# ACADEMIC PROGRAM

## Master Advanced Economics

# Master 1 Advanced Economics

## Semestre 1

| Unités d'enseignement | Libellés enseignements | Nombre de crédits |
|---|---|---|
| **UE 1A** | **Microeconomics and macroeconomics** | **8** |
| | ECO4101 : Macroeconomics 1 | 4 |
| | ECO4103 : Microeconomics 1 | 4 |
| **UE 1B** | **Quantitative methods** | **12** |
| | ECO4104 : Econometrics 1 | 4 |
| | ECO4105 : Econometrics 2 | 4 |
| | ECO4106 : Mathématiques 1 | 4 |
| **UE 1C** | **Applied economics and elective courses** | **9** |
| | ECO4108 : Natural Resource Economics | 3 |
| | ECO4107 : Gender Economics | 3 |
| | ECO4109 : Introduction au droit public et constitutionnel (ou cours au choix, non géré par le département d'économie) | 3 |
| **UE 1D** | **Langues** | **3** |
| | Cours au choix, non géré par le département d'économie | 3 |

# Semestre 2

| Unités d'enseignement | Libellés enseignements | Nombre de crédits |
|---|---|---|
| **UE 2A** | **Microeconomics & macroeconomics** | **6** |
| | ECO4201 : Microeconomics 2 | 3 |
| | ECO4203: Quantitative Economic History | 3 |
| **UE 2B** | **Methods and tools** | **8** |
| | ECO4204 : Econometrics 3 | 4 |
| | ECO4206 : Mathématiques 2 | 4 |
| **UE 2C** | **Applied economics** | **6** |
| | ECO4207 : Economic Geography | 3 |
| | ECO4208 : Public Economics | 3 |
| **UE 2D** | **Elective courses** | **6** |
| | Langues, cours au choix , non géré par le département d'économie (selon MCC du centre de langues) | 3 |
| | ECO4210 : Droit public européen et international (ou cours au choix, non géré par le département d'économie (selon MCC du cours choisi) | 3 |
| **UE 2E** | **Vocational Training** | **2** |
| | ZZTD9001 : Vocational training | 2 |

# Master 2 Advanced Economics

## Semestre 1

| Unités d'enseignement | Libellés enseignements | Nombre de crédits |
|---|---|---|
| **UE 1A** | **Core courses** | **10** |
| | ECO5106 : Topics in Econometrics | 5 |
| | ECO5108 : Machine Learning and Spatial Data Analysis | 5 |
| **UE 1B** | **Specialization courses** | **12** |
| | ECO5111 : Behavioral Economics | 4 |
| | ECO5107 : Topics in Microeconomics | 4 |
| | ECO5001 : Information economics | 4 |
| | ECO5101: Data task (option) | 0 |

## Semestre 2

| Unités d'enseignement | Libellés enseignements | Nombre de crédits |
|---|---|---|
| **UE 2A** | **Research workgroups** | **12** |
| | ECO5203 : Topics in financial macroeconomics | 4 |
| | ECO5002 : Topics in economic history | 4 |
| | ECO5202 : Development | 4 |
| **UE 2B** | **Master thesis and seminars** | **26** |
| | ECO5201 : Thesis Seminar | 2 |
| | ZZTD9000: Master Thesis | 24 |

UNIVERSITÉ DE LYON

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# SYLLABUS

## *Macroeconomics*

**Lecturer :** Sarra GHADDAB

**Course** of Master 1 - Semester 1, 2024-2025

## 1. Overview

In this course, students are encouraged to immerse themselves in the role of policymakers, tasked with evaluating and addressing the macroeconomic challenges that countries face in our interconnected, globalized world. The course places a strong emphasis on monetary and financial issues. The conceptual framework for analysis is based on "The Money View" by Perry Mehrling, which provides a foundational understanding of the intricacies of the monetary and financial system, including technical aspects such as payment systems, often referred to as the "plumbing" of the financial world.

The lecture explores the connections between financial variables and real economic variables through in-depth case studies of significant events such as the Global Financial Crisis and the COVID-19 pandemic. These case studies facilitate the evaluation of various policy responses, including fiscal, monetary, and both macroprudential and microprudential measures.

Additionally, the course delves into current debates and topics of interest, such as the dynamics and challenges of the Euro, the concept of safe assets, and the role of shadow banking. This comprehensive approach aims to equip students with the analytical tools and technical knowledge necessary to understand and influence the complex landscape of global macroeconomic policy.

## 2. Prerequisites

A high level of English proficiency is necessary. Familiarity with basic accounting principles is advantageous but not essential.

## 3. Practical information

This course spans 24 hours, divided into weekly 3-hour sessions.

## 4. Bibliography

Adler, G., Casas, C., Cubeddu, L.M., Gopinath, G., Li, N., Meleshchuk, S., Buitron, C.O., Puy, D., Timmer, Y., "Dominant Currencies and External Adjustment", IMF Staff Discussion Note, July 2020

Adrian, Tobias and Shin, Hyun Song, "Liquidity and Leverage", FRB of New York Staff Report No. 328, 2009

Avdjiev, S., McCauley, R.N., Shin, H.S., "Breaking free of the triple coincidence in international finance", BIS Working Paper No. 524, October 2015

Awrey, D., "Brother, Can You Spare a Dollar? Designing an Effective Framework for Foreign Currency Liquidity Assistance" (2017), COLUMBIA BUS. L. REV. 934-1016.

Boissay, F., Patel, P., Shin, H.S., "Trade credit, trade finance, and the COVID-19 Crisis", BIS Bulletin No 24, June 2020

Cassola, N., Kok, C., Mongelli, F.P., The ECB after the crisis: existing synergies among monetary policy, macroprudential policies and banking supervision", ECB Occasional Paper No 237, November 2019

Gabor, D., and Ban, C., "Banking on Bonds: The New Links Between States and Markets", Journal of Common Market Studies, 2015, Vol. 54, No. 3, pp. 617-625

Gabor, D., "Goodbye (Chinese) Shadow Banking, Hello Market-based Finance", Development and Change, 2018, 49(2), 394-419.

Kindleberger, C. P., "Panics, Manias and Crashes: A History of Financial Crises", Palgrave McMillan, 1978 (first edition)

McLeay, M., Radia, A. and Thomas, R., "Money creation in the modern economy", Bank of England Quarterly Bulletin, Q1 2014

Mehrling, P., Poszar, Z., Sweeney, J., Neilson, D., "Bagehot was a Shadow Banker: Shadow Banking, Central Banking and the Future of Global Finance", In Shadow Banking Within and Across Borders, edited by Stijn Claessens, Douglas Evanoff, George Kaufman, and Luc Laeven. World Scientific Publishing, 2014.

Mehrling, P., "Financialization and its discontents", Finance and Society, 2017

Poszar, Z., "Shadow Banking: The Money View", Office of Financial Research Working Paper, July 2014

Poszar, Z., Sweeney, J., "COVID-19 and Global Dollar Funding", Credit Suisse Global Money Notes #27, March 2020

Tooze, A., "Crashed: How a decade of financial crises changed the world", Penguin, 2018

# Advanced Microeconomics: Game Theory

## Prerequisite

The main prerequisite for this course is an understanding of microeconomics. Familiarity with calculus is also helpful. The most important prerequisite, however, is a degree of comfort with rigorous reasoning and arguments.

## Exams

The midterm exam will be held in class. The final exam will be scheduled by the registrar during the final exam period.

## Course Readings

- *A Course in Game Theory* by Osborne and Rubinstein,

- *Microeconomic Theory* by Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green

- Miscellaneous academic journals.

## Course Outline

### Part 1: Simultaneous Game

### 1. Simultaneous Games with Complete Information

1. Basic Definitions

2. Rationality and Equilibria

## *Econometrics 1*

**Lecturer :** Vincent Bagilet vincent.bagilet@ens-lyon.fr (4 first lectures), Gaetan Bakalli bakalli@em-lyon.com (4 last lectures), Lucile Laugrette lucile.laugerette@gmail.com (R TD).

**Course** of Master 1 – 1st semester, 2024-2025

### 1. Overview

This course aims to introduce regression methods for economic research and general method to test hypothesis. It shall provide fundamental tools to quantitatively explore relevant social science questions.

Intuition will be central to this class. A typical lecture will first discuss the main intuition related to the topics of the day through a set of concrete examples and realistic simulations. Most sessions will also involve hands-on R exercises and data analyses to allow grasping the main challenges associated with the topic of interest. After this description of the goals, the motivation, and the intuition behind the aspects explored in the lecture, it will turn to a comprehensive theorizing and mathematical formalization.

The first part of this class will discuss how to implement a simple but sensible regression-based analysis. It will introduce a canonical regression method, its properties and discuss the implications of its associated assumptions on the outcomes of the analysis.

The second part (last four lectures), will discuss in depth the theoretical underpinning behind the large sample properties of estimators and how to design a proper hypothesis test.

### 2. Prerequisites

A basic background in econometrics, statistics and probability is required for this course. A good understanding of linear algebra is also necessary. No prior knowledge of R is required, although some programming experience is a plus.

### 3. Practical information

This is an 8 week-course, with lectures on Tuesdays 17/09, 24/09, 01/10, 08/10 (8.00am – 11.00am), 22/10 , 05/11 (8.30am – 11.30am) and Tuesdays 22/10 and 05/11 1pm – 3pm. The R TD will be every Wednesday from 18/09 to 06/11 (except during the fall break) 8.30am – 11.30am.

Exam will be held on the 19/11 8.30am to 11.30 am for the lectures and on 13/11 9am to 12pm for the R TD.

### 4. Bilbiography

- Gelman, Andrew, Jennifer Hill, and Aki Vehtari. *Regression and Other Stories*. of *Analytical Methods for Social Research*. Cambridge University Press, 2020.
- Wooldridge, Jeffrey M. *Introductory Econometrics: A Modern Approach*. South-Western College Publishing, 7th edition, 2018.

- Angrist, Joshua D. and Jorn-Stefen Prischke. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press, 2009.
- Wickham, Hadley, Mine Çetinkaya-Rundel, and Garrett Grolemund. *R for data science*. O'Reilly Media, Inc., 2nd edition, 2023
- Hanck, Christoph, Martin Arnold, Alexander Gerber and Martin Schmelzer. *Introduction to Econometrics with R*. 2019.
- Casella, George, and Roger Berger. *Statistical inference*. CRC Press, 2024.
- Newey, Whitney K., and Daniel McFadden. "Large sample estimation and hypothesis testing." *Handbook of econometrics* 4 (1994): 2111-2245.
- Davison, A. C. *Bootstrap methods and their application*. Cambridge University Press, 1997.

## *Econometrics 2*

**Lecturer :** Alexeï Tsygvintsev, alexei.tsygvintsev@ens-lyon.fr
**Course** of Master 1 – 1st semester, 2024-2025

### 1. Overview

This course offers a deep dive into advanced econometric techniques with a strong emphasis on financial time series analysis. The lectures are structured to provide both theoretical foundations and practical applications, ensuring students are well-prepared for empirical economic research.

1. Basic Principles of Financial Time Series: Introduction to concepts of stationarity and forecasting with practical examples.

2. Simple Autoregressive Models: Exploration of lags, the Autocorrelation Function, AR(p) models, conditions for stationarity, and forecasting methods.

3. Basic Ideas of Non-Linear Optimization: Covers Gradient Descent and the Maximal Likelihood method, supplemented with illustrative examples.

4. Simple Moving Average Models (MA(q)): Focus on the estimation of coefficients and forecasting techniques, with examples.

5. ARMA(q,p) Models: Discussion on different forms and invertibility with practical examples.

6. VAR Models: Detailed look at parameter estimation and forecasting techniques.

7. Artificial Neural Networks in Time Series Analysis: Application of neural networks to time series analysis, demonstrated through examples.

8. Random Walks and Fractal Characteristics of Time Series: Exploration of random walks and their fractal aspects in time series data.

### 2. Prerequisites

Students are expected to have a solid foundation in Linear Algebra, functions of several variables, differential calculus, and probability theory. Familiarity with linear regression and basic programming skills in languages such as R, Scilab, or Python are also recommended.

### 3. Practical information

This is a 4-week course, typically involving six hours of lecture each week.

### 4. Bilbiography

Gerard J. van den Berg, Maarten Lindeboom and France Portrait (2006) : « Economic - Kennedy, "A Guide to Econometrics"

Jeffrey Wooldridge, "Introductory Econometrics: A Modern Approach"

William H. Greene, "Econometric Analysis"

# *Mathematics 1*

**Lecturer :** Bertrand Rémy, bertrand.remy@ens-lyon.fr
**Course** of Master 1 – 1st semester, 2024-2025

### 1. Overview

This course will be dealing with optimization in various guises.

The notions of convexity and coercivity will be introduced, extending the already studied topological criteria for existence of extrema involving continuity and compactness.

The general subject matter of the first main part will essentially be static optimization, that is optimizing values of numerical functions submitted to equality constraints (Lagrange multipliers theorem) and to inequality constraints (Karush-Kuhn-Tucker theorem).

The general subject matter of the second main part will be an introduction to dynamic optimization, in particular basics of calculus of variations, Euler-Lagrange equations…

### 2. Prerequisites

It is assumed that the basics of topology and differential calculus have already been considered (compactness, achieved extrema for continuous functions, $1^{st}$ and $2^{nd}$ order differentials, quadratic forms material in relation with differential calculus, $1^{st}$ and $2^{nd}$ order necessary conditions for local extrema, $2^{nd}$ order sufficient condition for local extrema)

### 3. Practical information

This is a 8 week-course, typically with one 3 hours lecture each week.

### 4. Bilbiography

Essential Mathematics for Economic Analysis (fifth edition)
Knut Sydsater, Peter Hammond, Arne Strøm & Andrés Carvajal

Further Mathematics for Economic Analysis (second edition)
Knut Sydsater, Peter Hammond, Atle Seierstad & Arne Strøm

Further Mathematics for Economic Analysis – Student's Manual (second edition)
Knut Sydsater, Peter Hammond, Atle Seierstad & Arne Strøm

# *Introduction au droit public interne*

**Enseignant :** Pr. David Mongoin
**Cours de Master 1** – 1ᵉʳ semestre 2024-2025

### 1. Description

Ce cours de 12 séances, dont la dernière est consacrée à une évaluation écrite, a pour objet de présenter le droit public français dans ses deux branches principales : le droit constitutionnel et le droit administratif. Plus précisément, il s'agira de présenter les systèmes juridique, institutionnel et juridictionnel français en insistant sur la naissance et l'évolution des grandes notions fondamentales du droit public : la souveraineté, le régime représentatif, la loi, la séparation des pouvoirs, la justice administrative, etc. En résumé, ce cours a pour objet d'aider à mieux connaître le droit public français et à donner des éléments permettant de forger son opinion personnelle sur des questions fondamentales qui traversent la société française contemporaine : les rapports entre l'État de droit et la démocratie, la question de la laïcité ou encore le « gouvernement des juges ».

### 2. Prérequis

Aucun prérequis n'est exigé, sinon une réelle curiosité envers le droit en général et le droit public en particulier.

### 3. Information pratique

Le cours sera dispensé au premier semestre chaque lundi de 16h à 18h pendant 12 séances. L'évaluation de ce cours se composera de deux notes : une note portera sur une présentation orale en dix minutes d'une question d'actualité sur le droit public ; une note portera sur une interrogation écrite sur des questions de cours (dernière séance).

### 4. Bibliographie indicative

Bernard Manin, *Principes du gouvernement représentatif*, Champs, coll. « Champs essais », 2019.

Aurélie Duffy, Idris Fassassi, Gilles Guglielmi, Élisabeth Zoller, *Introduction au droit public*, Dalloz, coll. « Précis », 2022.

Pierre Avril, *La Vᵉᵐᵉ République. Histoire politique et constitutionnelle*, PUF, coll. « Droit fondamental », 1994.

Denis Baranger, *Le droit constitutionnel*, Paris, PUF, coll. « Que sais-je ? », 2023.

Guy Carcassonne, avec la collaboration de Marc Guillaume, *La Constitution*, préface de Georges Vedel, Paris, Éditions du Seuil, coll. « Points Essais », 2023.

Le texte de la Constitution du 4 octobre 1958 :http://www.conseil-constitutionnel.fr/conseil-constitutionnel/francais/la-constitution/la-constitution-du-4-octobre-1958/la-constitution-du-4-octobre-1958.5071.html

## *Microeconomics 2*

**Lecturer :** Sinan Sarpca, sinan.sarpca@ens-lyon.fr
**Course** of Master 1 – 2$^{nd}$ semester, 2024-2025

### Overview

This course provides a formal discussion of several types of market failures. In the first half of the course our focus will be on market equilibrium with public goods and externalities. We will review the motives and mechanisms to improve the equilibrium, and restore efficiency when possible. The second half will discuss equilibrium under information asymmetries and also review some mechanisms that aim to deal with inefficiencies resulting from moral hazard and adverse selection.

### Practical information

Grading will be based on a final exam (80%) and also on class participation, pop quizzes, homework problems, and a midterm exam (total of which will count for 20%).

### Prerequisites

A good understanding of microeconomic theory (as in Microeconomics L3 or similar). A good command of multivariate calculus is necessary.

### Course Outline

PART 1:

An Introduction
Microeconomic Foundations
- Competitive equilibrium
- Fundamental theorems of welfare economics

References: My lecture notes

Externalities
- Inefficiency of the competitive outcome
- Traditional solutions to the externality problem
- Quotas and Taxes
- Bargaining
- Missing Markets

References: My lecture notes, Mas-Colell et.al Ch 15, Hindriks and Myles Ch 8

Public Goods

- Conditions for Optimality
- Inefficiency of Private Provision
- Lindahl equilibrium

References: My lecture notes, Mas-Colell et.al Ch 15, Hindriks and Myles Ch 6

PART 2:

An Introduction to the Economics of Information and Incentives
- Elements of the principal-agent problem
- Symmetric information contracts
- Moral Hazard problem

References: My lecture notes, Macho-Stadler and Perez-Castrillo, Chapters 1,2,3

An introduction to the Adverse Selection Problem
References: My lecture notes, Macho-Stadler and Perez-Castrillo, Chapter 4

**Bibliography**

Hindriks, J. and Myles, G. (2013) Intermediate Public Economics, The MIT Press.

Macho-Stadler, I. and Perez-Castrillo, D. (2001) An Introduction to the Economics of Information: Incentives and Contracts, Oxford University Press

Mas-Colell, A., Whinston, M.D., and Green, J.R. (1995) Microeconomic Theory, Oxford University Press

## *Econometrics 3*

**Lecturer :** Alexandre Verlet, alexandre.verlet@ens-lyon.fr
**Course** of Master 1 – 1st semester, 2024-2025

### 1. Overview

This class aims to equip students with the main econometric tools they need to answer their own causal research questions: random experiments, difference-in-differences, regression discontinuity, and instrumental variables. It will also provide intuitions and examples of other non-canonical strategies that have recently emerged in the literature.

### 2. Prerequisites

The course ECO-4104 Econometrics 1 is required. In addition, students must be comfortable with OLS regression and probability theory.

### 3. Practical information

This is an 8 week-course, typically with one 3 hours lecture each week. Practical sessions will require an active license and basic knowledge of Stata.

### 4. Bibliography

**Econometric Analysis of Cross Section and Panel Data**, Wooldridge 2010
**Davidson and MacKinnon's Econometric Theory and Methods**, MacKinnon and Davidson
**Mostly Harmless Econometrics**, Angrist and Pischke 2008
**Causal Inference: The Mixtape,** Cunningham 2021

## *Mathematics 2*

**Lecturer :** Eric Thierry, eric.thierry@ens-lyon.fr
**Course** of Master 1 – 2nd semester, 2024-2025

### 1. Overview

This computer science is intended for students wishing to learn or improve their programming skills. The programming language chosen will be Python, a language widely used both in teaching for its ease of access and in the professional world for its wide range of applications. In addition to learning Python syntax and creating small programs, this course will be an opportunity to discuss good programming practices, to try out algorithm design and analysis, and to learn how to use classic libraries of programs such as Matplotlib for data visualization, Pandas for data manipulation, or Scipy for scientific computation (related to the content of mathematics teaching). This course will also be an opportunity to experiment with mathematical tools, such as linear algebra or differential calculus, and to discuss a little about the use of AI for coding.

### 2. Prerequisites

No programming prerequisite. Some exercises may refer to mathematical notions studied in previous courses (e.g. Mathematics 1) like linear algebra or differential calculus.

### 3. Practical information

This course comprises 8 sessions, with one 3-hour session (lecture & tutorial) per week, and ends with a 3-hour exam. Each session will include a practical coding tutorial. Therefore students will be asked to bring or share some device, like a laptop, where they can code in Python.

### 4. Bibliography

All the necessary educational material will be provided. The course will not require a particular textbook. But of course you can find many textbooks and online tutorials or apps teaching Python. Here are a few examples.

**Textbooks:**

- "*Python for kids*" by Jason R. Briggs ("Python pour les kids" en version française), for an easy introduction to Python if you are completely new to programming.

- *"Think Python. How to think like a computer scientist"* by Allen B. Downey, for a progressive introduction to Python (only core Python, it does not introduce the classical additional libraries). Free download on https://greenteapress.com/wp/think-python-2e/

- *"Python for Data Analysis"* by Wes McKinney, for an introduction to data science with Python including the use of classical libraries like numpy, matplotlib, pandas (requires basic knowledge of Python).

- *"Hands-On Machine Learning with Scikit-Learn, Keras, and Tensorflow"* by Aurélien Géron, for a huge reference on Machine Learning with Python (requires basic knowledge of Python).

**Online references:**

- Openclassrooms: https://openclassrooms.com/ (search for "Python" to get a list of courses ranging from beginner to expert)

- SoloLearn: https://www.sololearn.com/ (free app for beginners)

- Python Reference Site: https://www.python.org/ (with the latest documentation)

## *Economic Geography*

**Lecturer :** Pierre-Philippe COMBES

**Course** of Master 1 – 1st semester, 2024-2025

### 1. Overview

The first part of the course is devoted to the economic mechanisms that shape the within- and between city spatial organisation. This will typically answer the following questions.

Why do cities exist and induce an uneven spatial distribution of income and of land and commodity prices? How can cities of different size co-exist within integrated economic areas? What does shape the city internal structure, in terms of housing types and income segregation? What is the impact of people and goods mobility on spatial concentration? What is the role of local public policies and of land use regulation on spatial disparities?

The second part of the course moves to the empirical studies that evaluate the gains and costs from agglomeration. A special emphasis is put on the impact on spatial disparities of individual location choices made by workers that are heterogeneous in skills. The balance between income gains and costs of living is studied, typically assessing whether cities are too large or too small. Studies about the value of consumption amenities (restaurants, cultural life, climate,…) will be presented too.

### 2. Prerequisites

Microeconomics under perfect and imperfect competition (Micro I and II).

Basics of applied econometrics (including panel approaches and notions of instrumentation)

### 3. Practical information

Slides are circulated before the lectures such that students can concentrate on the course and participate through questions.

Work from one week to the other consists in carefully re-reading the slides and asking further clarification at the next course if needed. Extra readings will be suggested too.

The exam has two parts that will enter with equal weights in the overall grade. A two-hour in-class essay will have to explain and criticise under the light of the course a newspaper article about an urban issue in a developed or a developing country. The second part will consist in a critical reading of a research article

### 4. Bilbiography

**Preliminary list of references:**

*Chapter 1*

- Combes, P.-P., T. Mayer, and J.-F. Thisse, 2008. Economic Geography (ch. 1 and 2), Princeton University Press.

- McMillen, D. and J. McDonald, 2011. Urban Economics and Real Estate; Theory and Policy (ch. 1 and 2), 2nd ed. Wiley.

- O'Sullivan, A., 2012. Urban Economics (ch. 1 and 2), 8th ed. McGraw-Hill.

*Chapter 2*

- Brueckner, J., 2011. Lectures on Urban Economics (ch. 1), MIT Press.

- Combes, P.-P., T. Mayer, and J.-F. Thisse, 2008. Economic Geography (ch. 2), Princeton University Press.

- Duranton, G., Puga, D., 2004. Micro-foundations of urban agglomeration economies. In: Henderson, V., Thisse, F. (Eds.), Handbook of Regional and Urban Economics, vol. 4. North-Holland, Amsterdam, pp. 2063–2117.

*Chapter 3*

- Fujita, M., 1990. Urban Economic Theory: Land Use and City Size (ch. 2, 3, 4), Cambridge University Press.

- Fujita, M. and J.-F. Thisse, Jacques-François. Economics of Agglomeration: Cities, Industrial Location, and Globalization. Cambridge University Press, Cambridge, 2013.

*Chapter 4*

- Combes, P.-P., G. Duranton, and H. Overman, 2005. Agglomeration and the adjustment of the spatial economy, Papers in Regional Science, 84(3), 311-349.

- Moretti, E. (2011). Local labour markets. In O. Ashenfelter & D. Card (eds.), Handbook of Labor Economics4.

- Combes, P.-P., T. Mayer, and J.-F. Thisse, 2008 (chap. 6, 7, 8). Economic Geography, Princeton University Press.

*Chapter 5*

- Combes, P.P. and L. Gobillon, 2015. The empirics of agglomeration economies. In Duranton, Gilles, Henderson, Vernon, and Strange, Will, eds., Handbook of Urban and Regional Economics 5A. North-Holland, Amsterdam.

- Glaeser, E. L., and D. C. Maré. 2001. Cities and skills. Journal of Labor Economics 19:316–42.

- Jaffe, A. B. (1989). Real effects of academic research, American Economic Review 79(5): 957-970.

- Jaffe, A. B., Trajtenberg, M. and Henderson, R. (1993). Geographic localization of knowledge spillovers as evidenced by patent citations, Quarterly Journal of Economics 108(3): 577-598.

*Chapter 6*

- Albouy, D., 2008. Are big cities really bad places to live? Improving quality-of-life estimates across cities. Working Paper 14472, National Bureau of Economic Research.

- Combes, P-P., Duranton, G., Gobillon, L., 2019. The Costs of Agglomeration: House and Land Prices in French Cities, Review of Economic Studies, forthcoming.

- Handbury, J.. Are poor cities cheap for everyone? Non-homotheticity and the cost of living across US cities, 2013. Mimeograph, Wharton University.

- Handbury, J. and D. Weinstein, 2015. Goods prices and availability in cities. Review of Economic Studies, 82(1): 258-296.

- Moretti, E., 2013. Real wage inequality, American Economic Journal: Applied Economics 5(1): 65-103.

# ENS - European and international public law

**Associated Professor :** Christine FERRARI-BREEUR
**Course** of Master 1 – 2nd semester, 2024-2025

## 1. Overview

The course presents international and EU law and their relationship to French law.

The actors involved in shaping these laws will be enumerated. The results will then be detailed, i.e. the sources of international law (mainly treaties) and above all the sources of EU law. Finally, the relationship between French law and these two legal orders will be explained.

This course will provide an opportunity to explain the workings of the EU and some of its policies, and to consider current issues concerning its future.

## 2. Practical information

This is a week-course, typically with one 2 hours lecture each week.

## 3. Bilbiography

- ALLEN Stephen, International Law, LawExpress, Pearson, 4th edition, 259p
- BANTEKAS Ilias and PAPASTAVRIDIS Efthymios, Concentrate International Law, Oxford, 5th edition, 232p
- GUTH Jessica, EU Law, Pearson, LawExpress Q&A, 5th edition, 270p
- HOMEWOOD Matthew and SMITH Clare, Concentrate EU Law, Oxford, 8th edition, 240p
- LESCOT Christophe, Organisations européennes, coll. Paradigme, Larcier, 25eme éd, 428p


- Pour le texte (en anglais) des traités UE : https://eur-lex.europa.eu/collection/eu-law/treaties/treaties-force.html#new-2-51
- Pour le texte (en anglais) de la Convention européenne des droits de l'homme (et ses protocoles) : https://www.echr.coe.int/documents/d/echr/convention_ENG

# *Information Economics*

**Lecturer :** Elisa Mougin, elisa.mougin@ens-lyon.fr
Course of Master 2 – 2st semester, 2024-2025

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### 1. Overview

Welcome to the graduate-level course in Information Economics. In this course, we will embark on a comprehensive exploration of economic theories related to information and its applications. Understanding the vital role of information in economic decision-making is crucial for researchers and policymakers alike. Therefore, this course is tailored to equip you with the analytical tools necessary to navigate the complexities of information economics.

The first part of the course covers the theoretical approach to information and how economic models integrate it, better accounting for economic phenomena based on incomplete information or unbalanced preferences. The second part of the course deals with the market for news and the sector of information production. It will discuss the political economy of information and spend some time on current topics such as information in the digital age, trust, and false information.

This course is designed to provide a solid foundation and enhance your ability to apply these concepts in practical settings. Class sessions will be interactive and dynamic, encouraging active participation. You will be asked to analyze tables, interpret equations, and engage in meaningful discussions in class.

### 2. Prerequisites

Prerequisites for this course include a robust background in applied microeconomics, econometrics, and evaluation techniques at the graduate level.

### 3. Practical information

This is a 24 hour-course, typically with one or two 3 hours lecture each week. The detailed agenda is available on the course page on the *Portail des Etudes*.

A list of readings will be provided at the beginning of the course. For each class, there will be one mandatory reading to prepare, along with a short list of recommended readings for those who wish to explore the topic further.

### 4. Bibliography

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of economic perspectives*, *31*(2), 211-236.

Berry, S. T., & Waldfogel, J. (2001). Do mergers increase product variety? Evidence from radio broadcasting. *The Quarterly Journal of Economics*, *116*(3), 1009-1025.

Birchler, U., & Bütler, M. (1999). *Information economics*. Routledge.

Cagé, J., & Huet, B. (2021). *L'information est un bien public: refonder la propriété des médias*. Seuil.

George, L. M., & Waldfogel, J. (2006). The New York Times and the market for local newspapers. *American Economic Review*, *96*(1), 435-447.

Hamilton, J. (2016). *Democracy's detectives: The economics of investigative journalism*. Harvard University Press.
Webster, J. G. (2014). *The marketplace of attention: How audiences take shape in a digital age*. Mit Press.

Strömberg, D. (2004). Radio's impact on public spending. *The Quarterly Journal of Economics*, *119*(1), 189-221.

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# Topics in Economic History

ECO-5002, spring 2025
Tuesday, 8:30-11:30, room D2-108
Thursday, 8:30-11:30, room D2-112

## Course description

This graduate-level course offers an introduction to quantitative economic history, and involves the study of a broad-ranging theme, occasionally drawing on insights from other disciplines such as political science, history, and paleoclimatology. Topics include the impact of shocks on past societies, social conflict, the role of institutions and state-building in economic development, the various effects of wars, and the short- and long-run consequences of enfranchisement and political repression. Much of these topics are intertwined in the lecture and readings.

The course relies on a mix of lectures, student presentations, and replication exercises to foster a practical and participatory learning experience. Through this approach, students gain both theoretical knowledge and practical skills in quantitative economic history research.

## Pre-requisites

The course builds on and extends previous and concurrent courses in applied economics in the MSc program. Familiarity with contents of these courses is assumed. It includes a working knowledge of how to apply economic models in context and how to select and use appropriate econometric tools to test the theory. Familiarity with the content of other economic history courses are a plus, but not compulsory. Students should also have working knowledge of statistical packages such as Python,

R, or Stata.

## ECTS credits

Upon successful completion of this course, students will receive 4 ECTS credits.[1]

## Course objectives

By the end of this course, students should be able to:

- develop an understanding of the history of the field of economic history;

- critically evaluate (primary) sources in the process of assembling a dataset;

- apply economic theory to historical data and devise (or judge) valid empirical strategies.

Students should also gain proficiency in:

- making individual and group presentations;

- writing an informative article review (referee report);

- using statistical software for economic history research;

- devising an essay topic supported by an appropriate bibliography.

## Course structure

The course is organised in 8 sessions of 3 hours. Each class is devoted to discussion of a particular topic. The first hour of the class will be a lecture led by the instructor. The second hour of the class will be a discussion on the readings led by students. The last hour will be devoted to working on a replication study. Active class participation is vital. It is expected that students will have done all of the readings in advance of the class.

Attendance to all sessions is compulsory. Repeated absences without motive sent prior to the session are penalised (10 % downgrade on the final GPA).

## Assessment

There is no final exam. Instead, the grading breakdown is as follows:

      In-class presentation    40 %

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[1] Following the European Credit Transfer and Accumulation System (ECTS), 1 ECTS credit is the equivalent of approximately 25-30 hours of study.

| In-class referee report | 20 % |
| Term Paper | 40 % |

*In-class presentation*

Students should present a paper like if they were the authors at a conference. Presentation should last no longer than 25 minutes. In general, presentations should contain the main contributions of the paper; a short discussion of the literature; a description of the data and the empirical (identification) strategy; and an overview of the results (and if pertinent a discussion of the plausible mechanisms at stake).

*In-class referee report*

Students should act as reviewers and discuss the strengths and weaknesses of the paper for no more than 10 min. More information will be given during Class 1. Broadly speaking, the discussion should follow the usual guidelines for writing referee report. In particular, it should at least:

- summarise the method and main contribution;

- discuss how the author's findings fit into the existing literature;

- evaluate the range of sources/data used and their pertinence to answer to the research question;

- assess the empirical strategy and its relevance to answer to the research question.

*Term Paper*

The term paper for this course is a joint assignment with **Information Economics** (ECO-5001) taught by Élisa Mougin. Students are required to write a referee report on a working paper that has not been discussed in class, and a research proposal. They can choose to write the research proposal for either ECO-5001 or ECO-5002. Accordingly, they will write a referee report for the other course.[2] Students should inform instructors about their choice no later than 16 February 2025.

The purpose of the term paper is to mimic the process of designing and writing an academic article. It should take the form of a research proposal on any topic of student's willing as long as it pertains economic history. The only requirement is that the topic must genuinely involve the past. Identifying a promising research topic is arguably the most difficult part of this requirement. However, your entire career as a researcher will revolve around identifying interesting questions so this is a very

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[2] Students electing to write a referee report should follow the guidelines provided in Berk et al. (2017).

formative exercise. Students may choose to work on a topic related to their master's dissertation, but the requirements will be raised accordingly.

The goal of this exercise is to apply economic reasoning to some historical events, and search for causality between two or more phenomena. The proposal must have historical substance to back up the research hypothesis. In particular, the research proposal should:

- consider a specific research question that speaks to issues identified in the literature;

- provide a concise review of existing theory and research on the topic;

- clearly state why and how the historical settings can help to extend, revise, and/or challenge existing results in the literature;[3]

- offer some hints (hypothetical findings) of what the results of their empirical strategy might be.

There is no formal page-limit for the research proposal, but it is expected that documents will be no longer than 5-15 pages, including figures, tables, and references [a4 format, police size 12, margins 2.54 cm, line spacing 1.5]. The term paper is due on 16 March 2025.

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[3] Additional points will be granted if students effectively identify historical sources and/or data that allows them to implement their empirical strategy.

# Course Outline

This is a tentative schedule and is subject to change at any time.

### Session 1: Introduction

*Topic*     Overview of the course objectives, structure, and requirements. Mapping the landscape of quantitative economic history

**Readings**
*Assigned*     none

### Session 2: Shocks

*Topic*     Historical responses to external shocks with a focus on famine, epidemics, and conflicts

**Readings**
*Assigned*     none

### Session 3: State-building

*Topic*     State-building as a catalyst for economic development

**Readings**
*Assigned*     Chiovelli, Giorgio et al. (2023). *Bourbon Reforms and State Capacity in the Spanish Empire*. CAGE working paper no. 673. Competitive Advantage in the Global Economy. DOI: 10.2139/ssrn.4545407

*Recommended*     Chambru, Cédric et al. (2024). 'The Dynamic Consequences of State-Building: Evidence from the French Revolution'. *American Economic Review* 11, pp. –. DOI: 10.1257/aer.2022011

*Additional*     Besley and Persson (2010), Guardado (2022), Lax-Martinez et al. (2022)

### Session 4: Social instability, reforms and regime changes

*Topic*　　　　　Focus on actors and policies during unstable and revolutionary periods

**Readings**

*Assigned*　　　Jha, Saumitra and Steven Wilkinson (2023). *Revolutionary Contagion*. Stanford GSB Research Paper 4084. DOI: 10.2139/ssrn.4406390

*Recommended*　Garfias, Francisco and Emily A. Sellars (2022). 'When State Building Backfires: Elite Coordination and Popular Grievance in Rebellion'. *American Journal of Political Science* 66, pp. 977–992. DOI: 10.1111/ajps.12611

*Additional*　　Besley, Burgess et al. (2022), Spenkuch et al. (2023)

### Session 5: The American Civil War

*Topic*　　　　　Leverage the American Civil War to study how ideas propagate

**Readings**

*Assigned*　　　Petroff, Casey (2023). *Mobilizing the Home Front: War and Women's Political Activism*. Working Paper

*Recommended*　Dippel, Christian and Stephan Heblich (2021). 'Leadership in Social Movements: Evidence from the "Forty-Eighters" in the Civil War'. *American Economic Review* 111.2, pp. 472–505. DOI: 10.1257/aer.20191137

*Additional*　　Bazzi et al. (2023), Esposito et al. (2023)

### Session 6: Repression in the East

*Topic*　　　　　Dig into different forms of repression to study the effect of exposure to violence, famine and spying on short-run individual outcomes and persistence across generations

**Readings**

*Assigned*      Brey, Bjorn et al. (2024). *The Inter-generational Transmission of Experiences: The Great Famine and Contemporary Attitudes*. Working Paper

*Recommended*   Lichter, Andreas et al. (2021). 'The Long-Term Costs of Government Surveillance: Insights from Stasi Spying in East Germany'. *Journal of the European Economic Association* 19.2, pp. 741–789. DOI: `10.1093/jeea/jvaa009`

*Additional*     Kapelko and Markevich (2014), Miho et al. (2024), Nikolova et al. (2022)

**Session 7: World Wars**

*Topic*         Explore the impact of World War I and World War II on women and families

**Readings**

*Assigned*      Arnsbarger, Madison (2024). *The Political Economy of Women's Suffrage and World War I*. Working Paper

*Recommended*   Gay, Victor (2023). 'The Intergenerational Transmission of World War I on Female Labour'. *The Economic Journal* 133.654, pp. 2303–2333. DOI: `10.1093/ej/uead029`

*Additional*     Brainerd (2017), Gay and Boehnke (2021)

**Session 8: Enfranchisement**

*Topic*         Study the consequences of obtaining the right to vote in the private and political spheres

**Readings**

*Assigned*      Bernini, Andrea et al. (2023). *Black Empowerment and White Mobilization: The Effects of the Voting Rights Act*. Working Paper No 31425. National Bureau of Economic Research. DOI: `10.3386/w31425`

*Recommended*   Slotwinski, Michaela and Alois Stutzer (2023). 'Women Leaving the Playpen: the Emancipating Role of Female Suffrage'. *The Economic Journal* 133.650, pp. 812–844. DOI: `10.1093/ej/ueac077`

*Additional*     Biavaschi and Facchini (2020), Facchini et al. (2020), Kose et al. (2021)

# References

Arnsbarger, Madison (2024). *The Political Economy of Women's Suffrage and World War I*. Working Paper.

Bazzi, Samuel, Andreas Ferrara, Martin Fiszbein, Thomas P. Pearson and Patrick A. Testa (2023). *The Confederate Diaspora*. Working Paper No 31331. National Bureau of Economic Research. DOI: `10.3386/w31331`.

Berk, Jonathan B., R. Harvey Campbell and David Hirshleifer (2017). 'How to Write an Effective Referee Report and Improve the Scientific Review Process'. *Journal of Economic Perspectives*, 31.1, pp. 231–244. DOI: `10.1257/jep.31.1.231`.

Bernini, Andrea, Giovanni Facchini, Marco Tabellini and Cecilia Testa (2023). *Black Empowerment and White Mobilization: The Effects of the Voting Rights Act*. Working Paper No 31425. National Bureau of Economic Research. DOI: `10.3386/w31425`.

Besley, Timothy, Robin Burgess, Adnan Khan and Guo Xu (2022). 'Bureaucracy and Development'. *Annual Review of Economics* 14, pp. 397–424. DOI: `10.1146/annurev-economics-080521-011950`.

Besley, Timothy and Torsten Persson (2010). 'State Capacity, Conflict, and Development'. *Econometrica* 78.1, pp. 1–34. DOI: `10.3982/ECTA8073`.

Biavaschi, Costanza and Giovanni Facchini (2020). *Immigrant Franchise and Immigration Policy: Evidence from the Progressive Era*. CEPR Discussion Paper No 14684. Centre for Economic Policy Research.

Brainerd, Elizabeth (2017). 'The Lasting Effect of Sex Ratio Imbalance on Marriage and Family: Evidence from World War II in Russia'. *The Review of Economics and Statistics* 99.2, pp. 229–242. DOI: `10.1162/REST_a_00649`.

Brey, Bjorn, Joanne Haddad and Lamis Kattan (2024). *The Inter-generational Transmission of Experiences: The Great Famine and Contemporary Attitudes*. Working Paper.

Chambru, Cédric, Emeric Henry and Benjamin Marx (2024). 'The Dynamic Consequences of State-Building: Evidence from the French Revolution'. *American Economic Review* 11, pp. –. DOI: `10.1257/aer.2022011`.

Chiovelli, Giorgio, Leopoldo Fergusson, Luis R. Martinez, Juan David Torres and Felipe Valencia Caicedo (2023). *Bourbon Reforms and State Capacity in the Spanish Empire*. CAGE working paper no. 673. Competitive Advantage in the Global Economy. DOI: `10.2139/ssrn.4545407`.

Dippel, Christian and Stephan Heblich (2021). 'Leadership in Social Movements: Evidence from the "Forty-Eighters" in the Civil War'. *American Economic Review* 111.2, pp. 472–505. DOI: `10.1257/aer.20191137`.

Esposito, Elena, Tiziano Rotesi, Alessandro Saia and Mathias Thoenig (2023). 'Reconciliation Narratives: The Birth of a Nation after the US Civil War'. *American Economic Review* 113.6, pp. 1461–1504. DOI: `10.1257/aer.2021041`.

Facchini, Giovanni, Brian G. Marco Knight and Cecilia Testa (2020). *The Franchise, Policing, and Race: Evidence from Arrests Data and the Voting Rights Act*. Working Paper No 27463. National Bureau of Economic Research. DOI: `10.3386/w27463`.

Garfias, Francisco and Emily A. Sellars (2022). 'When State Building Backfires: Elite Coordination and Popular Grievance in Rebellion'. *American Journal of Political Science* 66, pp. 977–992. DOI: `10.1111/ajps.12611`.

Gay, Victor (2023). 'The Intergenerational Transmission of World War I on Female Labour'. *The Economic Journal* 133.654, pp. 2303–2333. DOI: `10.1093/ej/uead029`.

Gay, Victor and Jörn Boehnke (2021). 'The Missing Men. World War I and Female Labor Force Participation'. *The Journal of Human Resources* 57.4, pp. 1209–1241. DOI: `10.3368/jhr.57.4.0419-10151R1`.

Guardado, Jenny (2022). 'Hierarchical Oversight and the Value of Public Office: Evidence from Colonial Peru'. *The Journal of Politics* 84, pp. 1353–1369. DOI: 10.1086/717757.

Jha, Saumitra and Steven Wilkinson (2023). *Revolutionary Contagion*. Stanford GSB Research Paper 4084. DOI: 10.2139/ssrn.4406390.

Kapelko, Natalia and Andrei Markevich (2014). *The Political Legacy of the Gulag Archipelago*. Working Paper. DOI: 10.2139/ssrn.2516635.

Kose, Esra, Elira Kuka and Na'ama Shenhav (2021). 'Women's Suffrage and Children's Education'. *American Economic Journal: Economic Policy* 13.3, pp. 374–405. DOI: 10.1257/pol.20180677.

Lax-Martinez, Gema, Dominic Rohner and Alessandro Saia (2022). 'Threat of Taxation, Stagnation and Social Unrest: Evidence from 19th Century Sicily'. *Journal of Economic Behavior & Organization* 202, pp. 361–371. DOI: 10.1016/j.jebo.2022.08.007.

Lichter, Andreas, Max Löffler and Sebastian Siegloch (2021). 'The Long-Term Costs of Government Surveillance: Insights from Stasi Spying in East Germany'. *Journal of the European Economic Association* 19.2, pp. 741–789. DOI: 10.1093/jeea/jvaa009.

Miho, Antonela, Alexandra Jarotschkin and Ekaterina Zhuravskaya (2024). 'Diffusion of Gender Norms: Evidence from Stalin's Ethnic Deportations'. *Journal of the European Economic Association* 22.2, pp. 475–527. DOI: 10.1093/jeea/jvad040.

Nikolova, Milena, Olga Popova and Vladimir Otrachshenko (2022). 'Stalin and the Origins of Mistrust'. *Journal of Public Economics* 208.104629. DOI: 10.1016/j.jpubeco.2022.104629.

Petroff, Casey (2023). *Mobilizing the Home Front: War and Women's Political Activism*. Working Paper.

Slotwinski, Michaela and Alois Stutzer (2023). 'Women Leaving the Playpen: the Emancipating Role of Female Suffrage'. *The Economic Journal* 133.650, pp. 812–844. DOI: 10.1093/ej/ueac077.

Spenkuch, Jörg L., Edoardo Teso and Guo Xu (2023). 'Ideology and Performance in Public Organizations'. *Econometrica* 91.4, pp. 1171–1203. DOI: 10.3982/ECTA20355.

*Topics in Econometrics*

**Lecturer :** Vincent BAGILET [vincent.bagilet@ens-lyon.fr](mailto:vincent.bagilet@ens-lyon.fr) (4 first lectures) & Sarra GHADDAB [sarraghaddab@gmail.com](mailto:sarraghaddab@gmail.com)

**Course** of Master 2 - Semester 1, 2024-2025

## 1. Overview

The course "Topics in Econometrics" is divided into two distinct parts, each taught by a different lecturer.

The first part of this class (5 first lectures) will explore how to avoid some pitfalls commonly encountered in applied econometrics. In particular, we will delve into approaches to put design, modeling and identification hypotheses to a test. As such, simulations will constitute the cornerstone of this class as they allow easily identifying some design or modeling failures. This first part of the class will be heavily hands-on and R based. It will aim to provide you with tools to test by yourself the hypotheses you make in your own analyses. Through this exploration, we will also review most canonical identification strategies and their identification assumptions.

The second part (3 last lecures) explores the econometrics of qualitative variables. It covers models for discrete dependent variables, including the Linear Probability Model (LPM), Probit model, Logit model, Multinomial Logit, Conditional Logit, Ordered Probit, and Ordered Logit models. Additionally, it addresses models for corner solutions or censored dependent variables, specifically the Tobit model. Students will gain an understanding of the theoretical foundations, estimation techniques, and practical applications of these models. Through a combination of lectures, hands-on sessions using statistical software, case studies, and assignments, students will learn to estimate, interpret, and apply these models in empirical research.

## 2. Prerequisites

Prerequisites for this class include foundational knowledge in econometrics, statistical theory, causal inference, mathematics for economists, and familiarity with statistical software, in particular R and the Tidyverse.

## 3. Practical information

This course lasts 24 hours in total and will be jointly taught by Vincent Bagilet (16 hours) and Sarra Ghaddab (8 hours), with one 3-hour-lecture each week.

## 4. Bibliography

- Gelman, Andrew, Jennifer Hill, and Aki Vehtari. *Regression and Other Stories*. of *Analytical Methods for Social Research*. Cambridge University Press, 2020.
- Angrist, Joshua D. and Jorn-Stefen Prischke. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press, 2009.
- Scott Cunningham, *Causal Inference: The Mixtape,* Yale University Press, 2021.
- Hayashi, F. (2000): *Econometrics*, Princeton University Press, chapter 7.
- Wooldridge, J.M. (2002): *Econometric Analysis of Cross Section and Panel Data*, MIT Press, chapters 15, 16, 17.

# Topics in Microeconomics:
# Causes and Consequences of Residential Segregation

M2 Course - 2024-2025 2nd semester

ENS Lyon Department of Economics

Dionissi Aliprantis (dionissi.aliprantis@ens-lyon.fr)
Florence Goffette-Nagot (florence.goffette-nagot@cnrs.fr)

# 1   Overview

This course will present, both theoretically and empirically, economic analyses of the causes and consequences of residential segregation.

As an introduction, a few facts regarding racial and income segregation in the US and in France will be reviewed.

The first part of the course deals with the theoretical factors of spatial sorting within cities. The monocentric model with different transport costs and amenities is recalled briefly. Then the Tiebout model of voting with one's feet, Schelling's model with social preferences and the Rosen-Roback models are exposed. More recent models dealing with the interplay of these basic factors with some recent evolutions will then be considered, namely changes in labor demand by skills, and in the valuation of intra-urban amenities.

The second part will develop on the consequences of residential segregation. A first methodological part will discuss the challenges raised by the identification of neighborhood effects. Recent empirical analyses for the US will then be presented in details.

The last part of the course will consider how some housing policies may act against residential segregation, both in the US and in France.

# 2   Prerequisites

The course builds on previous courses in the Master program, in particular, Microeconomics 1 & 2, Econometrics 1-3 and Economic Geography. Familiarity with contents of these courses is assumed.

# 3   Practical information

This is a 18-hours course, with $2 \times 3$ hours lecture each week. Three of them will be given by each of the two lecturers

# 4   References

Couture, Victor, Cecile Gaubert, Jessie Handbury, and Erik Hurst. 2024. "Income Growth and the Distributional Effects of Urban Spatial Sorting." The Review of Economic Studies 91 (2): 858–98. https://doi.org/10.1093/restud/rdad048.

Couture, Victor, and Jessie Handbury. 2017. "Urban Revival in America, 2000 to 2010." w24084. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w24084.

Curci, Federico, and Hasin Yousaf. 2023. "Gentrification." In Handbook of Labor, Human Resources and Population Economics, edited by Klaus F. Zimmermann, 1–36. Springer International Publishing. https://doi.org/10.1007/978-3-319-57365-6_422-1.

Diamond, Rebecca. 2016. "The Determinants and Welfare Implications of US Workers' Diverging Location Choices by Skill: 1980–2000." American Economic Review 106 (3): 479–524. https://doi.org/10.1257/aer.20131706.

Diamond, Rebecca, and Cecile Gaubert. 2022. "Spatial Sorting and Inequality." Annual Review of Economics 14 (1): 795–819. https://doi.org/10.1146/annurev-economics-051420-110839.

Guerrieri, Veronica, Daniel Hartley, and Erik Hurst. 2013. "Endogenous Gentrification and Housing Price Dynamics." Journal of Public Economics 100:45–60. https://doi.org/10.1016/j.jpubeco.2013.02.001.

Hanlon, W.Walker, and Stephan Heblich. 2022. "History and Urban Economics." Regional Science and Urban Economics 94 (May):103751. https://doi.org/10.1016/j.regsciurbeco.2021.103751.

Lee, Sanghoon, and Jeffrey Lin. 2018. "Natural Amenities, Neighbourhood Dynamics, and Persistence in the Spatial Distribution of Income." The Review of Economic Studies 85 (1): 663–94. https://doi.org/10.1093/restud/rdx018.

# ECO5108
# APPLIED MACHINE LEARNING & DATA ANALYSIS

## SYLLABUS - MSC ADVANCED ECONOMICS - ENS LYON

### 2024/2025

## I  INSTRUCTORS

| Name | Email | Office |
|------|-------|--------|
| - Louise Inguere | louise.inguere@ens-lyon.fr | D4.007 |
| - Vincent Bagilet | vincent.bagilet@ens-lyon.fr | D4.018 |

## II  COURSE OBJECTIVES AND OVERVIEW

In nearly all aspects of the modern society, our daily worldwide data production reaches so extravagant volumes that an unprecedented milestone was recently crossed and start to be pointed out in the tech community. That is, nowadays more data is produced per second than what we could actually be able to objectively process.

Still, in parallel, the techniques to process high and complex volumes of data are evolving fast, and have started to propagate in all research domains. While talking about a 'revolution' seems quite melodramatic, these advances in data processing have permitted to consider new sources of data, encoded into high-dimensional structures - such as `images`, `spatial` or `textual` data - as inputs to address many important questions in social sciences. As a consequence, applied scientists have become increasingly interested in seizing the opportunity offered by Machine Learning techniques during the past decade. Indeed, transforming these data into simpler but meaningful representations before including them in their analysis have permitted to unlock previously unanswered viewpoints or applications.

Consequently, this course aims to provide you with the keys to get a satisfying understanding of the modern Machine Learning techniques' main principles and models. A specific focus will be directed towards introducing you to various tools and acquiring a strong practical experience. By experimenting on many data formats, the objective is that you can then fully consider using those to conduct original research projects in the future. To do so, lectures will span from a selected theoretical base to a fully practical approach using `Python`, providing you with intuitions and preventive alerts on the good practices and pitfalls of this field of study.

# III   Topics Covered

**Machine Learning Theory:**
— General mathematical concepts and history
— Main ML models overview
— Artificial Neural Networks and Deep Learning
— Optimization and evaluation techniques
— Comparative advantages and limits
— Insights on common errors and best practices
— *Examples of use-cases*

**Applications on Spatial Data:**
— Python general review
— Manipulating images, shapes, geo-referenced and temporal data
— *Python standard libraries:* handling and analyzing data
— *Python ML libraries*: processing, predicting, and evaluating
— *Introduction to Github:* package replication
— *GIS tools:* QGIS and Google Earth

**Applications on Textual Data:**
— Finding and wrangling text data
— Dictionary-based methods
— Topic Modeling
— Word Embeddings
— Deep learning methods



Figure 1 – Data sources illustrations. *Sources: Unsplash*

## IV  SCHEDULE

The course is composed of eight 3-hours sessions, each mixing theory and practice. The last session will be dedicated to the restitution of your final work, to collectively broaden your applications ideas and to encourage you in pursuing looking for new datasets and/or angles of analysis in the future.

|   | Date | Time | Object |
|---|------|------|--------|
| 1 | Monday Nov. 4 | *1pm - 4pm* | Introduction course |
| 2 | Wednesday Nov. 6 | *1pm - 4pm* | Main course 1 |
| 3 | Wednesday Nov. 13 | *1pm - 4pm* | Main course 2 |
| 4 | Monday Nov. 18 | *1pm - 4pm* | Main course 3 |
| 5 | Friday Nov. 22 | *1pm - 4pm* | Main course 4 |
| 6 | Wednesday Nov. 27 | *1pm - 4pm* | Main course 5 (text-specific) |
| 7 | Friday Nov. 29 | *1pm - 4pm* | Main course 6 (text-specific) |
| 8 | Monday Dec. 2 | *1pm - 4pm* | Final project |
| 9 | Monday Dec. 9 | *1pm - 4pm* | Final project restitution |

This schedule is also accessible via your Google Agenda. If any changes are made to the calendar, the Google Agenda will be updated consequently, and you will also receive a preventive notification by e-mail.

## V  PREREQUISITES

No specific knowledge is required to attend this class, except for the programming experience gained by having attended the various practical courses (using Stata, R, Python) which were part of the MSc program. In particular, this course can be seen as the continuity of the introduction to Python course, delivered in Master 1, hence familiarity with contents of this course is assumed.

If you did not attend those classes and you did not have any prior introduction to Python during your studies, please indicate it to the instructors during the first session, so that it is taken into consideration. However do not worry, the exercises have been organized with a very gradual difficulty so that everyone can learn at their own pace.

Some other programming experience is, of course, a plus and should let you dive deeper in the course's application exercises.

# VI  TECH RESOURCES

As each session will include practice, you should come to class with a computer with administrator rights and a working internet connection. For practical exercises and assignments, we will make use of **Jupyter notebooks**, a flexible format which supports code, formatted text and beautiful visual layouts.

To be able to write and execute notebooks, you may choose between the following options:

— **Recommended:** Install **Python** on your computer, by installing an **Anaconda** distribution (Python version 3.10 or above). You have the choice between the classic **Anaconda** full app, or the lighter alternative **Miniconda**, depending on the free space you have on your computer and your programming experience (see this guide for choosing between both). In any case, it provides access to all standard modules used for scientific computing and enables effective modules management, while letting you in control of what is saved on your computer.

Note that Anaconda already integrates a graphical interface and some programming environments (which is why it is heavier), whereas in addition to Miniconda you shall install a development environment of your choice that supports notebooks, such as **Visual Studio Code** or **JupyterLab**. VS Code supports a wide range of programming languages, making this software's installation profitable for any of your other programming projects. On the other hand, Jupyter is the native environment for notebooks. Both stand as good options.

— **Alternative:** Use the Google Colab remote environment (which requires a Google account). It offers an alternative as it does not necessitate to install anything on your laptop, however it has the drawbacks of not being in control of what is accessible to you, of requiring an internet access and also of being dependent of Google's policy.

In any case, installation issues will be addressed during the first session.

# VII  GRADING

You will be assessed on both your regular participation and on your final project:

— **Regular participation (40%):** During each class, engaging actively by participating in discussions and regular quizzes, along with fulfilling the minimal required parts of the practical exercises of each lesson will guarantee you the maximal grade for participation. Note that the quizzes answers are not evaluated, they are used as inclusive learning tools rather than tests in this course. The exercises (Jupyter notebooks to be completed) have to be fulfilled individually. You will have to submit them on the course's deposit within the allocated time, which is before the next session, i.e. you have until midnight of the previous day before next class. This allows you to either finish and drop it directly during the current class or to take your time to finish it throughout the week.

— **Final project (60%):** At the end of the course's cycle, you will have to conduct a final application project by groups of two. Each group will select both a research question and an original data source, and will have to put into practice all aspects of what was learned during the course to extract, process, predict, evaluate and analyze the chosen data. The 3-hours session of Monday, December 2nd is fully dedicated to starting the programming part of this final project with the assistance of the instructors. Then, you will have time to finish your code and analysis as a homework, before submitting your work on the course's deposit. Finally, the last session will consist of a short presentation from each group to describe its data and analysis, accompanied with a discussion on the applications of each methodology.

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# *Experimental Economics*

## **Syllabus**

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Fall 2024

# 1    Basic Information

## 1.1    Contacts

Teacher: Fabio Galeotti
Researcher, CNRS
office:              -
office hours:    after lecture/by appointment
e-mail:            [fabio.galeotti@cnrs.fr](mailto:fabio.galeotti@cnrs.fr)

## 1.2    Set-up

The module will be taught by means of a weekly 6-hour lecture/tutorial for a duration of 4 weeks.

## 1.3    Prerequisites

The module assumes that students have reasonable prior working knowledge of microeconomic theory, (especially decision-making under risk and uncertainty, and game theory), and econometrics. There are linkages between this module and Microeconomics I, Microeconomics II, and Econometrics; the game theory component Microeconomics I and II is especially useful to get the most out of this module.

# 2    Course Overview

## 2.1    Content

The course provides an introduction to the experimental methods used in economics to study behavior under controlled conditions. It is divided into two parts. The first part considers the rationale for experimentation in economics; it examines several of the ways in which experiments have been used; and it seeks to appraise the contribution experiments have made, and can be expected to make, in a variety of areas of economics, such as individual decision making, markets, coordination, negotiation, charitable giving, public goods games, social preferences, and lying behavior.

The second part concerns experimental methods, and focuses on how to design an experiment. Students will learn how to formulate their own behavioral research questions and hypotheses, and develop an experimental design for collecting and analyzing data.

## 2.2    Goal, Approach, and Learning Outcomes

The course provides graduate research training in experimental economics, and is useful either for students wishing to become academic economists or for students wishing to develop a career in a wide range of fields where knowledge of behavioral or experimental economics can prove useful, such as teaching, finance, banking, business, consulting and government.

The course also promotes the following transferable skills which are essential for any graduate job: oral and written communication skills (by presenting and writing a critical review of cutting-edge work in experimental economics), critical thinking skills (by critically reading, discussing, and summarizing breakthrough work in experimental economics), analytical skills (by assessing the analysis of experimental papers), and research skills (by identifying a research question and designing a research experiment).

Upon completion of the course, we expect students to be:

• Familiar with some of the major areas of research in experimental economics;

• Able to understand, critically assess and analyze experimental papers;

• Able to understand some of the strengths and limitations of experiments in economics;

• Able to sketch the design of a simple research experiment in economics.

The teaching approach is research-led. Each week, the lecture focuses on a few 'key readings' which all students should have read in advance. Students are asked to open the discussion with a brief critical summary of one of these key readings, followed by questions by the other students. As a part of the course assessment, each student is required to develop a project concerning the design of a research experiment. Students will receive a one-to-one guidance on the project throughout the course. Finally, students will learn about the experimental methods and facilities used by the researchers at the Groupe d'Analyse et de Théorie Economique (GATE), and be invited to attend workshops and seminars in experimental economics organized by GATE.

## 2.3    Lectures and tutorials

The first part of the course provides an overview of the main areas of experimentation in economics, discussing the main contribution experiments have made. The second part focuses on experimental methods, from the design of an experiment to the main techniques used to analyze experimental data.

Every week, a student or a group of students will introduce the topic covered in the lecture by giving a brief critical summary of a key reading of their own choice (no presentations in week 1). Failing to present will result in a grade of 0 for that assignment.

For the project, each student will have to formulate an original behavioral research question, and develop an experimental design to test it. The research question can be based on an existing research paper and be a variation of the original question, or concerns a completely new idea. Each student is expected to write a document reviewing the related literature, presenting the research Failing to develop the project will result in a grade of 0 for this coursework.

## 2.4    Credits and Examination

Course grade is determined as follows: 10% from participation in class, 45% from critical summary of a key reading, and 45% from project.

## 3      Reading List

Particularly useful texts are:

Camerer, C. (2003), Behavioral Game Theory: Experiments in Strategic Interaction, Princeton University Press.

Friedman, D. and S. Sunder (1994), Experimental Methods: A Primer for Economists, Cambridge University Press.

Moffatt, P. G. (2015). Experimetrics: Econometrics for experimental economics. Macmillan International Higher Education.

Jacquemet N., L'Haridon O. (2018). Experimental Economics: Method and Applications. Cambridge University Press.

Siegel, S., & Castellan, N. J., Jr. (1988). Nonparametric statistics for the behavioral sciences (2nd ed.). New York, NY, England: Mcgraw-Hill Book Company.

Other useful texts include:

Bardsley, N., Cubitt, R., Loomes, G., Moffat, P., Starmer, C., & Sugden, R. (2010). Experimental economics: Rethinking the rules. Princeton University Press.

Camerer, C.F., G. Loewenstein and M. Rabin, eds. (2004), Advances in Behavioral Economics, Princeton University Press.

Charness, G., & Pingle, M. (Eds.). (2021). The Art of Experimental Economics: Twenty Top Papers Reviewed. Routledge.

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Kagel, J. and A. Roth, eds. (1995). The Handbook of Experimental Economics, Princeton University Press.

Kagel, J. H., & Roth, A. E. (2016). The Handbook of Experimental Economics, Volume 2. Economics Books, 2.

Schram, A., & Ule A. (2019). Handbook of Research Methods and Applications in Experimental Economics, Edward Elgar Publishing.

Articles and Papers (in bold the key readings):

- *Introduction to Experimental Economics*

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Sims, Christopher A. (2010) "But Economics Is Not an Experimental Science", Journal of Economic Perspectives, 24(2), 59-68.

Smith, Vernon L. (1982) "Microeconomic Systems as an Experimental Science", American Economic Review, 72(5), 923-955.

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Smith, Vernon L. (1994) "Economics in the Laboratory", Journal of Economic Perspectives, 8(1), 113-131.

Starmer, Chris (1999) "Experimental Economics: Hard Science or Wasteful Tinkering?" Economic Journal, 109, F5-F15.

- *Choice Under Risk and Uncertainty*

Cubitt, Robin, Chris Starmer and Robert Sugden (1998) "On the validity of the random lottery incentive system", Experimental Economics, 1, 115-131.

Grether, David M. and Charles R. Plott (1979) "Economic theory and the preference reversal phenomenon", American Economic Review 69 (1979), 623-638.

Gneezy, U., & Potters, J. (1997). An experiment on risk taking and evaluation periods. The quarterly journal of economics, 112(2), 631-645.

Hey, John and Chris Orme (1994) "Investigating generalisations of expected utility theory using experimental data", Econometrica, 62, 1291-1326.

Holt, C. A., & Laury, S. K. (2002). Risk aversion and incentive effects. American economic review, 92(5), 1644-1655.

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Sugden, Robert and Chris Starmer (1989) "Probability and juxtaposition effects: an experimental investigation of the common ratio effect", Journal of Risk and Uncertainty 2, 159-178

Tversky, Amos and Daniel Kahneman (1992) "Advances in prospect theory: cumulative representation of uncertainty", Journal of Risk and Uncertainty, 5, 297-323.

- *Contingent Valuation*

Bateman, Ian, Alistair Munro, Bruce Rhodes and Robert Sugden (1997) "A test of the theory of reference-dependent preferences". Quarterly Journal of Economics, 112, 479-505.

Horowitz, John K., and Kenneth E. McConnell (2002) "A Review of WTA/WTP Studies." Journal of Environmental Economics and Management, 44, 426–447.

**Kahneman, Daniel, Jack Knetsch and Richard Thaler (1990) "Experimental tests of the endowment effect and the Coase Theorem". Journal of Political Economy, 98, 1325-1348.**

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Shogren, Jason, Seung Shin, Dermot Hayes and James Kliebenstein (1994). "Resolving differences in willingness to pay and willingness to accept". American Economic Review 84, 255-270.

- *Market Experiments*

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Berg, Joyce, John Dickhaut and Keven McCabe (1995) "Trust, Reciprocity and Social History", Games and Economic Behavior, 10, 122-142.

Bolton, Gary E. and Axel Ockenfels (2000) "ERC: A Theory of Equity, Reciprocity, and Competition", American Economic Review, 90(1), 166-193.

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**Fehr, Ernst and Simon Gächter (2000) "Cooperation and Punishment in Public Goods Experiments", American Economic Review, 90(4), 980-994.**

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Gneezy, Uri, Agne Kajackaite, and Joel Sobel (2018) "Lying Aversion and the Size of the Lie", American Economic Review, 108(2), 419-53.

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Sefton, Martin, Robert Shupp and James M. Walker (2007) "The Effect of Rewards and Sanctions in Provision of Public Goods", Economic Inquiry, 45(4), 671-690.

Sutter, M. (2009). Deception through telling the truth?! Experimental evidence from individuals and teams. *The Economic Journal*, *119*(534), 47-60.

- *Experimental Methods*

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Brandts, Jordi, and Gary Charness (2011) "The strategy versus the direct-response method: a first survey of experimental comparisons", Experimental Economics 14, 375-398.

Casari, Marco (2005), "On the design of peer punishment experiments", Experimental Economics, 8, 107-115.

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Charness, Gary, Uri Gneezy, and Austin Henderson (2018) "Experimental methods: Measuring effort in economics experiments", Journal of Economic Behavior & Organization 149, 74-87.

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Kachelmeier, Steven J., and Kristy L. Towry (2005) "The Limitations of Experimental Design: A Case Study Involving Monetary Incentive Effects in Laboratory Markets", Experimental Economics, 8, 21-33.

List, John A., Sally Sadoff, and Mathis Wagner (2011) "So you want to run an experiment, now what? Some simple rules of thumb for optimal experimental design" Experimental Economics, 14, 439.

Moffatt, Peter G., and Simon A. Peters (2001), "Testing for the presence of a tremble in economic experiments", Experimental Economics 4, 221-228.

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# Development Economics – ECO-5113

## Master 2 – Advanced Economics – ENS de Lyon

Mathieu Couttenier & Sylvie Démurger

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**Course description and organization**

This course focuses on studying the process of economic development and the economics of developing countries. It explores a variety of essential topics to understand why some countries are poor, how markets operate differently in poor economies, and the main obstacles to economic development. The primary focus of the course will be on empirical and microeconomic studies. It is structured around 6 key topics: education, health, gender, credit markets, agriculture, and conflicts.

The course will include 24 hours of lectures, scheduled as follows: September 10 (2:00pm-4:00pm), September 24 (2:00pm-4:00pm), October 1 (2:00pm-4:00pm), October 8 (2:00pm-4:00pm), October 15 (2:00pm-4:00pm), October 22 (2:00pm-4:00pm), November 4 (8:30am-11:30am), November 5 (8:30am-11:30am), November 18 (8:30am-11:30am) and November 19 (8:30am-11:30am).

**Course material and suggested general background readings**

A number of academic economics papers will be discussed in class. There is no textbook for this course, but if you are interested in some general background reading related to the topics we will cover, you may be interested in checking out some of the following books.

- De Janvry, Alain, and Elisabeth Sadoulet. *Development Economics: Theory and Practice.* London: Routledge, 2016.
- Ray, Debraj. *Development Economics.* Princeton, N.J: Princeton University Press, 1998.
- Banerjee, Abhijit V., and Esther Duflo. *Poor Economics: Rethinking Poverty and the Ways to End it.* Random House, 2013.

**Course evaluation**

Course evaluation is based on three key components:

1. ***Research Proposal*** (40%): Students will develop a research proposal that demonstrates their understanding of economic development topics. This proposal should include a clear research question, a review of relevant literature, and a proposed methodology (see guidelines below). The proposal will be evaluated based on its originality, feasibility, and the depth of analysis.

   The proposed research question must be submitted by email to the instructors by 5pm on Friday, November 15, 2024.

   The written research proposal must be submitted by email to the instructors by 5pm on Friday, December 13, 2023.

2. ***Final Exam*** (50%): The final exam will be conducted in class on <u>Wednesday, November 27,</u> 2024. It will assess students' comprehension of the material covered during the course through short answer questions and multiple-choice questions.
3. ***Class Participation*** (10%).

***Guidelines for the research proposal:***

The research proposal must be no more than 4 pages in length, including graphs, references and any other material. It should be written in LaTeX and submitted as a PDF file with the following title: 'Your surname_research_proposal.pdf'.

The research proposal should include the following items:
1. Research question: a clear statement of your research question, along with a brief motivation for why it is important, its policy implications, and (if any) economic theory it is testing. To choose your research question, you may consider extending an existing paper. You may use anecdotal evidence as a starting point/motivating fact.
2. Literature review: a short review of the relevant theoretical and/or empirical literature on your topic.
3. Empirical strategy: a description of your proposed empirical strategy and (realistic) data sources (including the data that could be collected).
4. Contribution: a clear discussion of how your research will contribute to the existing literature.
5. Challenges: a discussion of the challenges you expect to encounter in your research.

Think of this project as a blueprint for a research paper that contains everything but the findings: you will motivate the question, place it in the literature, and lay out your data sources (if any) and research design. Of course, we do not expect to see any preliminary results.

# *Topics in Financial Macroeconomics*

## Lecturers :

Guillaume Coqueret, coqueret@em-lyon.com;
Gaétan Bakalli, bakalli@em-lyon.com;

## **Course** of Master 2 – 2nd semester, 2024-2025

### 1. Overview

This course delves into advanced thematic topics in macroeconomics related to financial markets. The first part focuses (1-4) more on theoretical models while the second one (5-8) is more applied and data-intensive. The outline of the course is as follows:

1. Consumption-based models (C-CAPM) and critiques
2. Rare events and long-term risks
3. Asset pricing with heterogeneous agents
4. Green growth and green financial models (S-CAPM)
5. Equity premium prediction (1/2)
6. Equity premium prediction (2/2)
7. Introduction to commodities market: Physical and future markets
8. Nowcasting

### 2. Prerequisites

The course builds on previous introductory and intermediate courses in macroeconomics.

### 3. Practical information

The course has 8 sessions with typically 1 or 2 sessions of 3 hours per week.

### 4. Bilbiography

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Epstein, L. G., & Zin, S. E. (1991). Substitution, risk aversion, and the temporal behavior of consumption and asset returns: An empirical analysis. Journal of Political Economy, 99(2), 263-286.

Heikkinen, T. (2015). (De) growth and welfare in an equilibrium model with heterogeneous consumers. Ecological Economics, 116, 330-340.

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