International Economics
Development Economics

Academic year 2020-2021

Econometrics - Gerzensee Swiss Program for Beginning Doctoral Students

EI075 - Autumn - 6 ECTS

> **PROFESSOR**

N/A

> **ASSISTANT**

Course Description

The Swiss Program for Beginning Doctoral Students in Economics consists of a mathematics review (four days, optional) as well as
sequences in microeconomics, macroeconomics and econometrics. In each sequence, leading international academics teach four week-long
courses. Each course includes formal lectures of three hours per day as well as exercise review sessions. Course weeks start on Monday at
10:30 and end on Friday at noon. Returning to their home institutions in the periods between the course weeks, participants review and
prepare the material covered in class, solve mandatory take-home problem sets, and study for the exams. On successful completion of the
program, participants are awarded a Certificate.

Syllabus

PROGRAM

The program consists of an optional mathematics review as well as sequences in microeconomics, macroeconomics, and econometrics. In each sequence, leading international academics teach four week-long courses.

A typical course day includes classroom lectures of three hours as well as exercise review sessions. Course weeks start on Monday at 10:30 a.m. and end on Friday at noon.

In the periods between the course weeks, participants review and prepare the material covered in class, solve mandatory take-home problem sets, and study for the exams.

On successful completion of the program, participants are awarded a certificate. It is the responsibility of participants to obtain credit with their universities.

SEQUENCES

Microeconomics

The Microeconomics sequence covers: Preference and choice, consumer choice, classical demand theory, aggregate demand, production, choice under uncertainty; markets and competitive equilibria, welfare properties and other properties of competitive equilibria, uncertainty and asset pricing; non-cooperative games, simultaneous move and dynamic games, complete and incomplete information games with applications; externalities, public goods, adverse selection, signalling, screening, principal-agent theory, limits to redistribution, general equilibrium under uncertainty, social choice, incentives and mechanism design.

Textbooks used in the sequence include Gibbons (1992), A Primer in *Game Theory,* Harvester Wheatsheaf; Mas-Colell, Whinston and Green (1995), *Microeconomic Theory,* Oxford University Press. Other references are Jehle and Reny (2011), *Advanced Microeconomic Theory,* Prentice Hall, and Varian (1992), *Microeconomic Analysis,* Norton.

Macroeconomics

The Macroeconomics sequence covers: Development accounting and misallocation, capital accumulation, optimal consumption and saving, complete and incomplete markets, aggregation, risk sharing, asset pricing, durable goods and the demand for housing; the neoclassical growth model, Ramsey policies with complete and incomplete markets, the McCall and Stigler search model, search and matching, Diamond-Mortensen-Pissarides; the classical monetary model and the basic New Keynesian model, inflation dynamics, optimal monetary policy design; models of multiple equilibria, small open economies, overlapping generations, and economic growth.

The main textbook for the third week is Galí (2015), *Monetary Policy, Inflation and the Business Cycle.* An Introduction to the *New Keynesian Framework,* Princeton University Press. Other textbooks include Acemoglu (2009), *Introduction to Modern Economic Growth,* Princeton University Press; Barro and Sala-i-Martin (2003), *Economic Growth,* MIT Press; Ljungqvist and Sargent (2018), *Recursive Macroeconomic Theory,* MIT Press; Niepelt (2019), *Macroeconomic Analysis,* MIT Press; Romer (2019), *Advanced Macroeconomics,* McGraw-Hill; Walsh (2017), *Monetary Theory and Policy,* MIT Press, and Woodford (2003), *Interest and Prices: Foundations of a Theory of Monetary Policy,* Princeton University Press.

Econometrics

The Econometrics sequence covers: Basic probability theory, large sample theory, estimators and their properties, hypothesis testing, Bayes methods; inference in the classical regression model, generalizations of the linear model, instrumental variables; linear difference equations, stochastic processes, Wold theorem, spectral analysis, estimation and inference methods for stationary linear models, vector autoregressions, functional central limit theorem, Kalman filtering, models of time varying volatility, forecasting; nonlinear regression and non-linear

GMM estimation, quantile regression, discrete choice models, program evaluation and sample selection, non-parametric estimation techniques, and panel data models.

Textbooks used in the sequence include Hamilton (1994), *Time Series Analysis, Princeton University Press*; Hayashi (2000), Econometrics, Princeton University Press, and Hogg and Craig (1995), *Introduction to Mathematical Statistics,* Prentice Hall.

LECTURERS

Fernando Álvarez
University of Chicago

Fernando Álvarez is professor of economics at the University of Chicago. Fernando Álvarez is a research associate at the Nation- al Bureau of Economic Research (NBER), a fellow of the Econometric Society, an editor of the *Journal of Political Economy,* and an associate editor of the *Review of Economic Dynamics* and the *Journal of Macroeconomics.* Professor Álvarez has received fellowships from the European Central Bank (ECB), the Alfred P. Sloan Foundation and the Organization of American States. His research interests include monetary and employment policy, comprising discussions of interest and exchange rates, unemployment and insurance claims, equilibrium economics, dynamic programming, and segmented markets.

Jordi Galí
Universitat Pompeu Fabra and CREI

Jordi Galí earned his PhD in economics at the Massachusetts Institute of Technology (MIT) in 1989. Currently he is senior researcher at the Center for Research in International Economics (CREI), professor at Universitat Pompeu Fabra (UPF) and research professor at the Barcelona GSE. He was the director of CREI between 2001 and 2017. He has held academic positions at New York University and Columbia University. He has been a visiting professor at MIT. He is a research fellow at the Center for Economic Policy Research (CEPR), a research associate at the NBER, and a fellow of the Econometric Society. He has served as a co-editor of the *Journal of the European Economic Association* and codirector of the CEPR International Macroeconomics Programme. In 2012 he served as president of the European Economic Association. Among other awards, Galí has received the National Research Prize from the Government of Catalonia and was corecipient of the Yrjö Jahnsson Award. He has been a consultant to the ECB, Federal Reserve, Sveriges Riksbank, Norges Bank, Banque de France, and other central banks. His research interests include macroeconomics and monetary theory, and he has published articles on these topics in numerous scientific journals.

Piero Gottardi
University of Essex

Piero Gottardi is professor of economics at the University of Essex. He received his PhD from the University of Cambridge and was previously professor of economics at the University of Venice and the European University Institute, and a visiting professor at Harvard, Yale, Brown and UPF. He is associate editor of the *Journal of Economic Theory* and the *Journal of Public Economic Theory.* His research interests are in general equilibrium theory, financial economics and macroeconomic theory.

Bo E. Honoré
Princeton University

Bo Honoré is Class of 1913 Professor of Political Economy; professor of economics at Princeton University. He conducts research in econometrics. Professor Honoré earned his PhD at the University of Chicago. He has taught at Northwestern University and has held visiting positions at the University of Chicago and the University of Copenhagen. Professor Honoré has served as director of graduate studies, director of graduate admissions, director of the Gregory C. Chow Econometric Research Program, associate chair and chair of the department of economics at Princeton. Bo Honoré is a fellow of the Econometric Society. He was awarded The Richard E. Quandt Teaching Prize in 2012 and 2018, and The Rigmor and Carl Holst-Knudsen Award for Scientific Research from Aarhus University in 2017. He is a past member of the Board of Trustees of the Danish National Research Foundation.

Johannes Hörner
Yale University

Johannes Hörner is professor of economics, department of economics and Cowles Foundation for Research in Economics, Yale University. He has received his PhD in economics from the University of Pennsylvania in 2000, and has held previous positions at the Kellogg School of Management, Northwestern University (2000–2008). His academic interests range from game theory to the theory of industrial organization. His research has focused on repeated games, dynamic games, and auctions.

John H. Moore
University of Edinburgh and
London School of Economics

John H. Moore is professor of economic theory at the University of Edinburgh and at the London School of Economics (LSE). He studied for a BA in mathematics from the University of Cambridge and holds a PhD in economics from the LSE. Professor Moore's research is in microeconomic theory, labor contracts, mechanism design, the theory of the firm, and financial contracting. More recently, he has worked on the microfoundations of macroeconomics, in particular the role of money and credit in the propagation of business cycles. He was editor of the *Review of Economic Studies,* elected fellow of the Econometric Society and, with his co-author Nobuhiro Kiyotaki, was awarded the Yrjö Jahnsson Medal.

Sergio Rebelo
Northwestern University

Sergio Rebelo is professor of international finance at the Kellogg School of Management, where he has served as chair of the finance department. Professor Rebelo does research on macroeconomics and international finance. He has studied the causes of business cycles, the impact of economic policy on economic growth, and the sources of exchange rate fluctuations. His research has been funded by the National Science Foundation, the World Bank, the Sloan Foundation, and the Olin Foundation. He is a fellow of the Econometric Society, the NBER, and the CEPR. He has been a member of the editorial board of various academic journals, including the *American Economic Review,* the *European Economic Review,* the *Journal of Monetary Economics,* and the *Journal of Economic Growth.* He has won numerous teaching awards at the Kellogg School of Management, including the Executive Masters Program Outstanding Professor Award and the Professor of the Year Award. Professor Rebelo has served as a consultant to the World Bank, the International Monetary Fund, the Board of Governors of the Federal Reserve System, the ECB, the McKinsey Global Institute, the Global Markets Institute at Goldman Sachs, and other organizations. He received his PhD in economics from the University of Rochester.

Ricardo Reis
London School of Economics

Ricardo Reis is the A.W. Phillips Professor of Economics at the LSE. He has published widely on macroeconomics. His main areas of research are inflation expectations, unconventional monetary policies and the central bank's balance sheet, disagreement and inattention, business cycle models with inequality, automatic stabilizers, sovereign-bond backed securities, and the role of capital misallocation in the European slump and crisis. Professor Reis received his PhD from Harvard University, and he was previously on the faculty at Columbia University and Princeton University.

Klaus Schmidt
University of Munich

Klaus Schmidt is professor of economics at the University of Munich. He received his PhD from the University of Bonn and was a visiting professor at MIT, Stanford and Yale. He is associate editor of the RAND Journal of Economics and served as a co-editor of the European Economic Review and associate editor of the *Review of Economic Studies.* His research interests focus on contract theory and game theory, in particular the theory and applications of incomplete and implicit contracts, on behavioral and experimental economics, and on political economy.

Mark W. Watson
Princeton University

Mark W. Watson is professor of economics and public affairs at Princeton University. He is a research associate at the NBER and has served as a consultant for the Federal Reserve Banks of Chicago and Richmond. Before joining the Princeton faculty, he was a professor of economics at Northwestern University. Professor Watson holds a PhD from the University of California, San Diego. He has published extensively in the areas of theoretical and applied econometrics.

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PROGRAM RULES

PARTICIPATION

Participants are expected to prioritize the program and behave responsibly. In particular, they must attend all lectures and sessions, submit solutions to problem sets in time, and participate in the exams.

Insufficient prioritization of the program, irresponsible behavior, or unexcused nonparticipation may trigger expulsion from the program. Nonparticipation is unexcused if it is not indicated to the Study Center as early

as possible in advance. The Center reserves the right to request a medical certificate in case of nonparticipation due to medical reasons.

TAKE-HOME PROBLEM SETS

Participants must submit solutions to the take-home problem sets latest by the set deadline. In some cases, participants can form groups to jointly submit a solution. The professors determine the maximum group size. Copy-pasted solutions are not accepted.

Solutions to take-home problem sets must be concise and precise, and include a cover sheet with the name and ID number of the participant (or the participants in the group)

and the title of the homework. Solutions must be typewritten and submitted in PDF as e-mail attachment.

Participants who have not received an email confirmation on the working day after the deadline must immediately contact Ms. Teo Ruiz, or they risk missing the deadline.

Solutions are graded on a scale from 0 to 100 points and transformed into a grade on

a scale from 1 to 6, with 6 being the best grade. Participants may appeal against the grade within a month. The appeal has to be well motivated and addressed to the Study Center. A problem set may not be retaken. The total grade for the problem set solutions in each sequence is the average of all grades of the participant's solutions. If there are compelling reasons a missing grade may not count towards the average.

EXAMS

There are two exams for each sequence. The first exam covers the material of weeks 1 and 2. The second exam covers the material of weeks 3 and 4. Exams may be "open book" or "closed book" as determined by the professors. Electronic devices may not be used during the exams. Each exam lasts

two hours and is graded on a scale from 1 to 6. The passing grade for an exam is 3.5. Participants may appeal against the grade within a month. An exam may be retaken once, in the following year, unless important reasons render a delay unavoidable.

Exams are held at the Study Center on the following dates:
**Exam I (week 1 and week 2):
February 22–24, 2021**
**Exam II (week 3 and week 4):
September 1–3, 2021**

GRADES AND CERTIFICATE

The overall grade for each sequence is a weighted average of the grades for the problem set solutions (10%) and the first and second exam (45% each). To pass a sequence, the participant must pass each exam and achieve an overall grade of at

least 4. The Study Center reports the grades for each sequence to the representative of the participant's institution, which in turn decides about the recognition of those grades. The Study Center awards a certificate to participants who pass all three se-

quences of the program within a year. On request, the Study Center confirms successful participation in individual sequences.

FUNDING AND ORGANIZATION

The program is heavily subsidized. The fee for one sequence amounts to CHF 500, the fee for two sequences to CHF 1,000, and the fee for the full program to CHF 2,000 of which CHF 1,000 is refunded if and only if the full program is successfully completed within one year. The fee covers tuition as well as the cost of a single or shared double room with full board. For information about the hotel services, see the website of the Study Center's hotel (www.hotelschlossgerzensee.com).

The restaurant offers meat, fish, and vegetarian meals and caters to special diets. No accompanying persons nor pets are admitted.

ADMISSION

The Study Center invites Swiss universities and the Swiss National Bank to nominate candidates. As space is limited, the Center cannot admit all qualified nominees. Repeat nominations are possible.

Nominees must hold an undergraduate degree and be enrolled (or about to enrol) in the doctoral program at a Swiss university. They should hold a MA degree or complete their MA studies before the program starts. Under exceptional circumstances, an applicant without MA degree may be fast tracked into the program. Preference is given to applications for the full program.

A complete application includes (a) completed application form; (b) statement of purpose (ca. two pages, in English); (c) MA thesis if available (in English or a Swiss national language); (d) most recent grade transcripts; (e) completed recommendation forms by 1–3 professors, including applicant's prospective advisor; (f) recent GRE general test scores (not older than two years).

Forms can be downloaded from the Study Center's website (www.szgerzensee.ch).

For information about the GRE including how and where to take the test, see the website of Educational Testing Service (www.gre.org); of most relevance are the scores for the quantitative and verbal reasoning parts.

Applicants should send (a)-(d) to the representative at their home institution listed below. Regarding (e), they should give copies of the blank recommendation form to the professors supporting their application and ask them to send the completed forms in a sealed envelope to the representative. The representative will forward (a)-(e) to the Study Center. Finally, applicants should have (f) sent by Educational Testing Service to the Study Center. The Study Center has been assigned the GRE Graduate Code 7381 (Study Center Gerzensee Swiss Program for Beginning Doctoral Students in Economics).

Representatives:
EPFL, Philippe Thalmann
ETH Zurich, Peter Egger
Swiss National Bank, Carlos Lenz
The Graduate Institute, Cédric Tille
University of Basel, Yvan Lengwiler
University of Bern, Harris Dellas
University of Fribourg, Thierry Madiès
University of Geneva, Michele Pellizzari
University of Lausanne, Jürgen Maurer
University of Lucerne, Simon Luechinger
University of Neuchâtel,
Milad Zarin-Nejadan
University of St.Gallen, Reto Foellmi
Università della Svizzera italiana,
Patricia Funk
University of Zurich, Gregory Crawford

Deadlines:
Study Center receives GRE scores:
April 15, 2020.

Applicant submits application package to representative: **April 15, 2020.**

Study Center communicates admission decision: **May, 2020.**

Participant pays fee: **June 30, 2020.**

CONTACT

All mail as well as inquiries should be addressed to:
Study Center Gerzensee
Swiss Program for Beginning
Doctoral Students in Economics,
Ms. Teodora Ruiz, Dorfstrasse 2,
CH-3115 Gerzensee, Switzerland
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teodora.ruiz@szgerzensee.ch