Levinsohn and A. Pakes (1995), “Automobile Prices in Market Equilibrium”, *Econometrica* 63: 841-890.
- Berry, S. (1994), “Estimating Discrete-Choice Models of Product Differentiation”, *RAND Journal of Economics* 25: 242-262.
- Bresnahan, T. (1984), “Competition and Collusion in the American Automobile Industry: The 1955 Price War”, *The Journal of Industrial Economics* 35: 457-482.
- Nevo. A. (2000), “Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry, *RAND Journal of Economics* 31: 395-421.
- Petrin, A. (2002), “Quantifying the Benefits of New Products: The Case of the Minivan”, *Journal of Political Economy* 110: 705-729.
- Slade, M. E. (2004), “Market power and joint dominance in UK brewing”, *The Journal of Industrial Economics* 52(1): 133-163.
- Villas-Boas, S. B. (2007), “Vertical relationships between manufacturers and retailers: Inference with limited data”, *The Review of Economic Studies* 74(2): 625-652.



# TOPICS IN INDUSTRIAL ORGANIZATION (REGULATION)

## FALL 2015

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**PROF. EDUARDO SAAVEDRA**

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### I. Objectives

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The student must understand the key factors in the regulation of network industries, the pros and cons of their alternative regulatory mechanisms, and the role of the information on these processes. At the end of this course, the student must be able to work on the setting tariffs on utilities in practice, or be involved on the design of (de)regulatory processes in different network industries. The student must also know in detail the main characteristics of concession programs for infrastructure.

### II. Schedule

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**Sessions:** Friday: 10:00 - 12:50

**Room:** E55

**Office Hours:** ask for e-mail to each professor

### III. Course Requirements / Grading

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One exam (30%), two assignments (50%), and one presentation (20%).

- Exam: Tuesday October 15<sup>th</sup> (topics 1, 2, 3)
- Assignment 1: October 19<sup>th</sup> (topic 4)
- Assignment 2: November 16<sup>th</sup> (topic 5)
- Presentation: week of exams (topic 6)

### IV. Textbooks / References

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There is no specific textbook for this course but we strongly recommend:

- Armstrong, M & D. Sappington (2007), “Recent Developments in the Theory of Regulation”, chapter 27 in Armstrong, M. & R. Porter (eds.), Handbook of Industrial Organization, Volume 3, North-Holland. [AS07]
- Laffont, J.J. & J. Tirole (1993), A Theory of Incentives on Procurement and Regulation, MIT Press. [TL93]

Check the mandatory (\*) and additional readings for each topic.

## V. Course Outline

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### 1. Institutional Economics

#### References

- (\*) [LT93] Introduction
- (\*) Rodríguez, J. and E. Saavedra (2008), “Incentivos y Eficiencia en el Gasto Público” in P. Fischer-Bollin (ed.) *Eficiencia del Gasto Público en América Latina*, KAS Brasil (translated as: *Incentives and Efficiency of the Public Expenditure*).
- Saavedra, E. (2010), “La Difícil Tarea de Reformar la Institucionalidad Regulatoria”, *Revista de Análisis Económico* 26(1): 3-16 (translated as: *The Hard Task of Reforming Regulatory Institutions*).
- Spiller, P. y M. Tommasi (2008), “The Institutions of Regulation. An Application to Public Utilities”, chapter 20 in C. Ménard & M. Shirley eds. *Handbook of New Institutional Economics*, Springer.
- Trillas, F. (2010), “Independent Regulators: Theory, Evidence and Reform Proposals”, Public-Private Sector Research Center Working Paper 860. (<http://www.iese.edu/research/pdfs/DI-0860-E.pdf>)

### 2. Tariff Setting under Complete Information

- A. Marginal and Average Cost Pricing, Non-Linear Pricing
- B. Ramsey Prices, Peak Load Tariffs
- C. Efficient Rationing

#### References

- (\*) [LT93] pp. 19-35
- (\*) Agostini, C. & E. Saavedra (2013), “Chile: Port Congestion and Efficient Rationing in Cargo Transfers”, *Cepal Review* N° 111: 123-143.
- Baron, D. & R. Myerson (1982), “Regulating a Monopolist with Unknown Costs”, *Econometrica* 50: 911-930.
- Braeutigam, R. (1989), “Optimal Policies for Natural Monopolies”, chapter 23 in R. Schmalensee and R. Willig eds. *Handbook of Industrial Organization*, Vol 2. North Holland.

### 3. The New Regulatory Economics: Tariff Setting under Asymmetric Information

- A. Models with Unknown Costs
- B. Hybrid Models

#### References

- (\*) [LT93] chapters 1 and 2 (optional, chapters 9 and 10)
- (\*) [AS07] sections 2.3 a 2.7 & 3.
- Baron, D. and R. Myerson (1982), “Regulating a Monopolist with Unknown Costs”, *Econometrica* 50: 911-930.
- Biglaiser, G. & C. Ma (1995), “Regulating a Dominant Firm: Unknown Demand and Industry Structure”, *Rand Journal of Economics* 26(1): 1-19.
- Lewis, T. & D. Sappington (1988), “Regulating a Monopolist with Unknown Demand”, *American Economic Review* 78(5): 986-998.
- Lewis, T. & D. Sappington (1988a), “Regulating a Monopolist with Unknown Demand and Cost Functions”, *Rand Journal of Economics* 18(3): 438-457.

#### 4. Competition in Network Industries

- A. The Vertical Nature of a Network Industry
- B. Access Charges in One-Way Access
- C. Network Unbundling
- D. Non Pricing Discriminatory Practices: Sabotage

##### References

- (\*) [AS07] section 5.
- (\*) Armstrong, M., J. Doyle, & J. Vickers (1995), “The Access Pricing Problem: A Synthesis”, *Journal of Industrial Economics* 44(2):131-50.
- (\*) Laffont, J.J., P. Rey, & J. Tirole (1998), “Network Competition: I. Overview and Nondiscriminatory Pricing”, *RAND Journal of Economics* 29(1):1-37.
- (\*) Mancero, X. & E. Saavedra (2005), “Un Modelo de Entrada y Competencia en Telecomunicaciones”, *Revista de Análisis Económico* 21(1):59-79 (translated as *A Model of Entry and Competition in Telecommunications*).
- Agostini, C., R. Lazcano, E. Saavedra & M. Willington (2016), “Predation and Network Based Price Discrimination in Chile”, Doc. I-314, ILADES-Universidad Alberto Hurtado.
- Armstrong, M. (2002), “The Theory of Access Pricing and Interconnection”, chapter 8 in *Handbook of Telecommunications Economics*, eds. M. Cave, S. Majumdar, and I. Vogelsang, North Holland.
- Hoernig, S. (2014), “Competition between Multiple Asymmetric Networks: Theory and Applications”, *International Journal of Industrial Organization* 32, pp. 57–69.
- Demsetz, H. (1968), “Why Regulate Utilities”, *Journal of Law and Economics* 11:55-66.
- Dessein, W. (2003), “Network Competition in Nonlinear Pricing”, *RAND Journal of Economics* 34(4): 593 – 611.
- Hoernig, S. (2007), “On-net and Off-net Pricing on Asymmetric Telecommunications Networks”, *Information Economics and Policy* 19(2): 171-188.
- Laffont, J.J., P. Rey & J. Tirole (1998a), “Network Competition: II. Price Discrimination”, *RAND Journal of Economics* 29(1): 38-56.
- Mandy, D. & D. Sappington (2007), “Incentives for Sabotage in Vertically-Related Industries”, *Journal of Regulatory Economics* 31(3): 235-260.

#### 5. Private Public Partnerships - PPP's

- A. Introduction (Yardstick Competition, Biddings)
- B. Concessions in Infrastructure
- C. Privatizations of Utilities
- D. Renegotiation in PPP programs

##### References

- (\*) [AS07] section 4.
- (\*) [LT93] chapter 11 (optional: chapters 15 & 16).
- (\*) Guasch, J.L.; J.J. Laffont, & S. Straub (2006), “Renegotiation of Concession Contracts: A Theoretical Approach”, *Review of Industrial Organization* 29 (1-2): 55–73.
- (\*) Guasch, J.L. y S. Straub (2009), “Corruption and Concession Renegotiations: Evidence for Water and Transport Sectors in Latin American”, *Utilities Policy* 17: 185-190.
- (\*) Hart, O., A. Shleifer, & R. Vishny (1997). “The Proper Scope of Government: Theory and an Application to Prisons”, *Quarterly Journal of Economics* 112: 1126-1161.

- (\*) Saavedra, E. (1998). “Renegotiating Incomplete Contracts: Over and Under-Investment in Public Infrastructure Franchising”, *Revista de Análisis Económico* 13(1): 149-179.
- De Fraja, G. (1994), “Chicken or Egg. Which Should Come First, Privatisation or Liberalisation?”, *Annales d' Economie et de Statistique* 33:133-156.
- Engel, E., R. Fischer, & A. Galetovic (2007), “The Basic Public Finance of Public-Private Partnerships”, NBER Working Paper 13.284.
- Estache, A. (2004), “PPI partnerships vs. PPI divorces in LDCs”, Mimeo The World Bank.
- Hart, O. (2003), “Incomplete Contracts and Public Ownership: Remarks and an Application to private Public-Private Partnerships”, *Economic Journal* 113: 69-76.
- Montesinos, J. and E. Saavedra (2012), “Renegotiation of Concession Contracts: Empirical Evidence for Public Transport Infrastructure in Peru”. Mimeo ‘Economics of the Public Private Partnerships’ Conference, IESE Barcelona, April.
- Riordan, M. y Sappington, D. (1987), “Awarding Monopoly Franchises”, *American Economic Review* 77: 375-387.

## 6. Regulatory Pricing in Practice

- A. Rate of Return and Price Caps
- B. The Efficient Firm Model

### References

- (\*) [LT93] pp. 35-70.
- (\*) Fuentes, F. & E. Saavedra (2007), “Un Análisis Comparado de los Mecanismos de Regulación por Empresa Eficiente y *Price Cap*”, Doc. I-191, ILADES-UAH (translated as *A Comparative Analysis of Efficient Firm vs. Price Cap Regulation*).
- (\*) Fuentes, F. & E. Saavedra (2007a), “Soluciones a los Problemas de Implementación de la Empresa Eficiente: Plusvalía, Indivisibilidades y Obsolescencia”, Doc. I-192, ILADES-UAH (translated as *Solutions to the Problems of Implementation of the Efficient Firm: Appreciation, indivisibilities and Obsolescence*).
- (\*) Fuentes, F. & E. Saavedra (2007b), “Discrepancias en las Partidas de Gasto de los Procesos Tarifarios de Servicios Básicos en Chile”, Doc. I-193, ILADES-UAH (translated as *Discrepancies in Expense Items in the Setting Tariff Process of Basic Services in Chile*).
- Gómez-Lobo, A. & M. Vargas (2001), “La Regulación de Empresas Sanitarias en Chile: una Revisión Crítica”, *Perspectivas en Política, Economía y Gestión* 6 (1): 89-109 (translated as *The Regulation of Water Companies in Chile: A Critical Review*).
- Jadresic, A., V. Blanlot & G. San Martín (2001), La Nueva Regulación, vol. 1, Dolmen (translated as *The New Regulation*).
- Office of Gas & Electricity Markets (2010), “Handbook for Implementing the RIIO Model”. Technical Report (available at: <http://www.ofgem.gov.uk/NETWORKS/RPIX20/Pages/RPIX20.aspx>)

# INTERNATIONAL MACROECONOMICS AND FINANCE

## FALL 2015

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**PROF. PABLO GONZALEZ**

E-mail: [pablogon@uahurtado.cl](mailto:pablogon@uahurtado.cl)

### I. Objective

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This is a course designed as a graduate level introduction to International Economics and some relevant topics or applications on Open Economy Monetary Economics. The course strengthens the intuition and modelling techniques related to current account, the effects of the monetary policy, the exchange rate determination, optimal exchange rate regimes and balance-of-payments crises, among others.

### II. Schedule

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**Classes:** Tuesday and Thursday from 10:00 to 11:20, room D15.

**Office hours:** by appointment.

### III. Evaluation

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One midterm 35% (09/08/2015), assignments (10% - average), presentation (25%) and a final exam (30%).

### IV. Bibliography

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*Vegh, Carlos A. Open Economy Macroeconomics in Developing Countries. Cambridge, London: MIT Press, 2013.*

*Drazen, Allan. Political Economy in Macroeconomics. Princeton University Press, 2002.*

*Persson, T. and G. Tabellini. Political Economics: Explaining Macroeconomics Policy. MIT Press, 2002.*

*Wickens, Michael. Macroeconomic Theory: A Dynamic General Equilibrium Approach. Princeton: Princeton University Press, 2008.*

*Walsh, Carl E. Monetary Theory and Policy. Cambridge and London: MIT Press, 1998.*

### V. Course Outline

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- 1) The basic intertemporal model for a small open economy.
  - a) Capital mobility, price distortions and non-traded goods.
    - (\*)Vegh, Carlos A. *Open Economy Macroeconomics in Developing Countries. Ch. 1, 2, 3, 4.*
    - Obstfeld, Maurice and Rogoff, Kenneth. *Foundations of International Macroeconomics. Cambridge and London: MIT Press, 1996, Ch. 1 y 2.*

- Wickens, Michael. *Macroeconomic Theory: A Dynamic General Equilibrium Approach*. Princeton: Princeton University Press, 2008, Ch. 7.
- 2) Introducing money in the basic model.
- (\*) Walsh, Carl E. *Monetary Theory and Policy*. Cambridge and London: MIT Press, 1998, Ch. 1.
  - (\*) Vegh, Carlos A. *Open Economy Macroeconomics in Developing Countries*. Ch. 5.
  - Friedman, Milton. "The Role of Monetary Policy," *American Economic Review*, March 1968, 58(13):1-17.
  - Bernanke, Ben S. and Mihov, Ilian. "Measuring Monetary Policy," *Quarterly Journal of Economics*, Aug. 1998, 113(3):869-902.
- a) Money demand and supply. Time inconsistency
- Wickens, Michael. *Macroeconomic Theory: A Dynamic General Equilibrium Approach*. Princeton: Princeton University Press, 2008, Ch. 8.
  - Bénassy, Jean-Pascal. *Macroeconomic Theory*. Oxford, New York: Oxford University Press, 2010, Ch. 11.
  - Walsh, Carl E. *Monetary Theory and Policy*. Cambridge and London: MIT Press, 1998, Ch. 2 and 3.
  - Ljungqvist, Lars and Thomas J. Sargent. 2004. *Recursive Macroeconomic Theory (MIT Press, 2nd Edition)*, Cap 1 y 3.
  - Sidrauski, Miguel. "Rational Choice and Patterns of Growth in a Monetary Economy," *American Economic Review*, May 1967, 57(2):534-544.
  - (\*) Samuelson, Paul A. "An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money," *Journal of Political Economy*, Dec. 1958, 66(6):467-482.
  - (\*) Blanchard, Olivier Jean and Fischer, Stanley. *Lectures on Macroeconomics*. Cambridge and London: MIT Press, 1989, Ch. 3.
  - Obstfeld, Maurice and Rogoff, Kenneth. *Foundations of International (\*) Macroeconomics*. Cambridge and London: MIT Press, 1996, Ch. 7A.
  - Champ, Bruce and Freeman, Scott. *Modeling Monetary Economies*, 2nd. Edition. Cambridge: Cambridge University Press, 2001.
  - Obstfeld, Maurice and Rogoff, Kenneth. *Foundations of International Macroeconomics*. and London: MIT Press, 1996, Sec. 8.3.
  - Calvo, Guillermo A. "Devaluation: Levels Versus Rates," *Journal of International Economics*, May 1981, 11(2):165-72.
  - Sargent, Thomas and Wallace, Neil. "Interest on Reserves." *Journal of Monetary Economics*, May 1985, 15(3):279-90.
  - Sargent, Thomas J. and Wallace, Neil. "Some Unpleasant Monetarist Arithmetic," *Federal Reserve Bank of Minneapolis Quarterly Review*, Winter 1985, 9(1):15-31.
  - Calvo, Guillermo A. "On the Time Consistency of Optimal Policy in a Monetary Economy," *Econometrica*, Nov. 1978, 46(6):1411-28.
  - Friedman, Milton. "The Optimum Quantity of Money," en M. Friedman, ed, *The Optimum Quantity of Money and Other Essays*. 1969, pp. 171-87.
- 3) Credibility and reputation
- (\*) Drazen, Allan. *Political Economy in Macroeconomics*. Princeton University Press, 2002, Ch. 4, 5 y 6.
  - (\*) Persson, T. and G. Tabellini. *Political Economics: Explaining Macroeconomic Policy*. MIT Press, 2002, Ch. 15 y 17.

- *Walsh, Carl E. Monetary Theory and Policy. Cambridge and London: MIT Press, 1998, Ch. 8.*
  - *Wickens, Michael. Macroeconomic Theory: A Dynamic General Equilibrium Approach. Princeton: Princeton University Press, 2008, Ch. 13.*
- 4) The monetary approach to the Balance of Payments
- (\*) *Vegh, Carlos A. Open Economy Macroeconomics in Developing Countries. Ch. 6.*
- 5) Exchange rate regimes
- (\*) *Vegh, Carlos A. Open Economy Macroeconomics in Developing Countries. Ch. 11.*
  - (\*) *Drazen, Allan. Political Economy in Macroeconomics. Princeton University Press, 2002, Ch. 12.*
  - (\*) *Persson, T. and G. Tabellini. Political Economics: Explaining Macroeconomic Policy. MIT Press, 2002, Ch. 18.*
  - (\*) *Obstfeld, Maurice and Rogoff, Kenneth. Foundations of International Macroeconomics. Cambridge and London: MIT Press, 1996, Ch. 6 y 8.*
  - *Wickens, Michael. Macroeconomic Theory: A Dynamic General Equilibrium Approach. Princeton: Princeton University Press, 2008, Ch. 12.*

# LABOR ECONOMICS

## FALL 2015

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**PROF. EUGENIO GIOLITO (PART I)**

E-mail: [egiolito@uahurtado.cl](mailto:egiolito@uahurtado.cl)

**PROF. LUCAS NAVARRO (PART II)**

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### I. Objectives

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The course has two parts. The first part is mainly about search and matching models in the labor market. These models can explain the existence of unemployment and wage dispersion in labor markets with search frictions. They are also useful for the analysis of labor market policies like unemployment insurance, the effect of hiring and firing costs, etc.

The second part of the course is about topics related to Economics of the Family and Economics of Crime, two important fields in labor economics. We will cover different theories and recent empirical applications.

### II. Schedule

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**Classes:** Monday, Wednesday 1:30-2:50 pm.

**Office hours:** By appointment

### III. Course Requirements/Grading

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Four problem sets

### IV. Course Outline

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#### FIRST PART

\* denotes required reading.

#### 1. Marriage and Divorce

##### A. Stylized facts and theory

- \* Aiyagari, S. R. and Greenwood, J. and Guner, N. "On the State of the Union," *Journal of Political Economy*, 108 (2), April 2000, 213-244.
- \* Becker, G. (1991), "Assortative Mating in Marriage Markets," in *A Treatise on the Family*, 1991.
- \* Becker, Gary S. "A Theory of Marriage, Part I", *Journal of Political Economy*, 81(4), July-August, 1973 813-46.
- \* Becker, Gary S. "A Theory of Marriage, Part II" *Journal of Political Economy*, 82(2), Part 2, March – April, 1974, S11-S26.
- \* Browning, Martin, F. Bourguignon, P.A. Chiappori and V. Lechene, "Income and Outcomes: A Structural Model of Intrahousehold Allocation". *Journal of Political Economy* Vol. 102, No. 6 (Dec., 1994), pp. 1067-1096

Fernández, Raquel, and Richard Rogerson (2001), "Sorting and Long-Run Inequality". *The Quarterly Journal of Economics*, Vol. 116, No. 4 (Nov., 2001), pp. 1305-1341



Fernández, R., N. Guner and J. Knowles (2005), “Love and Money: A Theoretical and Empirical Analysis of Household Sorting and Inequality”. *The Quarterly Journal of Economics*, Vol. 120, No. 1, pp. 273-344.

Fernández-Villaverde, Jesús, Jeremy Greenwood and Nezih Guner, “From Shame to Game in One Hundred Years: A Macroeconomic Model of the Rise in Premarital Sex and its De-Stigmatization.” NBER Working Paper 15677. <http://www.nber.org/papers/w15677>

Greenwood, J., Guner, N. and Knowles, J. A. (2003), “More on Marriage, Fertility, and the Distribution of Income”. *International Economic Review*, 44: 827–862

\*Weiss, Y. (1997), “The formation and dissolution of families: Why marry? Who marries whom? and what happens upon divorce,” in *Handbook of Population and Family Economics*, M. Rosenzweig and O. Stark (eds.).

### B. Marriage dynamics and fertility

\*Akerloff, G., J. Yellen, and M. Katz (1996), “An Analysis of Out-of-Wedlock Childbearing in the United States,” *Quarterly Journal of Economics*, 111(2): 277-317.

Ashcraft, A., Fernández-Val, I. and Lang, K. (2013), “The Consequences of Teenage Childbearing: Consistent Estimates When Abortion Makes Miscarriage Non-random”, *The Economic Journal*, 123 (September), 875–905.

Bergstrom, T. C. and Bagnoli, M. (1993), “Courtship as a Waiting Game,” *Journal of Political Economy*, 101 (1), 185-202.

\*Caucutt, Elizabeth M. and Guner, Nezih and Knowles, John, “Timing of Births: A Marriage Market Analysis,” *Review of Economic Dynamics*, 5, 815-855.

\*Díaz-Giménez, Javier, and Eugenio Giolito (2013)., “Accounting for the Timing of First Marriages”, *International Economic Review*. Volume 54, Issue 1 (pp. 135-158).

Fletcher, Jason, and Barbara L. Wolfe (2009), “Education and Labor Market Consequences of Teenage Childbearing: Evidence Using the Timing of Pregnancy Outcomes and Community Fixed Effects”, *Journal of Human Resources*, Volume 44 (2), pp. 303-325.

\*Giolito, Eugenio (2010), "On Population Structure and Marriage Dynamics". *The B.E. Journals of Macroeconomics*. Vol. 10: Issue 1 (Advances), Article 33.

\*Hotz, V. J., S. McElroy, and S. Sanders (2005), “Teenage Childbearing and Its Life Cycle Consequences: Exploiting a Natural Experiment”, *The Journal of Human Resources*, Vol. 40, No. 3 (Summer), pp. 683-715.

Kane, T. and D. Staiger (1996), “Teen Motherhood and Abortion Access,” *Quarterly Journal of Economics*, May 1996, 467-505.

Keeley, M.C., “An Analysis of the Age Pattern of First Marriage,” *International Economic Review*, June 1979, 20 (2), 527-544.

\*Siow, Aloysius, “Differential Fecundity, Markets, and Gender Roles,” *Journal of Political Economy*, 106 (2), 1998, 334-354.

Willis, R. (1999), “A Theory of Out-of-Wedlock Childbearing,” *Journal of Political Economy*, Vol. 107, No. 6, Part 2, December 1999.

### C. Divorce

- Ananat, Elizabeth, and Guy Michaels. 2008. The effect of marital breakup on the income distribution of women with children. *Journal of Human Resources* 43(3): 611-629.
- Becker, G., E. Landes, and R. Michael (1977), "An Economic Analysis of Marital Instability," *Journal of Political Economy*, December, 1141-1188.
- \*Cáceres-Delpiano, Julio, and Eugenio Giolito (2012), "The Impact of Unilateral Divorce on Crime". *Journal of Labor Economics*, 30 (1).
- Del Boca, Daniela and Christopher J. Flinn, "Rationalizing Child- Support Decisions," *The American Economic Review*, 85 (5), December 1995, 1241-1262.
- Gray, Jeffrey S. (1998), "Divorce-Law Changes, Household bargaining, and Married Women's Labor Supply." *American Economic Review*, 88 (3).
- \*\*Gruber, Jonathan (2004), "Is Making Divorce Easier Bad for Children?". *Journal of Labor Economics*, 22 (4).
- Page, Marianne E. and Ann Huff Stevens (2004), "The Economic Consequences of Absent Parents." *Journal of Human Resources*, 39(1), pp. 80-107.
- Paxson, Christina and Jane Waldfogel (2002), "Work, Welfare, and Child Maltreatment," *Journal of Labor Economics*, Vol. 20, No. 3 (Jul., 2002), pp. 435-474.
- \*\*Peters, H. Elizabeth (1986), "Marriage and Divorce: Informational Constraints and Private Contracting." *American Economic Review*, 76 (3), 437-454.
- Stevenson, Betsey (2007) "The Impact of Divorce Laws on Marriage-Specific Capital". *Journal of Labor Economics*, 25, 1.
- \*\*Stevenson, Betsey and Justin Wolfers (2006) "Bargaining in the Shadow of the Law: Divorce Laws and Family Distress", *Quarterly Journal of Economics*, 121(1).
- \*\*Wolfers, Justin (2006), "Did Unilateral Divorce Raise Divorce Rates? A Reconciliation and New Results." *American Economic Review*, 96, 5.

## 2. Economics of Crime

### A. The economic model of crime

- Becker, Gary S. (1995), "[The Economics of Crime](#)", *Cross Sections*, 8-15.
- \*Becker, Gary S. (1968), "[Crime and Punishment: An Economic Approach](#)", *Journal of Political Economy*, 76(2), 169-217.
- \*Durlauf, Steven, and Daniel Nagin (2011), "The Deterrent Effect of Imprisonment." In *Controlling Crime: Strategies and Tradeoffs*, Philip J. Cook, Jens Ludwig, Justin McCrary eds. NBER. <http://www.nber.org/chapters/c12078>
- Dills, Angela, Jeffrey Miron, and Garret Summers (2010), "[What do economists know about crime?](#)", in *The Economics of Crime: Lessons for and from Latin America*, NBER. <http://www.nber.org/chapters/c11845>
- Eide, Erling, Paul Rubin and Joanna Shepherd (2006), "Economics of Crime", in *Foundations and Trends in Microeconomics*, Vol. 2, No. 3, 205-279.

Ehrlich, Isaac (1996), "Crime, Punishment, and the Market for Offenses", *Journal of Economic Perspectives*, 10(1), 43-67.

\*McCrary, Justin (2002), "Dynamic Perspectives on Crime". Chapter 4 in *Handbook of the Economics of Crime*, Edward Elgar, 2010.  
<http://emlab.berkeley.edu/~jmccrary/mccrary2009final.pdf>

\*Imhoroglu, A., A. Merlo and P. Rupert (2004), "What Accounts for the Decline in Crime?" *International Economic Review*, 45, 707-29.

#### B. Police and deterrence effects

Chalfin, Aaron, and Justin McCrary (2013), "The Effect of Police on Crime: New Evidence from U.S. Cities, 1960-2010". NBER Working Paper No. 18815.

Di Tella, Rafael and Ernesto Schargrodsky (2004), "Do Police Reduce Crime? Estimates Using the Allocation of Police Forces After a Terrorist Attack" *American Economic Review*, 94(1), 115-133.

Klick, Jonathan, and Alexander Tabarrok (2005), "Using Terror Alert Levels to Estimate the Effect of Police on Crime." *Journal of Law and Economics*, 48: 267-279.

\*\*Draca, Mirko, Stephen Machin and Robert Witt (2011), "[Panic on the Streets of London: Police, Crime and the July 2005 Terror Attacks.](#)" *American Economic Review*, 101 2157–2181.

\*\*Levitt, Steven D. (1997), "[Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime](#)", *American Economic Review*, 87 (3), 270-290.

\*\*Levitt, Steven D. (2002), "[Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime: Reply](#)", *American Economic Review*, 92 (4), 1244-1250.

\*\*McCrary, Justin (2002), "Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime: Comment", *American Economic Review*, 92 (4), 1236-1243

Shi, Lan, (2009), "The Limits of Oversight in Policing: Evidence from the 2001 Cincinnati Riot." *Journal of Public Economics* 93: 99-113.

#### C. Prison and incapacitation

\*\*Donohue, John, and Justin Wolfers (2005), "Uses and Abuses of Empirical Evidence in the Death Penalty Debate." *Stanford Law Review* 58:791-846

Helland, E. and A. Tabarrok, (2007). "Does Three Strikes Deter? A Nonparametric Estimation." *Journal of Human Resources* 42: 309-330.

Levitt, Steven D. (1998), "[Why Do Increased Arrest Rates Appear to Reduce Crime: Deterrence, Incapacitation, or Measurement Error?](#)" *Economic Inquiry* 36: 353-372 or NBER WP #5268.

Levitt, Steven D. (1996), "The Effect of Prison Population Size on Crime Rates: Evidence from Prison Overcrowding Litigation." *The Quarterly Journal of Economics*, 111(2), pp. 319-51.

\*\*Katz, Lawrence, S. Levitt and E. Shustorovich (2003), "Prison Conditions, Capital Punishment, and Deterrence." *American Law and Economics Review*, 5(2), 318-343.

Kessler, Daniel and Steven Levitt (1999), "[Using Sentence Enhancements to Distinguish between Deterrence and Incapacitation.](#)" *Journal of Law and Economics*, 42: 343-363.

#### D. Crime and demography

- \*\*Donohue, John J. and Steven Levitt (2001), "The Impact of Legalized Abortion on Crime", *Quarterly Journal of Economics* 116(2):379-420.
- \*\*Donohue, John, and Steven Levitt (2004). "Further Evidence that Legalized Abortion Lowered Crime: A Reply to Joyce." *Journal of Human Resources*. 39(1):29-49.
- \*\*Donohue, John, and Steven Levitt (2008). "Measurement Error, Legalized Abortion, and the Decline in Crime: A Response to Foote and Goetz." *Quarterly Journal of Economics*. 123(1):425-440.
- \*\*Foote, Christopher, and Christopher Goetz (2008), "The Impact of Legalized Abortion on Crime: Comment." *The Quarterly Journal of Economics*, Vol. 123, No. 1 pp. 407-423.
- Hunt, Jennifer (2006), "[Do Teen Births Keep American Crime High?](#)", *Journal of Law and Economics* Vol. 49, No. 2 (October),
- \*\*Levitt, Steven (1999), "The Exaggerated Role of Changing Age Structure in Explaining Aggregate Crime Changes." *Criminology*, 37(3), 581-599.
- Jacob, B., L. Lefgren, and E. Moretti (2007): "The Dynamics of Criminal Behavior: Evidence from Weather Shocks," *Journal of Human Resources*, 42(3), 489-527.
- \*\*Joyce, Ted (2004), "Did Legalized Abortion Lower Crime?" *Journal of Human Resources* 39:1,1
- \*\*Joyce, Ted (2009), "A simple test of abortion and crime." *The Review of Economics and Statistics*, Vol. 91, No. 1, Pages 112-123.
- Joyce, Ted (2009), "Abortion and Crime: A Review". NBER Working Paper 15098  
<http://www.nber.org/papers/w15098>.

#### E. Socioeconomic determinants of crime

- Baum-Snow, Nathaniel, and Byron Lutz, (2011). "School Desegregation, School Choice, and Changes in Residential Location Patterns by Race." *American Economic Review* 101 (December): 3019–3046.
- Cook, Philip and G. Zarkin (1985), "Crime and the Business Cycle." *Journal of Legal Studies* 14: 115-128.
- Deming, David, (2011), "Better Schools, Less Crime?" *Quarterly Journal of Economics*: 126(4):2063-2115.
- Fajnzylber, Pablo, Daniel Lederman, and Norman Loayza (2002), "[Inequality and Violent Crime](#)", *Journal of Law and Economics*, 45(1), 1-40.
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\*Rogerson, Shimer and Wright (2005), pp 5-15.

## **3. Random Search and Wage Posting Models**

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- Acemoglu D. and R. Shimer (1999), Holdups and Efficiency with Search Frictions, *International Economic Review*.
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- Bowlus, A. 1995. Matching workers and jobs: cyclical fluctuations in match quality. *Journal of Labor Economics* 13: 335-50.
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- Veracierto, M. (2008). On the cyclical behavior of employment, unemployment and labor force participation. *Journal of Monetary Economics* 55: 1143-57.

## **7. Related models**

### *A. Efficiency wages*

- Albrecht and Vroman (1998), Nash Equilibrium Efficiency Wage Distributions, *International Economic Review*
- \*Shapiro and Stiglitz (1984) Equilibrium Unemployment as a Worker Discipline Device, *American Economic Review*, 1984.

### *B. Policy applications*

- Acemoglu, D., and R. Shimer. (1999). Efficient unemployment insurance. *Journal of Political Economy* 107: 893-928.
- Bertola, G., and R. Rogerson. (1997). Institutions and labour reallocation. *European Economic Review* 41: 1147-71.
- Blanchard and Tirole (2008), The Joint Design of Unemployment Insurance and Employment Protection: A First Pass, *Journal of the European Economic Association*.
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# ENVIRONMENTAL AND NATURAL RESOURCES ECONOMICS

## FALL 2015

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**PROF. EVANGELINA DARDATI**

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### I. Objective

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The goal of this class is to understand the link between the economy, the environment and the role of the government. The specific topics we will cover are externalities, public goods, regulation of the environment through taxes, pollution permit systems and command and control policies, both under certainty and under uncertainty. In the second part of the course we will go over cost-benefit analysis and study different methods to measure the benefits. In the last part of the course we will cover some topics on renewable and non-renewable natural resources.

### II. Logistics

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**Class Time:** Tuesday and Thursday 11:30 to 12:50.

**Class Location:**

**Office hours:** by appointment.

### III. Class Evaluation

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• Midterm 1	40%	October 1st.
• Class Participation	10%	
• Problem Sets (4)	25%	TBA
• Paper Presentation	25%	TBA

- 1- You can work in groups for the problem sets but each of you must submit your own homework. You are not allowed to copy the problem set of someone else, even if you worked with that person. Moreover, I encourage you to take the homework seriously, since it serves as a study guide for the course.
- 2- All problem sets are due in the beginning of the class and I will not accept them late. So, please do not even bother asking for extensions.
- 3- Each student is required to choose a paper marked with (\*\*) from part 4 of the program and present it in class. Presentations are 30-40 minutes. The professor will assign the date depending on the paper. Students have to choose the paper during the first two weeks of classes.

### IV. Textbooks

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- [KO] Kolstad, Charles. Environmental Economics. 2nd ed. Oxford University Press, 2010.
- [EESR] Stavins, Robert N., ed., 2005, Economics of the Environment: Selected Readings, Fifth Edition, New York: W. W. Norton and Company.

The main book for this class is Kolstad (2010). However, I will cover each topic with different sources. You can find the references in the outline of the course. The references marked with an asterisk (\*) are required reading.

## V. Course Outline

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### 1. Introduction. ¿What is environmental economics?

References:

- KO Ch 1 and 2.
- Fullerton, Don and Robert Stavins, "How Economists See the Environment," *Nature* 395, October 1998, 433-4 (Ch 1 in EESR).

### 2. The markets and the Environment

- a) Efficiency.**
- b) Externalities.**
- c) Public Goods.**
- d) Property Rights.**

References:

- KO capítulo 4 y 5.
- Coase, Ronald H., "The Problem of Social Cost," *The Journal of Law and Economics*, October 1960, 1-44 (Ch 2 EESR).
- Sigman, Hilary, "International Spillovers and Water Quality in Rivers: Do Countries Free Ride?" *American Economic Review* 92 (4), September 2002, 1152-9.
- Starrett, David, "Property Rights, Public Goods and the Environment," in Mäler, Karl-Göran and Jeffrey R. Vincent, eds., *Handbook of Environmental Economics*, Vol. 1, Amsterdam: North-Holland, 2003.

### 3. Regulation of the environment.

- a) Command and Control.**
- b) Taxes and subsidies.**
- c) Tradable pollution permits.**
- d) Pollution permits allocation.**
- e) Prices vs Quantities.**
- f) Risk.**
- g) Market power.**

References:

- KO Ch 11, 12, 13, 14 y 15.
- Sandel, Michael J., "It's Immoral to Buy the Right To Pollute," *New York Times*, Dec. 15 1997, p.A29 (Ch 18 in EESR; and reply in EESR).
- Carlson, C., D. Burtraw, M. Cropper, and K. Palmer, "Sulfur Dioxide Control by Electric Utilities: What are the Gains from Trade?" *Journal of Political Economy* 108 (6), December 2000, 1202-326.
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- Weitzman, Martin L., "Prices vs. Quantities," *Review of Economic Studies* 41(4), Oct.1974, 477-91.

#### 4. Cost-benefit analysis and economic valuation of the environment.

a) Cost-benefit analysis.

b) Valuation.

-Revealed preferences.

-Travel Cost Method.

-Contingent valuation.

#### References:

- Ko Chapters 6, 7, 8, 9 y 10.
- Arrow, Kenneth, et al, "Is There a Role for Benefit-Cost Analysis in Environmental, Health, and Safety Regulation?", *Science*, April 12, 1996 (Ch 11 EESR).
- Goulder, L., and R. Stavins, "An Eye on the Future," *Nature* 419: 673-4, October 2002 (Ch 12, EESR).
- Steven Kelman, "Cost-Benefit Analysis: An Ethical Critique", and reply by DeLong, Solow y Butters, *AEI Journal on Government and Society Regulation* (Jan/Feb 1981). (Ch 14 EESR).

#### Hedonic Price Indices

- Brookshire, D. S., M. A. Thayer, W. D. Schulze, and R. d'Arge, "Valuing Public Goods: A Comparison of Survey and Hedonic Approaches," *American Economic Review* 72 (1), March 1982, 165-77.
- Chay, Kenneth, and Michael Greenstone. "Does Air Quality Matter? Evidence from the Housing Market." *Journal of Political Economy*, Vol. 113 (2005), 376-424. (\*\*)
- Currie, J. et al., 2015. "Environmental Health Risks and Housing Values: Evidence from 1,600 Toxic Plant Openings and Closings." *American Economic Review*, 105(2), pp.678-709.(\*\*)
- Davis, L.W., 2004. "The effect of health risk on housing values: Evidence from a cancer cluster." *American Economic Review*, 94(5), pp.1693-1704. (\*\*)
- Davis, L., (2011) "The Effect of Power Plants on Local Housing Prices and Rents: Evidence from Restricted Census Microdata" *Review of Economics and Statistics*, 93(4), 1391-1402. (\*\*)
- Grainger, C.A., 2012. "The distributional effects of pollution regulations: Do renters fully pay for cleaner air?" *Journal of Public Economics*, 96(9-10), pp.840-852. (\*\*)
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- Rehdanz, K. & Maddison, D., 2009. "The amenity value of climate to households in Germany." *Oxford Economic Papers*, 61(1), pp.150-167.
- Smith, V. Kerry and Ju-Chin Huang, "Can Markets Value Air Quality? A Meta-Analysis of Hedonic Property Value Models," *Journal of Political Economy* 103 (1), (1995), 209-27.

#### Health and mortality

- Alberini, Anna, Maureen Cropper, Alan Krupnick, and Nathalie Simon, "Does the Value of a Statistical Life Vary with Age and Health Status? Evidence from the US and Canada," *Journal of Environmental Economics and Mgmt* 48(1), July 2004, 769-92. (\*\*)
- Ashenfelter, Orley, and Michael Greenstone. "Using Mandated Speed Limits to Measure the Value of a Statistical Life: Evidence from the Introduction of the 65-mph Speed Limit on Rural Interstates." *Journal of Political Economy*, February 2004.
- Ashenfelter, O.C. & Greenstone, M., 2004. "Estimating the Value of a Statistical Life: The Importance of Omitted Variables and Public Bias," *American Economic Review*.

- Cameron, T.A., 2010, "Euthanizing the Value of a Statistical Life", *Review of Environmental Economics and Policy*, 4, 161-178. (Ch 10 in EESR.)
- Chay, Kenneth, and Michael Greenstone, "The Impact of Air Pollution on Infant Mortality: Evidence from Geographic Variation in Pollution Shocks Induced by a Recession," *Quarterly Journal of Economics* 118 (3), August 2003.
- Chen, Y. et al., 2013. "Evidence on the impact of sustained exposure to air pollution on life expectancy from China's Huai River policy." *Proceedings of the National Academy of Sciences*, 110(32), pp.12936–12941. (Also check NBER working paper). (\*\*)
- Greenstone, M., Ryan, S.P. & Yankovich, M., 2012. "The Value of a Statistical Life: Evidence from Military Retention Incentives and Occupation-Specific Mortality Hazards," working paper. (\*\*)
- Greenstone, M., Dominici, F. & Sunstein, C., 2014. "Particulate Matter Matters." *Science*, 344(18).
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#### Defensive Expenditures

- Anon, 1997. Averting behavior and urban air pollution. *Land Economics*.
- Deschenes, O., Greenstone, M. & Shapiro, J.S., 2014. "Defensive Investments and the Demand for Air Quality: Evidence from the NOx Budget Program and Ozone Reductions," Working Paper. (\*\*)
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#### Travel Cost Method

- Binkley, C. & Hanemann, M., 1978. "The recreation benefits of water quality improvement: Analysis of Day Trips in an Urban Setting," US Environmental Protection Agency Report.
- Bockstael, N.E., McConnell, K.E. & Strand, I.E., 1989. "Measuring the benefits of improvements in water quality: the Chesapeake Bay." *Marine Resource Economics*. (\*\*)
- Hausman, Jerry A., Gregory K. Leonard, and Daniel McFadden, "A Utility-Consistent, Combined Discrete Choice and Count Data Model: Assessing Recreational Use Losses Due to Natural Resource Damage," *Journal of Public Economics* 56 (1), Jan. 1995, 1-30. (\*\*)

### Contingent Valuation

- Carson, Richard T., Robert C. Mitchell, Michael Hanemann, Raymond J. Kopp, Stanley Presser, and Paul A. Ruud, "Contingent Valuation and Lost Passive Use: Damages from the Exxon Valdez Oil Spill," *Environmental and Resource Economics* 25 (2003), 257-86.
- Diamond, Peter A. and Jerry A. Hausman, "Contingent Valuation: Is Some Number Better than No Number?," *Journal of Economic Perspectives* 8 (4), Fall 1994, 45-64 (Capítulo 9 en EESR).
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- Hausman, Jerry, "Contingent Valuation: From Dubious to Hopeless," *Journal of Economic Perspectives*, 26(4), (2012), 43-56.
- Portney, Paul R., "The Contingent Valuation Debate: Why Economists Should Care," *Journal of Economic Perspectives* 8 (4), Fall 1994, 3-17 (Ch 7 in EESR).

### **5. Natural Resources: renewable and non-renewable.**

#### References:

- (\*) Sweeney, James. "Economic Theory of Depletable Resources: An Introduction." Chapter 17 in *Handbook of Natural Resource and Energy Economics*. Vol. III. Edited by Allen V. Kneese and James L. Sweeney. Elsevier Science Publishers, 1993. ISBN: 9780444878007.
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