

ANNUAL REPORT 2016-2017

CENTER FOR OPERATIONS
RESEARCH AND ECONOMETRICS

UCL
Université
catholique
de Louvain

CORE

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PRESENTATION

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- ▶ FUNDING

PRESENTATION

It is my pleasure to introduce this **CORE 2016-2017 ANNUAL RESEARCH REPORT**. Research is much more multifaceted nowadays than it used to be, and this makes life at CORE even more challenging. **CORE IS A HIVE** and new ideas are emerging through the many activities that are organized.

Based on last year's edition, this new report is structured so that everyone can easily find what is needed. My warmest thanks to Fabienne Henry who patiently collected all the information and set it to music. Enjoy your reading!



Isabelle THOMAS,
Research Director



CORE TODAY

Founded in 1966, the Center for Operations Research and Econometrics (CORE) is an interdisciplinary research center of the Université catholique de Louvain. In 2010, CORE became one of the "poles" of **IMMAQ**, a UCL research institute associating researchers from three different research entities: CORE, IRES (Institut de Recherches Economiques et Sociales) and ISBA (Institute of Statistics, Biostatistics and Actuarial Sciences).

CORE follows **three objectives**. The first one is the development of scientific **research** in the fields of economics, econometrics, operations research and quantitative and economic geography. The second objective is the **training** of young researchers at the doctoral and postdoctoral stages of their career. The third objective is the promotion of local and international scientific **exchanges and collaborations**. This report gives an overview of the activities developed from Summer 2016 to Summer 2017. A more dynamic follow-up of the current activities can be found in the CORE Newsletter which is published three times a year (<https://uclouvain.be/en/research-institutes/immaq/core/newsletter.html>), on the CORE website (<https://uclouvain.be/en/research-institutes/immaq/core>), and on social networks (<https://www.facebook.com/CORE.UCL>, https://twitter.com/CORE_UCL, https://en.wikipedia.org/wiki/Center_for_Operations_Research_and_Econometrics).

CORE's activities integrate fundamental and applied research to shed analytical light on a wide range of issues arising from economic policy and the management of private and public organizations. These research activities build on a common foundation of quantitative modelling and rigorous mathematical reasoning, encompassing many different fields of human activity. The main scientific disciplines to which CORE researchers actively contribute are: economics and game theory, econometrics, operations research, and quantitative and economic geography.

Research in **economics** and **game theory** at CORE is quite diverse and comprises applied and empirical work grounded on robust theoretical foundations. While general equilibrium and game theory were dominating themes in the early years of CORE, current research in economics is now mostly directed towards applications of theory to problems in market regulation and the organization of the public sector. In 2016-2017, CORE members pursued active research projects in energy economics, industrial organization, public economics and political economy, environmental economics, welfare economics and social choice theory, as well as general equilibrium and game theory.

Econometrics research at CORE is concerned with the development of quantitative models and of statistical and computational methods for the analysis of economic data. CORE's best known early contributions to econometrics were the introduction and development of Bayesian methods and inference. In 2016-2017, CORE members worked on financial econometrics, studying volatility models; on the development and analysis of high dimensional stochastic models, as well as identification and inference for time series and the analysis of complex data; and on further developments of Bayesian methods, in particular Markov Chain Monte Carlo algorithms and Bayesian inference.

Operations research deals with the development and application of analytical methods to help make better decisions. CORE has long been known for its methodological contributions to mathematical programming, in particular convex optimization and integer programming. It has expanded its interests and expertise to applications in operations management and to the study of large energy investments, transmission systems and energy markets. In 2016-2017, the CORE OR research group worked on interior point methods in optimization, the computation of economic equilibria, the study and applications of mixed integer programming and discrete optimization models, the design and development of algorithmic procedures and optimization software, as well as applications in energy management and supply chain management.

Quantitative and economic geography brings a quantitative modelling orientation to the study of the location, distribution and spatial organization of economic and other human activities. In 2016-2017, QEG research at CORE was mainly devoted to measuring and modelling socio-economic, transport and urban/peri-urban realities, covering different spatial levels of analysis on such topics as optimal location-allocation modeling, spatial statistics, urban modelling, land-use planning policy issues (LUTI models), and system of cities. This research addressed methodological challenges brought about by our connected world and resulting enormous data bases, where spatial theories must be informed by Big Data analysis and modelling.

RESEARCH ACHIEVEMENTS AND RECOGNITION

Scientific publications are the main output for research work in the directions pursued at CORE. In 2016-2017, CORE members have published four **books** and 131 papers in international scientific journals. Many research papers are first released, following an internal refereeing process, as **CORE Discussion Papers**, to elicit comments and discussion before or during submission to scientific journals. 43 papers contributed to the **CORE Discussion Papers** series in 2016-2017 and 93 published papers have been included in the **CORE Reprints Series**. Details on these publications, as well as on other forms of publications, such as newspaper articles and commissioned reports contributed by CORE members, are to be found in **Chapter 2**.

CORE researchers and their work receive **international recognition**: Doctor *Honoris Causa* to Pierre PESTIEAU, the *Ullman L. Award* to Isabelle THOMAS and a nomination in a well-known scientific society to Claude D'ASPREMONT. Two papers, one from Paul BELLEFLAMME and the other from Yue ZHANG were award-winners in international competitions. Further details on these honors, prizes and awards are also to be found in **Chapter 2**.

TRAINING

Training of young researchers takes several forms at CORE and are developed in **Chapter 3** of this report. In 2016-2017, CORE has hosted 38 **doctoral students** and 10 **postdoctoral research fellows**. These junior researchers develop their research under the supervision of one or several permanent CORE academic members. Four doctoral students defended their Ph.D. in this period.

CORE is a founding member of, and an active participant in, two European doctoral programs: the **European Doctorate in Economics Erasmus Mundus** (EDEEM), of which 3 students were at CORE in 2016-2017, and the **European Doctoral Program in Quantitative Economics** (EDP), with 2 students at CORE in 2016-2017.

CORE also organized or co-organized four **Winter/Spring/Summer schools** on emerging topics, aimed at junior (and not so junior) researchers. As part of CORE's 50th Anniversary a **debate** between students, Angus DEATON and Jean DRÈZE was organized in October 2016. CORE was associated in four **Ph.D. Courses**. Doctoral students in economics at CORE also actively participated, together with students from other Belgian universities, in **Doctoral Workshops** in December 2016 and June 2017.

The **CORE Brown Bag seminar** series, launched in 2014 by junior researchers, provides a forum where junior researchers from CORE, UCL and occasionally other institutions, present their current work or job market paper to obtain invaluable feedback in an attentive and friendly atmosphere. The Brown Bag Seminar series also welcomes research overview and expository presentations given by senior CORE academics.

SCIENTIFIC EXCHANGES AND COLLABORATIONS

One of the main features of CORE since its very foundation has been its focus on developing interuniversity and international scientific exchanges. CORE actively pursues this networking tradition, at both the institutional and individual levels. Such scientific exchanges and collaborations, detailed in **Chapter 4**, take many forms, notably:

- ▶ The continuing stream of **research visitors**, including *Associate Fellows* from (mostly) Belgian universities, who work at CORE on a regular, weekly basis, and participate in seminars and other research activities; *Research Associates*, usually former CORE members, who regularly visit CORE, typically for a few weeks each year; and *short-term visitors*, about 30 of them in 2016-2017, who spent from a few days to several months at CORE and presented their work at one of the weekly research seminars, participated in CORE workshops or conferences, and worked on joint research at CORE.
- ▶ CORE organized or co-organized international and national **scientific meetings**. CORE pursued its **50 days@CORE** activities organized within the framework of its 50th anniversary. During the second part of 2016 (September-December), 50 days@CORE activities included two campus-wide Nobel talks, a campus-wide Fields Medal talk, a CORE Distinguished Lectures Series, two research workshops, a debate, a Winter School and three Ph.D. courses.
- ▶ Following a well-established and successful CORE tradition, weekly research **seminars** in the four main CORE disciplines described above, allow CORE members and visitors to present their work and share ideas. 64 research seminars were held at CORE in 2016-2017.
- ▶ Finally, CORE members were invited to speak in international and national **conferences** and to give research presentations at various universities and research centers (see **Chapter 4**).

PEOPLE

Permanent **academic members** form the “heart and soul” of CORE (see **Chapter 5**). In addition to conducting their own research and performing their other university duties, CORE academic members lead and supervise junior researchers, collaborate with visitors, coordinate and participate in research seminars, and contribute to the organization of scientific meetings. They also play a critical role in securing the financial support outlined below. CORE could not continue to be the lively, stimulating and welcoming research environment it is today without its efficient and friendly **administrative staff**. These essential members of CORE create a place where the researchers can focus on their work without being hampered by practical issues. They also play an essential role in making CORE an attractive place for visitors. The contributions of the administrative staff are gratefully acknowledged.

FUNDING

Scientific activities are supported by CORE’s participation in a long list of **research projects and contracts**, detailed in **Chapter 6**. These projects are mainly financed by several Belgian public institutions (National Fund for Scientific Research (FRS-FNRS), Belgian Science Policy Office (Belspo), Région Bruxelloise (Innoviris), Fédération Wallonie-Bruxelles (ARC)), the European Commission, as well as private and public partners.

In 2016-2017, CORE was home to a **Research Chair**: the *Lhoist Berghmans Chair in Environmental Economics and Management*. This Research Chair provides financial and other support for junior and senior researchers, as well as for teaching, training and outreach activities.

Last, but not least, we gratefully acknowledge the continuing and vital support from the **Université catholique de Louvain**.



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RESEARCH ACHIEVEMENTS AND RECOGNITION

- ▶ BOOKS AND EDITED BOOKS
- ▶ CORE REPRINTS
- ▶ OTHER PUBLISHED PAPERS
- ▶ CORE DISCUSSION PAPERS
- ▶ OTHER DISCUSSION PAPERS AND MANUSCRIPTS
- ▶ MEDIA
- ▶ REPORTS
- ▶ PRIZES AND AWARDS

RESEARCH ACHIEVEMENTS AND RECOGNITION

PUBLICATIONS

BOOKS AND EDITED BOOKS

- ▶ Victoria ATECA-AMESTOY, **Victor GINSBURGH**, Isidoro MAZZA, John O'HAGAN and Juan PRIETO-RODRIGUEZ (eds.). *Enhancing Participation in the Arts in the EU. Challenges and Methods*. Berlin, Springer, 2017.

In this book, participation in the arts is analyzed as a substantial contributory factor to European citizenship, and also as a tool for improving individual and societal wellbeing through educational and inclusive policies. It offers an up-to-date overview of ongoing research on the measurement and analysis of, and prospects for, traditional and new forms of cultural engagement in Europe. It describes and assesses available methods and participation in the arts and seeks to determine how and to what extent the various drivers, policies and barriers matter. This publication is the final output of the work done by the members of the EU Project "Assessing effective tools to enhance cultural participation," which brought together social scientists and cultural practitioners in joint projects, conferences and seminars, to reflect on the current situation and the challenges faced by managers of cultural and arts institutions and cultural policy makers.

- ▶ Kristof DE WITTE et **Jean HINDRIKS** (eds.). *L'école de la réussite*. Gent, Skribis, 2017.

Ce livre propose un regard croisé, objectif et lucide sur notre enseignement francophone et flamand. Sa différence réside dans une perspective économique de l'enseignement qui repose sur des faits et évaluations chiffrées.

Dans un contexte d'hétérogénéité croissante de la population d'élèves, le livre se concentre sur une double mission de l'enseignement : l'excellence et l'égalité des chances. Il s'appuie sur des comparaisons internationales et des expériences concrètes à l'étranger. Ce livre révèle quelques surprises comme cette association troublante entre la qualité de l'ascenseur social et les inégalités scolaires, ou encore entre la qualité de l'ascenseur social et la réussite scolaire.

Le livre propose différentes thématiques fondamentales qui seront analysées sous un angle original. Il s'agit de l'égalité des chances, la mixité sociale, le décrochage scolaire, l'accès à l'emploi, l'éducation financière et le financement des écoles. Pour chaque thème un regard croisé est proposé entre le système scolaire flamand et francophone, et des propositions concrètes sont offertes en fin de chapitre.

- ▶ **Victor GINSBURGH** and Shlomo WEBER (eds.). *The Palgrave Handbook of Economics and Language*. Hampshire, Palgrave Macmillan, 2016.

Do the languages people speak influence their economic decisions and social behavior in multilingual societies? This handbook brings together scholars from various disciplines to examine the links and tensions between economics and language to find the delicate balance between monetary benefits and psychological costs of linguistic dynamics.

- ▶ Eyal WINTER. *Libérez vos émotions. Pourquoi elles sont plus rationnelles que nous le pensons*. Translated from English by Emmanuelle IDE, under the scientific supervision of **Pierre DEHEZ**. Louvain-la-Neuve: De Boeck Supérieur, 2017.

Dans cet ouvrage, Eyal WINTER se pose une question simple : pourquoi avons-nous des émotions ? Si elles conduisent à de mauvaises décisions, pourquoi l'évolution ne les a-t-elle pas rendues depuis longtemps sans importance ? La réponse est que, même si elles peuvent ne pas se comporter de manière purement logique, nos émotions nous conduisent souvent à de résultats meilleurs, plus sûrs et plus optimaux.

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- ▶ **Florian MAYNERIS**. Brexit et ses conséquences. RTBF La Première - Le Grand Huit du Weekend, 5 novembre 2016.
- ▶ **Florian MAYNERIS**. Bruxelles est sous-financée par rapport à son poids économique réel. RTBF.be, 6 janvier 2017.
- ▶ **Florian MAYNERIS**. Protectionnisme : menace pour la Belgique. *Vers l'Avenir*, 25 janvier 2017.
- ▶ **Mikael PETITJEAN**. La vitesse sur les marchés financiers : stop ou encore ? *Regards Economiques, Focus du 8 décembre 2016*.
- ▶ **Florian MAYNERIS**. Quel sera le coût du Brexit ? RTBF La Première - Journal Parlé, 3 mars 2017.
- ▶ **Mikael PETITJEAN**. Emprunt de l'Arabie Saoudite via l'émission d'obligations. RTBF La Première - Soir Première, 19 octobre 2016.
- ▶ **Mikael PETITJEAN**. Contrat à terme pour les diamants. RTBF La Première - Soir Première, 28 août 2017.
- ▶ **Jean-Sébastien TANCREZ**. Vers une logistique efficace et durable. *La Libre Belgique*, 1er octobre 2016.

REPORTS

- ▶ **Avinash BHARDWAJ** and Alper ATAMTURK. Network design with probabilistic capacities. BCOL Research Report 16.01, University of California Berkeley, USA, 2017.
- ▶ **Anthony PAPAVALIOU**, Alex PAPAEXOPOULO and Shmuel OREN. Market design for a decarbonized electricity market. Eurelectric/Florence School of Regulation call for proposals for the Electricity Market Design of the Future, June 2017.

PRIZES & AWARDS

- ▶ The paper of **Paul BELLEFLAMME** "Crowdfunding: Tapping the right crowd", *Journal of Business Venturing*, 2014, co-authored with Armin SCHWIENBACHER and Thomas LAMBERT has been selected as a winning paper in the prestigious Emerald Citations of Excellence for 2017.
- ▶ **Claude d'ASPREMONT** has been elected President of the Society for Social Choice and Welfare for the period 2016-2018.
- ▶ **Pierre PESTIEAU** received the title of Doctor Honoris Causa from the Université de Neuchâtel, Switzerland in October 26, 2016.
- ▶ **Isabelle THOMAS** got the 2017 Ullman L. Award in April 2017. This prestigious award is offered each year since 1990 by the Association of American Geographers for outstanding contributions to the field of transportation geography.
- ▶ The paper of **Murillo CAMPELLO**, Janet GAO, Jiaping QIU and **Yue ZHANG** has been appointed as the best paper in Corporate Finance at the Northern Finance Association (NFA) annual meeting in September 2016.



3

TRAINING

- ▶ JUNIOR RESEARCHERS
- ▶ COMPLETED PH.D. DISSERTATIONS
- ▶ PH.D. DISSERTATIONS IN PROGRESS
- ▶ EDEEM PROGRAM
- ▶ EUROPEAN DOCTORAL PROGRAM IN QUANTITATIVE ECONOMICS
- ▶ WINTER AND SUMMER SCHOOLS
- ▶ DOCTORAL WORKSHOPS
- ▶ DEBATE
- ▶ PH.D. COURSES
- ▶ BROWN BAG SEMINAR SERIES

TRAINING

JUNIOR RESEARCHERS

DOCTORAL STUDENTS AND RESEARCH ASSISTANTS

Adam ARNAUD · Ignacio Andrés ARAVENA SOLÍS · Gautier ATTANASI · Rytis BAGDZIUNAS · Sinem BAS · Gilles BERTRAND · Justin DELLOYE · Julien DEWEZ · Jérôme DOLLINGER · Cyrille DOSSOUGOIN · Mery FERRANDO GUTIERREZ · Bartosz FILIPECKI · Valeria FORLIN · Andras GREGOR · Thuc Huan HA · Thomas HACARDIAUX · Manuel HERRERA RODRIGUEZ · Claudia HUPKAU · Nathan LASSANCE · Arnaud MONSEUR · Liana-Sabina LUNCASU · Simone MARTELLI · Cheikh MBAYE · Ilyes MEZGHANI · Gaetan MONTERO REDONDO · Yuting MOU · Risa PAVIA · Wenli PENG · Erika PINI · Francesco Andrea PIRRONE · José-Miguel QUESADA PEREZ · Mathieu SAUVENIER · Eva-Maria SCHOLZ · Simon SCHOPOHL · Matias SCHUSTER PUGA · Valerio SERSE · Alice SERVAIS · Jonas STRIAUKAS · Yu SUN · Jonas TEUSCH · Sonia TRABELSI · Jean-Charles WIJNANDTS · Dagmara WRZESINSKA

RESEARCH FELLOWS

Research Fellows are scholars working at CORE for a period of one to three years:

- ▶ Andreu ARENAS, European University Institute, Italy
- ▶ Avinash BHARDWAJ, University of California at Berkeley, USA
- ▶ Marion COLLEWET, Universiteit Maastricht, The Netherlands
- ▶ Adeline DECUYPER, CESAME, UCLouvain, Belgium
- ▶ Jonathan HUGHES, University of Kent, United Kingdom
- ▶ Olivier FINANCE, Université Paris 1 Panthéon-Sorbonne, France
- ▶ Dimitra KYRIAKOPOULOU, Bank of Greece, Greece
- ▶ Eve RAMAEKERS, CORE, UCLouvain, Belgium
- ▶ Robert SOMOGYI, Ecole Polytechnique, Paris, France
- ▶ Tom TRUYTS, KU Leuven, Belgium

COMPLETED PH.D. DISSERTATIONS

Four CORE doctoral students successfully defended their Doctoral Dissertation at CORE.

- ▶ **Manuela BRAIONE**, *Component dynamic models for realized covariance matrices*
Economics School of Louvain, UCLouvain, Belgium, March 14, 2017 under the supervision of Luc BAUWENS and Christian HAFNER
Current position: Università degli Studi di Roma "Tor Vergata", Italy

The increasing availability of high-quality transaction data across many financial assets, allow the construction of estimates of ex-post daily realized volatility and co-volatility by summing squares and cross-products of intraday high-frequency returns. This exhaustive set of data has stimulated the development of a lively field of econometric analysis with the proposition of models directly fitted to time series of realized measures. One interest of these models is that they can be used for forecasting future values, which is typically of use in financial applications such as hedging, option pricing, risk management, and portfolio allocation. (Multivariate) GARCH models can be used for the same purposes but since they rely on daily observed returns, in principle they provide less precise estimates and forecasts of variances and covariances than measures based on intraday data. The present thesis tries to contribute to the existing literature by proposing feasible models for realized covariance matrices that can be readily applied in financial applications. The common feature of the novel specifications is a dynamic temporal structure of the covariance matrix consisting of a short-term and a long-term component, whereby the long-term component can be shaped differently depending on the specific problem at hand. Throughout the thesis we firstly embrace the common belief of a constant long-run component and then we relax it, thus illustrating the main strengths and weaknesses of both approaches. Furthermore, in each case, we propose our own methodology to allow estimation for large cross-sections, thus mitigating the common issue of parameter proliferation that prevents the application of many models to realistic high-dimensional frameworks. The usefulness of the proposed procedures is supported by extensive empirical evidence.

- ▶ **Deniz NEBIOGLU**, *Essays in empirical macroeconomics and experimental economics*
Economics School of Louvain, UCLouvain, Belgium, March 14, 2017 under the supervision of Vincent VANNETELBOSCH and Rafael WOUTERS
Current position: Bilgi Economics Lab of Istanbul (BELIS), Turkey

This thesis consists of two main parts. First part, which is composed of Chapter 1: 'Exploring transmission mechanism of news shocks: A unified approach' and Chapter 2: 'Do expectations matter? Evidence based on an estimated DSGE Model' focuses on analyzing the quantitative importance of news shocks in explaining business cycle fluctuations. Chapter 1 presents a series of calibration exercises, which aim to investigate the anatomy of news shock in a basic DSGE model in the spirit of Smets and Wouters (2007). On the other

hand, Chapter 2 estimates a modified version of Smets and Wouters (2007) model to test the quantitative importance of news shock in accounting for U.S. business cycle fluctuations. Second part which encloses Chapter 3: 'Labor/Leisure tradeoff in the laboratory' and Chapter 4: 'Wealth effects and labor supply: an experimental study' focuses on testing behavioural foundations of Greenwood et al. (1988) preferences which is commonly used in the news shock literature. Chapter 3 is a methodological investigation to guide an appropriate experimental design to study the topic and presents a series of experiments to show the challenge of observing labor/leisure trade-off in a neoclassical framework in the laboratory. Given this guidance, an experiment, which employs a market mechanism to extract labor/leisure preferences, was designed and run. This experiment constitutes Chapter 4 of this dissertation.

- ▶ **Eva-Maria SCHOLZ.** *Business strategy and environmental concerns*
Economics School of Louvain, UCLouvain, Belgium, April 4, 2017 under the supervision of Paul BELLEFLAMME

Environmental and social concerns have been rising continuously over the past decades and with them their importance for businesses and economies. Today, factors such as increasing resource risks, stricter regulatory environments as well as growing expectations in terms of sustainable product and service offerings or a socially and environmentally responsible conduct put companies in front of unprecedented challenges. At the same time, these challenges also hold unparalleled opportunities: by integrating sustainability considerations in their business strategies, companies may manage resource risks, comply with regulatory requirements and appeal to the expectations of their environmentally and socially conscious stakeholders. All of the latter may give rise to important competitive advantages, among other, by means of new growth opportunities, reputation gains or improved operational performance. Against this background, this thesis analyzes the strategic implications of social and environmental challenges and clarifies how companies may capture their business opportunities by integrating sustainability considerations in their operations. In particular: Chapter 1 addresses the topic of resource scarcity and analyzes its implications for the commercialization of process technology by means of licensing agreements; Chapter 2 focuses on firms' incentives for supporting the transition to a Circular Economy via the choice of their business model; Chapter 3 discusses final good producers' incentives and their ability to improve the social performance of their supply chains.

- ▶ **Claudia HUPKAU.** *Economic disadvantage, policy design and individual decision making*
Economics School of Louvain, UCLouvain, Belgium, August 24, 2017 under the supervision of François MANIQUET
Current position: Research Economist, Centre for Vocational Education Research, London School of Economics, United Kingdom

Disadvantage in terms of financial resources is often coupled with disadvantage in other dimensions, such as human capital, working conditions or labour market opportunities. This doctoral thesis serves as an examination of three economic questions, where individuals' disadvantage affects their economic decision making, or where disadvantaged individuals are the target of policies designed to improve their economic outcomes. In Chapter 1, we demonstrate how a policy targeted at poor individuals might fail in its objectives because the design of the policy causes some of the intended beneficiaries to suffer what we term an identity cost. In Chapter 2, we identify that women still fall behind men, in terms of labour market outcomes, partly due to their choices after childbearing. We show that women in the UK significantly reduce hours worked after having a second child, that this effect persistently occurs and is almost twice as prevalent among women working in low-skilled occupations, as opposed to women working in high or intermediate-skilled occupations. In Chapter 3, we study the impact of a school conversion programme in England, targeted at underperforming schools, typically attended by children from disadvantaged socio-economic backgrounds, with below-average prior performance. We show that giving schools more autonomy improves short and medium-term outcomes for the students attending them, and the effect is particularly strong for the most deprived students.

PH.D. DISSERTATIONS IN PROGRESS

Arnaud ADAM

- ▶ Title: A new geography of the spatial interactions within the metropolitan area of Brussels
- ▶ Supervisor: Isabelle THOMAS
- ▶ Started: 2015
- ▶ Doctoral School: Sciences, UCLouvain, Belgium

Ignacio Andrés ARAVENA SOLÍS

- ▶ Title: Application of high-performance computing in short-term scheduling of electric power systems under uncertainty
- ▶ Supervisor: Anthony PAPAVALIOU
- ▶ Started: 2013
- ▶ Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCLouvain, Belgium

Gautier ATTANASI

- ▶ Title: Dimension reduction of high dimensional nonstationary time series
- ▶ Supervisor: Sébastien VAN BELLEGEM
- ▶ Started: 2014
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Rytis BAGDZIUNAS

- ▶ Title: Functional data estimation in the presence of endogeneity
- ▶ Supervisor: Sébastien VAN BELLEGEM
- ▶ Started: 2011
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Sinem BAS

- ▶ Title: Essays on poverty and gender equality issues
- ▶ Supervisors: Alain CHATEAUNEUF and François MANIQUET
- ▶ Started: 2012
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium and Université Paris 1 Panthéon Sorbonne, France (EDEEM student)

GILLES BERTRAND

- ▶ Title: Model the value of flexibility at subhourly timescale
- ▶ Supervisor: Anthony PAPAVALIOU
- ▶ Started: September 2016
- ▶ Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCLouvain, Belgium

Justin DELLOYE

- ▶ Title: Three-dimensional urban morphodynamics
- ▶ Supervisors: Isabelle THOMAS and Dominique PEETERS
- ▶ Started: 2014
- ▶ Doctoral School: Sciences, UCLouvain, Belgium

Julien DEWEZ

- ▶ Title: Lower bounds on the nonnegative rank
- ▶ Supervisor: François GLINEUR
- ▶ Started: 2013
- ▶ Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCLouvain, Belgium

Jérôme DOLLINGER

- ▶ Title: Networks interrelations and co-evolutions
- ▶ Supervisors: Ana MAULEON And Vincent VANNETELBOSCH
- ▶ Started: 2017
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Cyrille DOSSOUGOIN

- ▶ Title: A spatial econometrics approach to financial complexity
- ▶ Supervisors: Sophie BÉREAU and Nicolas DEBARSY
- ▶ Started: 2014
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Mery FERRANDO GUTIERREZ

- ▶ Title: Human capital accumulation and deprivation
- ▶ Supervisor: François MANIQUET
- ▶ Started: 2012
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Bartosz FILIPECKI

- ▶ Title: Improving models and algorithms for mixed-integer nonlinear optimization in the power industry
- ▶ Supervisor: Mathieu VAN VYVE
- ▶ Started: 2014
- ▶ Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCLouvain, Belgium

Andras GREGOR

- ▶ Title: Essays on public economics
- ▶ Supervisor: Jean HINDRIKS
- ▶ Started: 2014
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Thuc Huan HA

- ▶ Title: The business models of a circular economy
- ▶ Supervisors: Paul BELLEFLAMME and Thierry BRÉCHET
- ▶ Started: 2015
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Manuel HERRERA RODRIGUEZ

- ▶ Title: Essays on port network optimization: Disruptive factors
- ▶ Supervisor: Per AGRELL
- ▶ Started: 2014
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Nathan LASSANCE

- ▶ Title: Information-theoretic risk measures in asset allocation
- ▶ Supervisor: Frédéric VRINS
- ▶ Started: 2016
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Liana-Sabina LUNCASU

- ▶ Title: Nonparametric m-frontier estimation with noise in both variables
- ▶ Supervisor: Sébastien VAN BELLEGEM
- ▶ Started: 2014
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Simone MARTELLI

- ▶ Title: Analysis of climate change mitigation policies
- ▶ Supervisor: Thierry BRÉCHET
- ▶ Started: 2014
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Cheikh MBAYE

- ▶ Title: Conic martingales and credit risk modelling
- ▶ Supervisor: Frédéric VRINS
- ▶ Started: 2015
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Ilyès MEZGHANI

- ▶ Title: Coordinated scheduling of transmission and distribution operations in electric power markets
- ▶ Supervisor: Anthony PAPAVALIOU
- ▶ Started: 2016
- ▶ Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCLouvain, Belgium

Arnaud MONSEUR

- ▶ Title: Macro finance models of interest rates in Europe
- ▶ Supervisor: Leonardo IANIA
- ▶ Started: 2015
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Gaetan MONTERO REDONDO

- ▶ Title: Measuring and understanding the morphology of urban space. Theoretical and empirical contributions on the basis of Brussels metropolitan area
- ▶ Supervisor: Isabelle THOMAS
- ▶ Started: 2015
- ▶ Doctoral School: Sciences, UCLouvain, Belgium

Yuting Mou

- ▶ Title: Priority service differentiation in residential demand response aggregation
- ▶ Supervisors: Philippe CHEVALIER and Anthony PAPAVALIOU
- ▶ Started: 2015
- ▶ Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCLouvain, Belgium

RISA PAVIA

- ▶ Title: Taxation of multinational corporations
- ▶ Supervisors: Jean HINDRIKS and Susana PERALTA
- ▶ Started: 2014
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium and Universidade Nova de Lisboa, Portugal (EDEEM student)

Wenly PENG

- ▶ Title: Stochastic modelling of real world scheduling problem
- ▶ Supervisor: Philippe CHEVALIER
- ▶ Started: 2012
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Erika PINI

- ▶ Title: Electoral competition and the mismatch between the voters' interests and the candidates' proposals
- ▶ Supervisor: François MANIQUET
- ▶ Started: 2017
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Francesco Andrea PIRRONE

- ▶ Title: Impact on growth and macro risk vulnerability of different pension schemes: PAYG, FF and hybrid schemes
- ▶ Supervisor: Julio DAVILA
- ▶ Started: 2013
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Mathieu SAUVENIER

- ▶ Title: Structural sparse linear model
- ▶ Supervisor: Sébastien VAN BELLEGEM
- ▶ Started: 2016
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Nicolas SCHOLTES

- ▶ Title: Interbank network and financial stability
- ▶ Supervisors: Sophie BÉREAU and Jean-Yves GNABO
- ▶ Started: 2013
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Simon SCHOPHL

- ▶ Title: Essays on communication and information transmission
- ▶ Supervisors: Ana MAULEON, Vincent VANNETELBOSCH, Tim HELLMAN (Universität Bielefeld) and Agnieszka RUSINOWSKA (Université Paris 1)
- ▶ Started: 2014
- ▶ Doctoral School: Louvain School of Economics, UCLouvain, Belgium, Universität Bielefeld, Germany, and Université Paris 1, France (EDEEM Student)

Valerio SERSE

- ▶ Title: Evaluating the effectiveness of price-based policies in reducing unhealthy food demand under models of 'non-standard' consumption behaviour
- ▶ Supervisor: Jean HINDRIKS
- ▶ Started: 2015
- ▶ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Yu SUN

- ▶ Title: Economic growth with environmental uncertainties
- ▶ Supervisor: Thierry BRÉCHET
- ▶ Started: 2015
- ▶ Doctoral School: Economics School of Louvain, UCLouvain

Jonas TEUSCH

- ▶ Title: Yardstick competition under heterogeneity
- ▶ Supervisors: Per AGRELL and Axel GAUTIER
- ▶ Started: 2013
- ▶ Doctoral School: HEC-Ecole de Gestion de l'Université de Liège, Belgium

Sonia TRABELSI

- ▶ Title: Morphometrics of green spaces
- ▶ Supervisor: Isabelle THOMAS
- ▶ Started: 2015
- ▶ Doctoral School: Sciences, UCLouvain, Belgium

Jean-Charles WIJMANDTS

- ▶ Title: Essays in empirical asset pricing
- ▶ Supervisors: Leonardo IANIA
- ▶ Started: 2016
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Dagmara WRZESINSKA

- ▶ Title: Incorporating spatial aspects in supply chain management problems
- ▶ Supervisors: Philippe CHEVALIER and Isabelle THOMAS
- ▶ Started: 2016
- ▶ Doctoral School: Louvain School of Management, UCLouvain, Belgium

EDEEM PROGRAM

EDEEM is a doctoral program in economics that gathers seven leading European institutions coordinated by Universität Bielefeld, Germany. EDEEM is a research-oriented program that aims to produce top-quality researchers, who will gain international experience working within the research units with some of Europe's leading researchers in economics. Students are trained for positions in academia at the international level as well as for responsible positions in government, research organizations, and business enterprises. High focus is made on research work, publication and presentation, with dedicated Jamborees and Summer Schools being an integral part of the training.

The EDEEM program welcomes around 25 students each year. Admission is based on excellence in previous Master Degree studies or equivalent. This degree does not have to be in economics, although interest in economics is certainly desirable and a strong background in mathematics will be helpful together with fluent written and spoken English. The program is organized in three years.

All Ph.D. students are jointly supervised by two advisers through a co-tutelle agreement between two universities of the consortium. The student must spend at least two semesters in each of the two degree-granting universities. A single defense in one of the two universities is organized. After having successfully completed the program, the student is awarded a double degree from the two hosting institutions. The consortium is fully committed to the placement of students at the end of the program. Three students were at CORE in the scope of this programme during academic year 2016-2017: Sinem BAS, Risa PAVIA and Simon SCHOPHIL.

As part of the European Doctorate in Economics, CORE hosted the 2017 Summer Meeting on July 10-12, 2017. The event is one of the mandatory activities for doctoral students participating in the EDEEM program. The idea of this meeting is to give students the opportunity to present their work within the EDEEM network and to encourage discussion. A job market placement training session as well as the annual monitoring of EDEEM doctoral students took place during these three days.

EDEEM SUMMER MEETING PROGRAM

KEYNOTE LECTURE

- ▶ Jean HINDRIKS, CORE, UCLouvain, Belgium
Towards an equitable and sustainable points system. A proposal for pension reform in Belgium

PARALELL SESSIONS

GAME THEORY AND NETWORK SESSION

- ▶ Elena ORLOVA, Universität Bielefeld, Germany and Ecole des Hautes Etudes en Sciences Sociales, Paris, France
Heterogeneity in games on networks
- ▶ Zhaojuin XING, Universität Bielefeld, Germany and Université Paris 1 Panthéon-Sorbonne, France
Vague Voronoi languages: Equilibria in signaling games
- ▶ **Simon SCHOPHIL**, Universität Bielefeld, Germany, Ecole des Hautes Etudes en Sciences Sociales, Paris, France and CORE, Université catholique de Louvain, Belgium
Centralizing information in endogenous networks

GROWTH SESSION

- ▶ Ilya ERYZHENSTKIY, Université Paris 1 Panthéon-Sorbonne, France and Universität Bielefeld, Germany
Endogenous borrowing constraints in a growth model with three overlapping generations
- ▶ Kerstin HÖTTE, Universität Bielefeld, Germany
Directed technological change: An agent-based macroeconomic approach to eco-innovation diffusion and policy evaluation based on Eurace@unibi
- ▶ Christophe DEUSTER, IRES, Université catholique de Louvain, Belgium and Universidade Nova de Lisboa, Portugal
Climate change and education: Do adverse weather changes foster educational attainment?

MIGRATION SESSION

- ▶ Tijan L. BAH, Universidade Nova de Lisboa, Portugal and Ecole des Hautes Etudes en Sciences Sociales, Paris, France
Understanding willingness to migrate illegally: Evidence from a lab-in-the field experiment
- ▶ Zainab IFTIKHAR, Universität Bielefeld, Germany and IRES, UCLouvain, Belgium
Brain drain, informality and inequality

MICROECONOMICS SESSION

- ▶ Quentin COUANAU, Université Paris 1 Panthéon-Sorbonne, France and Universität Bielefeld, Germany
Cooperation versus competition in agency under ambiguity
- ▶ Alessandro BASURTO, Universität Bielefeld, Germany and Universiteit Amsterdam, The Netherlands
Social learning in an asset pricing model with heterogeneous beliefs

DEVELOPMENT ECONOMICS SESSION

- ▶ Elisa Rizzo, IRES, UCLouvain, Belgium and Université Paris 1 Panthéon-Sorbonne, France
Education and crime in India
- ▶ **Sinem BAS**, Université Paris 1 Panthéon-Sorbonne, France and CORE, UCLouvain, Belgium
Poverty measurement with heterogeneous preferences

HUMAN CAPITAL SESSION

- ▶ Madhruai ARGAWAL, Universidade Nova de Lisboa, Portugal and Universität Bielefeld, Germany
Human capital inequality and growth-analysis for developing countries
- ▶ Nucke Widowati Kusumo PROJÓ, Université Paris 1 Panthéon-Sorbonne, France and Universidade Nova de Lisboa, Portugal
Why physicians engage in dual practice, evidence from a developing country

TAXATION AND MICROECONOMICS SESSION

- ▶ **Risa PAVIA**, Universidade de Lisboa, Portugal and CORE, UCLouvain, Belgium
Tax evasion by domestic and multinational Portuguese companies: A bunching analysis
- ▶ Dalal MOOSA, Université Paris 1 Panthéon-Sorbonne, France, IRES, UCLouvain, Belgium and Università Cà Foscari di Venezia, Italy
Complementing inheritance: Intra-household transfers in an OLG model

EUROPEAN DOCTORAL PROGRAM IN QUANTITATIVE ECONOMICS

The European Doctoral Program in Quantitative Economics (EDP) is a program of doctoral studies in economics organized jointly by the following universities: Université catholique de Louvain (Belgium), Ecole des Hautes Etudes en Sciences Sociales, Paris (France), Rheinische Friedrich-Wilhelms-Universität Bonn (Germany), European University Institute, Florence (Italy), Universitat Pompeu Fabra, Barcelona (Spain), London School of Economics (United Kingdom) with Tel Aviv University (Israel) as an exchange partner. This is done within the framework of the existing degree requirements of these institutions. The aim of EDP is to promote the exchange of doctoral students between these institutions in order for their research training to benefit from their strengths in various areas of quantitative economics.

Each institution offers Masters and Ph.D. courses, seminars and workshops, and research supervision. Doctoral students participating in the program do the research work for their dissertation in the institutions of the EDP network. They are required to spend at least 3 months abroad in an EDP institution different from the one where their dissertation will be presented.

The program focuses on economic theory, mathematical economics, decision and game theory, econometric theory and methodology, empirical econometrics and applied mathematical economics through the coordinated curriculum based on the activities at Barcelona, Bonn, Florence, London, Louvain, Paris and Tel-Aviv. It creates the opportunity for students to specialize in almost any major area of quantitative economics and, at the same time, it allows students to integrate different aspects of economics. Moreover, EDP offers unique access to the traditions and current research of these seven institutions. The program started in 1977. Fifty students are currently enrolled. Three are currently staying at CORE: Mery FERRANDO, Francesco Andrea PIRRONE and Eva-Maria SCHOLZ.

As part of the European Doctoral Program in Quantitative Economics, The Universitat Pompeu Fabra organized the Jamboree 2016-2017 for thirty-eight students on September 15-16, 2016.

EDP JAMBOREE PROGRAM

KEYNOTE LECTURE

- ▶ Luigi PASCALI, Universitat Pompeu Fabra, Barcelona, Spain
Cereals, appropriability and hierarchy

PARALELL SESSIONS

THEORY SESSION

- ▶ Carl HEESE, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
The self-informed voter and information aggregation
- ▶ Andrea PIRRONE, CORE, UCLouvain, Belgium
Common knowledge in correlated equilibria and global games
- ▶ Juni SINGH, Paris School of Economics, France
Updating under ambiguity with repeated feedback
- ▶ Justus WINKELMANN, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
A ranking mechanism for coupled binary decision problems

FINANCE SESSION

- ▶ Antonis KOTIDIS, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Double liability in a branch banking system: Historical evidence from Canada
- ▶ Rasmus PANK, European University Institute, Firenze, Italy
Certainty and decisions in experimental asset markets
- ▶ Fabian WALDERS, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Heterogeneous liquidity effects in corporate bond spreads
- ▶ Tomas WILLIAMS, Universitat Pompeu Fabra, Barcelona, Spain
Liquidity provision in sovereign debt markets and bank lending: Evidence from Columbia

MACROECONOMICS SESSION 1

- ▶ Matteo BENETTON, London School of Economics, United Kingdom
Competition and macro-prudential regulation: Evidence from the UK mortgage supermarket
- ▶ Jens HEROLD, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Data, model-implied policy rates and consumption Euler equations. An empirical perspective
- ▶ Pawel KOPIEC, European University Institute, Firenze, Italy
Competition in the financial sector and financial crises in a business cycle model

APPLIED MICROECONOMICS SESSION 1

- ▶ Dana KASSEM, London School of Economics, United Kingdom
Effect of electricity grid expansion on manufacturing firms: Evidence from Indonesia
- ▶ Iva TRAKO, Paris School of Economics, France
The impact of conflict displacement on education and labor market outcomes: The case of post-war Kosovo
- ▶ Simon BRIOLE, Paris School of Economics, France
From teacher quality to teaching quality: Instruction time, teaching practices and student achievement

MACROECONOMICS SESSION 2

- ▶ Martin WOLF, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Currency pegs and currency crises
- ▶ Guzman OURENS, IRES, UCLouvain, Belgium
Uneven diversification and divergence
- ▶ Annalisa FRIGO, IRES, UCLouvain, Belgium
Now she is Martha, then she is Mary: The influence of beguinages on gender norms

APPLIED MICROECONOMICS SESSION 2

- ▶ Tommaso SONNO, IRES, UCLouvain, Belgium
Markups, productivity and the financial capability of firms
- ▶ Clara MARTINEZ TOLEDANO, Paris School of Economics, France
The distribution of wealth in Spain. Evidence from capitalized income tax data
- ▶ Riccardo TURATI, IRES, UCLouvain, Belgium
Multiculturalism and growth: Skill-specific evidence from the Forst-WW2 period

JOB MARKET PRESENTATIONS

- ▶ Thomas STÖRK, Universitat Pompeu Fabra, Barcelona, Spain
An evaluation of air pollution control policy in China
- ▶ Arthur SEIBOLD, London School of Economics, United Kingdom
Statutory ages and retirement: Evidence from Germany
- ▶ Guo Xu, London School of Economics, United Kingdom
Patronage and the origins of state capacity: Evidence from the British empire
- ▶ Nicola LIMODIO, London School of Economics, United Kingdom
Deposit volatility and long-term investment: Evidence from a natural experiment in Pakistan
- ▶ Lisa WINDSTEIGER, London School of Economics, United Kingdom
To see or not so see: Inequality, segregation, biased perceptions of the income distribution and the demand for

WINTER AND SUMMER SCHOOLS

2ND UNAMUR-UCL/CORE WINTER SCHOOL ON NETWORKS IN ECONOMICS AND FINANCE

During the past decade, both academics and policymakers have recognised the importance of studying interconnectedness and complexity. The objective of this winter school and the associated events spreading over the week was to assess recent progress made in the application of networks for modelling economic and financial systems with an emphasis on econometric issues.

The Winter School took place at CORE from December 12 to December 14, 2016. This event was part of a full week devoted to network science. It was sponsored by UCLouvain, FiXS, CeReFiM, CORE and Naxys.

PROGRAM

- ▶ Bryan S. GRAHAM, University of California at Berkeley, USA
Lecture 1: Describing networks
Lecture 2: Nonparametrics: Graphons (part 1)
Lecture 3: Nonparametrics: Graphons (part 2)
Lecture 4: Network formation: Heterogeneity
Lecture 5: Network formation: Strategic interaction
Lecture 6: Peer effects
- ▶ Belgian Network Research meeting BeNet 2016 gathered scientists from a wide range of disciplines applying network science.
- ▶ Research meetings with Professor GRAHAM

2017 ECORES SUMMER SCHOOL: INDIVIDUAL HETEROGENEITY IN ORGANIZATIONS

Introducing heterogeneity in economic analysis is akin to inserting colors into black and white pictures. The case where all agents are identical and settings are symmetric is a reflection of a colorless world, whereas heterogeneity and diversity enrich it with color, spark, and spice. It allows for a much richer modeling of employer-employee relationships, consumer behavior, and firm strategies. The ECORES Summer School proposed a careful examination of various (positive and negative) aspects of heterogeneity in a wide range of social organizations and economic environments, in which symmetric settings are used as a benchmark. The big data revolution is now opening new horizons in the analysis of heterogeneity in economics and social organizations.

This year, the ECORES Summer School was held at CORE on May 30-June 1, 2017. It was sponsored by ECORES, The National Bank of Belgium, Vlaanderen in Actie Pact 2020, FNRS, Université libre de Bruxelles and Université catholique de Louvain.

PROGRAM

KEYNOTE LECTURES

- ▶ Liran EINAV, Stanford University, USA
Measuring the importance of adverse selection in insurance markets
- ▶ Muriel NIEDERLE, Stanford University, USA
A gender agenda: From the lab to the field to policy
- ▶ Roland BÉNABOU, Princeton University, USA
Social beliefs and social norms

POSTER SESSIONS

- ▶ Bastien CHABÉ-FERRET, IRES, UCLouvain, Belgium
Adherence to cultural norms and economic incentives: Evidence from fertility timing decisions
- ▶ **Thuc Huan HA**, CORE, UCLouvain, Belgium
Scrap collection for recycling: How far should we go?
- ▶ Mats KÖSTER, Düsseldorf Institute for Competition Economics, Germany
Local thinking and skewness preferences
- ▶ **Robert Somogyi**, CORE, UCLouvain, Belgium
The economics of zero-rating and net neutrality
- ▶ Dora Gréta PETROCZY, Corvinus University of Budapest, Hungary
How additional exit affects the European Union's power distribution
- ▶ Michaël RUBENS, KU Leuven, Belgium
Dynamic location decisions in multinational production
- ▶ Jean-Baptiste TONDJI, University of Ottawa, Canada
Valuing inputs under supply uncertainty: The Bayesian Shapley value
- ▶ Benoit DECERF, UNamur, Belgium
In search of advice for participants in constrained school choice
- ▶ Olivier DE GROOTE, KU Leuven, Belgium
The effects of high school curriculum. Are students making the right decision?
- ▶ Martijn HUYSMANS, KU Leuven, Belgium
Heterogeneity, vetoes and exit clauses in federal systems
- ▶ Fan LI, KU Leuven, Belgium
More money, better performance? The effects of student loans and need-based grants in China's higher education
- ▶ Homayoon MORADI, WZB Berlin Social Science Center, Germany
First show me the money: Moral wiggle room reverted
- ▶ **Marion COLLEWET**, CORE, UCLouvain, Belgium
Measuring labour supply preferences using hypothetical questions
- ▶ **Valerio SERSE**, CORE, UCLouvain, Belgium
Estimating a mixed logit model of Cola demand on scanner data with heterogeneous household preferences: Does reinforcement effects in sugar consumption matter?
- ▶ Haihan Yu, Universidad de Alicante, Spain
Common knowledge of rationality and information demand: An experiment on observational learning and information consumption
- ▶ **Andreu ARENAS**, CORE, UCLouvain, Belgium
Intergenerational mobility and school segregation
- ▶ Cécile GODFROID, Université de Mons, Belgium
How to reconcile financial incentives and prosocial motivation of loan officers in microfinance?
- ▶ Surana KHUSHBOO, KU Leuven, Belgium
Marital matching, economies of scale and intrahousehold allocations
- ▶ Oleg RUBANOV, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Ownership and incentives
- ▶ Hennie MORRITZ, Université libre de Bruxelles, Belgium
Who is the key campaigner? Civil society organizations in the European Union
- ▶ Thi Thu Hien PHAM, KU Leuven, Belgium
Bias-corrected estimation of the BLP random coefficient model with fixed effects
- ▶ Jeroen VAN DEN BOSCH, KU Leuven, Belgium
Productivity growth over the business cycle: Cleansing effects of recessions

SOFiE FINANCIAL ECONOMETRICS SUMMER SCHOOL

The SoFiE Financial Econometrics Schools are annual week-long research-based courses for Ph.D. students and new faculty in financial econometrics. On June 26-30, 2017, the National Bank of Belgium hosted the Summer School focused on "**Modelling the Term Structure of Interest Rates**". The 2017 lecturers were: Anh LE (Pennsylvania State University, USA) and Kenneth SINGLETON (Stanford University, USA).

PROGRAM

INTRODUCTION

- ▶ Review the salient empirical properties of bond yields (conditional moments, factor structure, etc.) and several of the empirical puzzles related to the distributions of bond yields;
- ▶ Review non-arbitrage pricing of default-free bonds;
- ▶ Introduce alternative parametric models for pricing bonds, including affine and linear-rational models

REDUCED-FORM, AFFINE TERM STRUCTURE MODELS

- ▶ Alternative normalizations for achieving identification;
- ▶ Estimation strategies for dynamic term structure models;
- ▶ Goodness-of-fit of affine models of bond yields

EQUILIBRIUM MODELS OF THE TERM STRUCTURE

- ▶ Pricing bonds in models with long-run risk;
- ▶ Habit formation and risk premiums in bond markets;
- ▶ Empirical challenges in matching distributions of yields in equilibrium models

SPANNING RESTRICTIONS IN DYNAMIC TERM STRUCTURE MODELS

- ▶ Economic motivations for spanning restrictions;
- ▶ Evidence of unspanned factors and their implications for modeling risk premiums in bond markets;
- ▶ Learning in bond markets

TIME-VARYING VOLATILITY IN BOND MARKETS

- ▶ Unspanned volatility in bond markets;
- ▶ Potential resolutions on the tension between fitting conditional means and variance of yields;
- ▶ Using options data to infer volatilities in bond markets.

DOCTORAL WORKSHOPS

The doctoral workshops provide a research forum where members of the Doctoral Program in Economics at UCLouvain have the opportunity to present part of their completed or ongoing research. Even though presentations are reserved for doctoral students, access to the workshop is open to a larger public. Professors and researchers from partner institutions are invited to attend all sessions. Doctoral students from Université catholique de Louvain, Université de Namur, Université Saint-Louis, Bruxelles, Université libre de Bruxelles, Université de Liège, Universiteit Gent and KU Leuven are invited to attend the sessions and present their research.

WINTER SESSION 2016, UNIVERSITÉ DE NAMUR

PARALELL SESSIONS

TRADE SESSION

- ▶ Daniele VERDINI, IRES, UCLouvain, Belgium
Regional labor market effects of Chinese import competition in Italy
- ▶ Ruben DEWITTE, Universiteit Gent, Belgium
Comparative advantage and heterogeneous firms. The case of Portugal

MONETARY ECONOMIC SESSION

- ▶ Kelbesa MEGERSA, UNamur, Belgium
Unconventional monetary policies in the US and Eurozone and their global spillovers: Some evidences from South Africa
- ▶ Julien PINTER, Université Saint-Louis, Bruxelles, Belgium
Breaking the Swiss Franc peg: Afraid of financial losses

PUBLIC ECONOMICS SESSION

- ▶ Mery FERRANDO, CORE, UCLouvain, Belgium
A new measure of income poverty for the US: Balancing absolute and relative poverty
- ▶ Valerio SERSE, CORE, UCLouvain, Belgium
Evaluating the impact of junk food taxation
- ▶ Sümeyra ATMACA, Universiteit Gent, Belgium
Corruption in public procurement: Reserve price setting

DEVELOPMENT AND MIGRATION SESSION

- ▶ Riccardo TURATI, IRES, UCLouvain, Belgium
Emigrants' selection and the modernization potential of transition economies
- ▶ Thu Hien DAO, IRES, UCLouvain, Belgium
Future world development and migration to OECD countries

MACROECONOMICS SESSION

- ▶ Yu Sun, CORE, UCLouvain, Belgium
Adaptative intertemporal decision making under the threat of intense earthquakes
- ▶ Christophe ERNAELSTEEN, UNamur, Belgium
Interregional redistribution and economic growth: Does the business cycle of growth matter? A test on European panel data

DEVELOPMENT AND FAMILY ECONOMICS SESSION

- ▶ Ludovic BEQUET, UNamur, Belgium
Gender in conflict - consequences of the people's war in Nepal on marriage and fertility behavior
- ▶ Fabio BLASUTTO, IRES, UCLouvain, Belgium
Premarital cohabitation as an information device and mating strategies by education

INDUSTRIAL ORGANIZATION SESSION

- ▶ **Eva-Maria SCHOLZ**, CORE, UCLouvain, Belgium
Corporate social responsibility and supplier development
- ▶ **Thuc Huan HA**, CORE, UCLouvain, Belgium
Scraps collection for recycling - how good is good?
- ▶ **Andras GREGOR**, CORE, UCLouvain, Belgium
Political motives behind the allocation of investment grants in Hungary - a regression discontinuity design approach

SUMMER SESSION 2017, UNIVERSITÉ CATHOLIQUE DE LOUVAIN

PARALELL SESSIONS

ECONOMETRICS AND FINANCIAL ECONOMICS SESSION

- ▶ **Mathieu SAUVENIER**, CORE, UCLouvain, Belgium
Linear sparse structural model
- ▶ Han Ngoc NGUYEN, UCLouvain, Belgium
The relationship between fertility rate and saving portfolio of household
- ▶ Gertjan VERDICKT, Universiteit Antwerpen, Belgium
Is dividend growth predictability dead? Long-run evidence from the Brussels stock exchange: 1832-2015

POPULATION AND FAMILY ECONOMICS SESSION

- ▶ **Sinem BAS**, CORE, UCLouvain, Belgium
Female labour supply in Turkey: A collective model
- ▶ Fabio BLASUTTO, IRES, UCLouvain, Belgium
Premarital cohabitation as an information device and mating strategy differences by education
- ▶ Annalisa FRIGO, IRES, UCLouvain, Belgium
Ageing mothers and the impact of assisted reproductive technologies

LABOUR ECONOMICS SESSION

- ▶ Dalal MOOSA, IRES, UCLouvain, Belgium
Intra-household transfers and bequest: A story of substitutes?
- ▶ Alexandre OUNNAS, IRES, UCLouvain, Belgium
Worker flows and job polarization: A variance decomposition
- ▶ Juliana MESEN VARGAS, IRES, UCLouvain, Belgium
Job search in the presence of subsistence constraints

MACROECONOMICS SESSION 1

- ▶ Marco PINCHETTI, Université libre de Bruxelles, Belgium
Creative destruction cycles: Schumpeterian growth in an estimated DSGE model
- ▶ Hoang KHIEU, Universität Mainz, Germany
Idiosyncratic capital income and wealth distribution
- ▶ Miura SHOGO, Université libre de Bruxelles, Belgium
Asset price bubbles, sentiment shocks and business cycles
- ▶ Françoise DELMEZ, UNamur, Belgium
Firms' choice of working time in a general equilibrium model

POLITICAL ECONOMICS SESSION

- ▶ **Andras GREGOR**, CORE, UCLouvain, Belgium
Electoral rules and fiscal outcomes - a regression discontinuity analysis of Hungarian municipal finances
- ▶ **Erika PINI**, CORE, UCLouvain, Belgium
Political abstention and economic inequality
- ▶ Olivier MALAY, HOOV, UCLouvain, Belgium
Do beyond GDP indicators carried by powerful actors have a transformative potential?

MACROECONOMICS SESSION 2

- ▶ François COURTOY, IRES, UCLouvain, Belgium
Optimal fiscal policy
- ▶ Charlotte DE MONTPELLIER, IRES, UCLouvain, Belgium
Relative pattern of Northern Southern Euro area
- ▶ Boris CHAFWEHE, IRES, UCLouvain, Belgium
Government debt management in heterogeneous agents economies
- ▶ Guillermo SANTOS, IRES, UCLouvain, Belgium
Efficiency in a model with heterogeneous agents and domestic sovereign default

ECONOMICS AND ETHICS SESSION

- ▶ **Risa PAVIA**, CORE, UCLouvain, Belgium
Tax evasion by domestic and multinational Portuguese firms: A bunching analysis
- ▶ Bram DE LANGE, Universiteit Gent, Belgium
Scale and sectoral impact of European state-owned enterprises
- ▶ **Andrea PIRRONE**, CORE, UCLouvain, Belgium
Public bequest as a pension scheme
- ▶ Louis LARUE, IRES, UCLouvain, Belgium
After the (virtual) gold rush: Bitcoin between inefficiency and injustice

INSTITUTION AND MIGRATION SESSION

- ▶ Christophe DEUSTER, IRES, UCLouvain, Belgium
Climate change and education: Do adverse weather changes foster educational attainment?
- ▶ Adam LEVI, JURI, UCLouvain, Belgium
From legal origin theory to legal development theory and its economic consequence
- ▶ Zainab IFTIKHAR, IRES, UCLouvain, Belgium
Brain drain, informality and inequality: A search-equilibrium model for sub-Saharan Africa

DEVELOPMENT ECONOMICS SESSION

- ▶ Elisa RIZZO, IRES, UCLouvain, Belgium
Female education and fertility in Sub-Saharan Africa
- ▶ Vanessa NAEGELS, KU Leuven, Belgium
The influence of demand side factors on the use of formal loans by Tanzanian female
- ▶ Modeste DAYÉ, UNamur, Belgium
Direct and indirect effects of access to formal saving accounts: Evidence from urban Benin
- ▶ Carine MEYIMDJUI, Université d'Auvergne, Clermont-Ferrand, France
Fiscal policy and households consumption

JOB MARKET PRESENTATION

- ▶ Tommaso SONNO, IRES, UCLouvain, Belgium
Globalization and conflicts: The good, the bad and the ugly of corporations in Africa

DEBATE

On October 25, 2016 (as part of CORE's 50th Anniversary celebrations), a debate took place between students and two guest speakers, Professors Angus DEATON and Jean DRÈZE. The former is emeritus professor at Princeton University, 2015 Nobel Prize laureate, and the latter is professor at Delhi School of Economics. He is mostly known however for his political efforts in favor of the poor in India, for instance as one of the designer of the NREGA program. The debate was organized by a team of master students in economics. The discussion focused on the specificities of India, in particular because its high GDP growth performances do not succeed in improving some of the most striking shortcomings of the Indian society in terms of, for instance, the health of the poor. The two speakers shared their views on the topic, including their evaluation of the policies that are implemented to address these problems, including foreign aid.

Ph.D. COURSES

JOINT PH.D. COURSE ON BIG-DATA IN DYNAMIC PREDICTIVE ECONOMETRIC MODELING

The National Bank of Belgium, the Vrije Universiteit Brussels, CORE and LFIN (UCLouvain) co-organized a new joint Ph.D. course on **Big Data in Dynamic Predictive Econometric Modeling**. The keynote speaker was Francis X. DIEBOLD (University of Pennsylvania, USA). The event was held in the premises of the National Bank of Belgium in Brussel on October 5-6, 2016.

Proceeding at a high level but nevertheless starting from first principles and in self-contained fashion, Professor DIEBOLD focused on aspects of predictive modeling for financial markets, macroeconomic fundamentals, and the interface. He gave special attention to high-dimensional environments and the use of shrinkage, selection, and distillation. As regards shrinkage and selection, as relevant for environments characterized by what he calls "unstructured sparsity" he focused on the lasso in conjunction with network-theoretic methods for characterizing and visualizing connectedness among financial markets, financial institutions, macro fundamentals, etc. As regards distillation, as relevant for environments characterized by what he calls "structured sparsity", he focused on dynamic-factor models and their use in several areas including yield curves, asset return volatilities, and real activity monitoring.

2ND IMMAQ PH.D. COURSE IN QUANTITATIVE FINANCE

For three days (November 7-9, 2016), IMMAQ organized its 2nd Ph.D. course in quantitative finance, this time on "**Credit Risk Modeling**". Professor David LANDO (Copenhagen Business School, Denmark) focused on three topics, one for each day.

PROGRAM

- ▶ The contingent claim approach to pricing corporate debt;
- ▶ Intensity models, credit default swaps, term structure of credit spreads, money markets rates;
- ▶ Correlated defaults, loan portfolios and CDO modeling.

7TH CEMS PH.D. COURSE ON IDENTIFICATION STRATEGIES IN BUSINESS AND FINANCE

This thorough Ph.D. level class covering modern empirical work was held at CORE on December 14-15, 2016. The course was designated to help students understand how to operationalize empirical research on topics that are central to **Empirical Finance and Business**. The overarching goal was to expose students to state-of-the-art empirical research methods and prepare them to conduct their own work using new tools.

The course was given by Murillo CAMPELLO, Cornell University, USA.

PROGRAM

- ▶ Course introduction - Endogeneity - Treatment effects framework
- ▶ Empirical methods I & II - Difference-in-differences - LATE estimators
- ▶ Empirical methods II & III - Instrumental variables - Regression discontinuity design
- ▶ Empirical methods III - Matching estimators

CEMS PH.D. COURSE ON BAYESIAN DYNAMIC MODELLING FOR MULTIVARIATE TIME SERIES ANALYSIS

This short-course covered principles and methodology of **Bayesian Dynamic Modelling**, with a main focus on **methodology for multivariate time series analysis and forecasting**. Provided by Professor Mike WEST (Duke University, USA) and following introductory conceptual and perspective development in univariate settings, the course worked through a series of contexts of multivariate dynamic modelling for multiple time series. Key model developments and examples involved analysis, inference and forecasting in financial and econometric contexts, including Bayesian decision analysis overlaying modelling and computational methodology. Several examples were drawn from these areas, while others exemplify use of this range of models in other fields. The course included recent modelling and methodological developments in multivariate time series and forecasting, and contacts current research frontiers.

The course took place at CORE from May 29 to June 1, 2017.

PROGRAM

- ▶ Brief overview of Bayesian dynamic modelling and forecasting
- ▶ Multivariate time series: Common components, multivariate volatility
- ▶ Dynamic latent factor models
- ▶ Dynamic graphical models
- ▶ Simultaneous dynamic graphical models
- ▶ Dynamic sparsity via latent thresholding

BROWN BAG SEMINAR SERIES

A noteworthy initiative of the junior researchers is the launch of a CORE Brown Bag seminar series in October 2014, where junior researchers from CORE and occasionally from other institutions, present their current work or job market paper and obtain (in)valuable feedback in a dedicated and friendly atmosphere. Of the 21 brown bag seminar presentations in 2016-2017, 18 were given by junior researchers and 3 by senior CORE academics (Philippe CHEVALIER and François MANIQUET).

- ▶ September 28, 2016.
Philippe CHEVALIER, CORE, UCLouvain, Belgium
Models for horizontal supply chain collaboration
- ▶ October 12, 2016.
Angela ARMAKOLA, Université Paris 1 Panthéon-Sorbonne, France
Monitoring CCP resilience using public data
- ▶ October 19, 2016.
Andreu ARENAS, CORE, UCLouvain, Belgium
Countercyclical schooling and intergenerational mobility
- ▶ November 2, 2016.
Thuc Huan HA, CORE, UCLouvain, Belgium
Social welfare and the rebound effect of the scraps collection system
- ▶ November 9, 2016.
Robert SOMOGYI, CORE, UCLouvain, Belgium
Capacity constraints, zero-rating and net neutrality
- ▶ November 16, 2016.
Zsombor MÉDER, Singapore University of Technology and Design, Singapore
Being random - an impractical guide. Algorithmic information theory meets game theory
- ▶ November 23, 2016.
Jau-er CHEN, National Taiwan University, Taiwan and Massachusetts Institute of Technology, Cambridge, USA
Dynamic instrumental variable quantile regression with unbalanced panel data and interactive effects
- ▶ November 30, 2016.
Ieva LINKEVICIUTE, Copenhagen Business School, Denmark
Aggregation of demand-side flexibility in electricity markets: The effects of portfolio choice
- ▶ January 11, 2017.
François MANIQUET, CORE, UCLouvain, Belgium
(Un)fair tax-benefit systems: Evidence from selected OECD countries
- ▶ January 18, 2017.
Johannes JOHNEN, CORE, UCLouvain, Belgium
Browsing versus studying offers
- ▶ February 1, 2017.
Alberto PARTI, Aix-Marseille School of Economics, France
Hedonic recall bias. Why you should not ask people how much they earn?
- ▶ February 8, 2017.
Mariann OLLAR, Universiteit Groningen, The Netherlands
Shared information sources in exchanges
- ▶ February 15, 2017.
Avinash BHARAJ, CORE, UCLouvain, Belgium
Submodular knapsacks - A polyhedral discussion
- ▶ February 22, 2017.
Marion COLLEWET, CORE, UCLouvain, Belgium
The effect of working hours on life satisfaction
- ▶ March 1, 2017.
Mery FERNANDO, CORE, UCLouvain, Belgium
Evolution of income poverty under unequal growth: Settling the dispute between absolutists and relativists
- ▶ March 15, 2017.
Romuald MÉANGO, Munich Center for the Economics of Aging, Germany
What make brain drain more likely? Evidence from Sub-Saharan Africa
- ▶ March 22, 2017.
Simon SCHOPHOL, CORE, UCLouvain, Belgium
Information transmission in hierarchies
- ▶ March 29, 2017.
Guzman OURENS, IRES, UCLouvain, Belgium
Uneven growth in the extensive margin: A new explanation for the divergence of agricultural economies

▶ April 19, 2017.

Risa PAVIA, CORE, UCLouvain, Belgium

*Tax evasion by domestic and multinational firms in Portugal:
A bunching analysis*

▶ May 3, 2017.

François MANIQUET, CORE, UCLouvain, Belgium

*Preference responsibility vs poverty reduction in the taxation of labor
incomes*

▶ May 17, 2017.

Guilhem LECOUTEUX, Université de Nice-Sophia Antipolis, France
*Behavioural paternalism, or the sovereignty of the neoclassical
consumer*



4

SCIENTIFIC EXCHANGES AND COLLABORATIONS

- ▶ RESEARCH VISITORS
- ▶ SCIENTIFIC MEETINGS
- ▶ WEEKLY CORE SEMINARS
- ▶ PARTICIPATION OF CORE MEMBERS IN MEETINGS ORGANIZATION
- ▶ PARTICIPATION OF CORE MEMBERS TO CONFERENCES AND SEMINARS

SCIENTIFIC EXCHANGES AND COLLABORATIONS

RESEARCH VISITORS

ASSOCIATE FELLOWS

Associate Fellows are scholars working at CORE on a regular weekly basis and are assigned an office for a predefined time period.

- ▶ Koen DECANCO, Universiteit Antwerpen, Belgium
- ▶ Jean-Charles DELVENNE, Ecole Polytechnique de Louvain, UCLouvain, Belgium
- ▶ Axel GAUTIER, Université de Liège, Belgium
- ▶ Pascal MOSSAY, Newcastle University, United Kingdom
- ▶ Mikael PETITJEAN, ILSM, UCLouvain, Belgium
- ▶ Joe THARAKAN, Université de Liège, Belgium
- ▶ Dirk VAN DE GAER, Universiteit Gent, Belgium
- ▶ Wouter VERGOTE, Université Saint-Louis, Bruxelles, Belgium

RESEARCH ASSOCIATES

Research Associates are scholars visiting CORE on a regular yearly basis.

- ▶ Francis BLOCH, Ecole Polytechnique, Paris, France
- ▶ Philippe DESCHAMPS, Université de Fribourg, Switzerland
- ▶ Johanna GOERTZ, University of Guelph, Canada
- ▶ Adel HATAMI-MARBINI, De Montfort University, Leicester, United Kingdom
- ▶ Jean-Jacques HERINGS, Universiteit Maastricht, The Netherlands
- ▶ Jan JOHANNES, Ruprecht-Karls-Universität Heidelberg, Germany
- ▶ Marie-Louise LEROUX, Université du Québec à Montréal, Canada
- ▶ Dunia Lopez PINTADO, Universidad Pablo de Olavide, Seville, Spain
- ▶ Juan MORENO TERNERO, Universidad Pablo de Olavide, Seville, Spain
- ▶ Dimitri PAOLINI, Università degli Studi di Sassari, Italy
- ▶ Arie PREMINGER, Ben-Gurion University of the Negev, Israël
- ▶ Guillaume ROELS, University of California, Los Angeles, USA
- ▶ Ernesto SAN MARTIN, Pontificia Universidad Católica de Chile, Santiago, Chile
- ▶ Jose J. SEMPERE MONERRIS, Universidad de Valencia, Spain
- ▶ Giacomo VALLETTA, EDHEC Business School, Roubaix, France
- ▶ Shin-Huei WANG, National Tsing Hua University, Hsinchu City, Taiwan

SHORT-TERM VISITORS

CORE benefited from the visit of a number of scholars whose stays ranged from a few days to a few months. Among them:

- ▶ Nazila AGHAYI, Islamic Azad University, Ardabil Branch, Iran
- ▶ Egle ALEKNEVICIŪTĖ, Vytautas Magnus University, Lithuania and HEC Paris, France
- ▶ Murillo CAMPELLO, Cornell University, USA
- ▶ Angus DEATON, Princeton University, USA
- ▶ Elizabeth DELMELLE, University of North Carolina, Charlotte, USA
- ▶ Eric DELMELLE, University of North Carolina, Charlotte, USA
- ▶ Danny Avello FERNANDEZ, Pontificia Universidad Católica de Chile, Santiago, Chile
- ▶ Eric GHIJSELS, University of North Carolina, Chapel Hill, USA
- ▶ Véronique GILLE, Institut de Recherche pour le Développement, Paris, France
- ▶ Bryan S. GRAHAM, University of California, Berkeley, USA
- ▶ Geovani Nunes GRAPIGLIA, Universidade Federal do Paraná, Curitiba, Brazil
- ▶ Thomas HVOLBY, Aalborg University, Denmark
- ▶ Vera JOTANOVIC, AMAV Consulting Company Industries International Trade and Development, Roma, Italy
- ▶ Marion LETURCO, Institut National d'Etudes Démographiques, Paris, France
- ▶ Ieva LINKEVICIUTE, Copenhagen Business School, Denmark
- ▶ Pierre-Louis Lions, Collège de France, Paris, France
- ▶ Yukihiro NISHIMURA, Osaka University, Japan
- ▶ Ion NECOARA, Universitatea Politehnica din Bucuresti, Bucharest, Romania
- ▶ Giorgia OGGIONI, Università degli Studi di Brescia, Italy
- ▶ Raffaele PESENTI, Università "Ca' Foscari" di Venezia, Italy
- ▶ Maurice QUEYRANNE, University of British Columbia, Vancouver, Canada
- ▶ Maria DEL MAR RACIONERO, Australian National University, Canberra, Australia
- ▶ Margarita SAMARTIN, Universidad Carlos III de Madrid, Spain
- ▶ Fred SCHROYEN, Norwegian School of Economics, Bergen, Norway
- ▶ Vladimir SHIKHMAN, Technische Universität Chemnitz, Germany
- ▶ Sergey SHPIRKO, Moscow Institute of Physics and Technology, Russia
- ▶ Eve SIHRA, Sciences Po, Paris, France
- ▶ Anna TATARCZAK, Marie Curie Skłodowska University, Lublin, Poland
- ▶ Filip USHCHEV, National Research University, Higher School of Economics, Moscow, Russia

SCIENTIFIC MEETINGS

CORE DISINGUISHED LECTURE SERIES

In September 2016, Jacques DRÈZE, CORE, UCLouvain, gave a series of lectures on "**Uncertainty and Economic Policy. General Equilibrium, Incomplete Markets and Macroeconomics**" followed by a panel chaired by Pierre DEHEZ (CORE) with the participation of Christian GOLLIER (Toulouse School of Economics, France), Martin Hellwig (Max Planck Institute for Research on Collective Goods, Bonn, Germany), and Jean-Jacques HERINGS (Universiteit Maastricht, The Netherlands). This event was part of the CORE 50th Anniversary Celebrations.

Jacques DRÈZE made clear the importance (and relevance) of integrating market incompleteness (as well as preference incompleteness) in general equilibrium modelling and identified remedies to the present recession, going beyond the Juncker program. It gave him the opportunity to list a number of research challenges that he hopes the younger generation will take on, with a focus on building a "dynamic stochastic equilibrium theory under incomplete markets".

PROGRAM

- ▶ Lecture 1: Exchange economies
- ▶ Lecture 2: Production economies
- ▶ Lecture 3: Public economies
- ▶ Panel discussion

CORE NOBEL TALK: JEAN TIROLE, 2014 NOBEL PRIZE LAUREATE IN ECONOMICS

CORE had the privilege to welcome Professor Jean TIROLE (Toulouse School of Economics, France) in the framework of its Nobel Talk series. This talk was part of the CORE 50th anniversary celebrations.

Jean TIROLE is an internationally renowned scholar in industrial organization, game theory, banking and finance. In 2014, he was awarded the Sveriges Riksbank Nobel Prize in Economic Sciences in memory of Alfred Nobel for his analysis of market power and regulation.

In his lecture, entitled "**Moral Reasoning, Markets and Organizations**", Jean TIROLE addressed this fundamental question: *Are Markets Moral?* Economists are indeed often accused of being obsessed by markets although, as many people contend, "there are things that money can't buy". To clarify the issue, Jean TIROLE first shared his feelings and experience about how economists view the world. He then explained that this criticism of markets is partly based on some misunderstandings of what economics is about.

Professor TIROLE's talk is available on our Youtube channel: [HTTPS://YOUTU.BE/CLAQK2JUIM4](https://youtu.be/CLAQK2JUIM4).

CORE NOBEL TALK: ANGUS DEATON, 2015 NOBEL PRIZE LAUREATE IN ECONOMICS

CORE had also the privilege to welcome Angus DEATON, Professor of Economics and Internal Affairs at Princeton University, USA, in the framework of its Nobel Talk series. This talk was part of the CORE 50th anniversary celebrations.

Angus DEATON is an internationally renowned leader in consumption, poverty and welfare. In 2015, he was awarded the Sveriges Riksbank Nobel Prize in Economic Sciences in memory of Alfred Nobel.

Angus DEATON gave a lecture on "**Why Global Poverty is so Hard to Measure and so Hard to Eradicate**". Global poverty refers to extreme poverty spread over the world. Measuring is necessary if we want to know on which regions efforts should be concentrated. The difficulty to measure it comes from the low quality of the data, its scarcity, and the fact that measuring poverty across countries requires comparing the well-being of people using different currencies to buy different goods. The difficulty of eradicating poverty on the other hand is related to the difficulty to evaluate policies and to identify its role in the increase of well-being.

WORKSHOP ON POVERTY AND WELL-BEING

The workshop, which took place on October 26, 2016 in the presence of Professor DEATON, gathered researchers essentially from Belgium and illustrated the vast range of economic research on "**Poverty and Well-Being**" that takes place in Belgium. Research has to do with:

- the use of survey data to measure well-being, and the difficulties related to the attempts of building comparability on subjective data;
- the distribution of well-being within the household;
- the analysis of behavioral responses to special institutions that are built in poor countries to alleviate poverty.

PROGRAM

- ▶ Benoit DECERF, UNAMUR, Belgium
A new measure of income poverty for the US: Balancing absolute and relative poverty
- ▶ Michel LUBRANO, Université d'Aix-Marseille, France
A Bayesian measure of poverty in the developing world
- ▶ Khushboo SURANA, KU Leuven, Belgium
Marital matching, economies of scale and intrahousehold allocations
- ▶ **Koen DECANCO**, Universiteit Antwerpen, Belgium
Non-parametric well-being comparisons
- ▶ **Erik SCHOKKAERT**, KU Leuven and CORE, Belgium
Well-being inequality and preference heterogeneity
- ▶ Guilhem CASSAN, UNamur, Belgium
The social cost of social norms: Gender quotas meet gender norms
- ▶ Catherine GUIRKINGER, UNamur, Belgium
Body-mass storing as a response to food market imperfections? Impacts of cereal banks in Northern Burkina Faso

BRU-NET WORKSHOP ON BIG DATA AND URBAN GEOGRAPHY

On November 21, 2016, the Quantitative Economic Geography group, Geog-en-CORE, organized a workshop on "**Big Data and Regional Sciences**". Six speakers were invited to deal with complex systems in urban environment. We welcomed academic researchers and members of private and public sectors. With a mix of methodological, geographical and business sessions, the BRU-NET workshop allowed to rise the debate on the use and applications of Big Data in our daily life. Discussions between the participants were very constructive.

PROGRAM

METHODOLOGY SESSION

- ▶ Renaud LAMBIOTTE, UNamur, Belgium
Mining open datasets for transparency in taxi transport in metropolitan environments
- ▶ Vincent TRAAG, Centre for Science and Technology Studies, Leiden, The Netherlands
Limitations and advances in community detection

GEOLOCALIZED DATA WITH APPLICATIONS IN THE BUSINESS SECTOR SESSION

- ▶ Christophe CLOQUET, My Poppy
Forecasting event attendance with anonymized mobile data

GEOGRAPHY AND URBAN INSIGHTS SESSION

- ▶ Paul LONGLEY, University College London, United Kingdom
Geospatial analysis of consumer behaviour
- ▶ Eric DELMELLE, University of North Carolina, Charlotte, USA
Mapping collective human activity in an urban environment based on mobile phone data

PRESENTATION OF THE BRU-NET PROJECT AND DISCUSSION

ERSA INTERNATIONAL WORKSHOP ON BIG DATA

The aim of this workshop jointly organized by ERSa, DG REGIO and CORE on November 22, 2016 was to show how various types of Big Data can be used in a creative way to tackle key issues in today's regional policy like smart specialisation, social inclusion of vulnerable population, the impact of migrants and refugees, especially knowing that we lack available and detailed data on fine time spatial scales and on these issues.

PROGRAM

INTRODUCTION: SETTING THE SCENE

- ▶ Paul LONGLEY, University College London, United Kingdom
Big data and regional development
- ▶ **Isabelle THOMAS**, CORE, UCL, Belgium
On the uses and illusions of ICT data for urban modellers. The example of Brussels
- ▶ Lewis DIJKSTRA, DG REGIO, Bruxelles, Belgium
How can regional and urban policy use big data?
- ▶ Questions and answers

POPULATION DYNAMICS AND BIG DATA SESSION

- ▶ Catherine LINARD, UNamur, Belgium
Dynamic population mapping using mobile phone data
- ▶ Filipe Batista e SILVA, European Commission, Ispra, Italy
Spatiotemporal population mapping in Europe
- ▶ Questions and answers

TRANSPORT ANALYSIS AND BIG DATA SESSION

- ▶ Hugo POELMAN, European Commission, DG REGIO, Bruxelles, Belgium
Rail accessibility in European cities and border areas
- ▶ Nicolas IBAÑEZ, European Commission, Sevilla, Spain
Road accessibility in European cities and border areas
- ▶ Questions and answers

DISCUSSION PANEL: RISKS AND OPPORTUNITIES OF BIG DATA

MEDAL FIELD TALK: PIERRE-LOUIS LIONS, 1994 FIELDS MEDAL

In the spirit of the CORE Nobel Talk series, Professor Pierre-Louis LIONS (Collège de France), 1994 Fields Medal Laureate for his work on nonlinear partial differential equations, honored us by coming to CORE for a talk on "**Mean Field Games**". This talk was part of the CORE 50th anniversary celebrations. It was organized with the idea of being accessible to a broad audience. With more than 80 participants, the event organized on December 14, 2016 was a success as Professor LIONS' easy approach on the subject was fully appreciated by the attendance.

Professor Lions's talk is available on our Youtube channel: [HTTPS://YOUTU.BE/CZL1A084HGQ](https://youtu.be/CZL1A084HGQ).

2ND BELGIAN-JAPANESE PUBLIC FINANCE WORKSHOP

Jean HINDRIKS (CORE, UCL, Belgium) and Pierre Pestieau (CORE and Université de Liège, Belgium) together with a group of academics of Osaka University (Japan) organized their yearly **Public Finance Workshop** on March 2-3, 2017, with the purpose of promoting collaboration between Belgian and Japanese economists in the field of public economics.

PROGRAM

- ▶ Tetsuo ONO, Osaka University, Japan
Inequality and education choice
- ▶ **Andreu ARENAS**, CORE, UCLouvain, Belgium
Intergenerational mobility and school segregation
- ▶ Kazuhiro YAMAMOTO, Osaka University, Japan
Subsidy competition, imperfect labor market, and the endogenous entry of firm
- ▶ Helmuth CREMER, Toulouse School of Economics, France
Household bargaining, spouses' consumption patterns and the design of commodity taxes
- ▶ Hikaru OGAWA, University of Tokyo Japan
Ad valorem capital tax competition
- ▶ Fédéric ROBERT-NICOUD, Université de Genève, Switzerland
The optimal distribution of population across cities
- ▶ Motohiro SATO, Hitotsubashi University, Japan
Cash-flow business taxation revisited: Bankruptcy, risk aversion and asymmetric information
- ▶ **Fred SCHROYEN**, CORE, UCLouvain, Belgium and Norwegian School of Economics, Bergen, Norway
The dynamics of tax amnesty applications in Norway
- ▶ Yukihiro NISHIMURA, Osaka University, Japan
The direction of strategic delegation and voter welfare in asymmetric tax competition models
- ▶ Hubert KEMPF, Ecole Normale Supérieure and CREST, Paris, France
Is fiscal federalism required in a monetary union?
- ▶ Daiji KAWAGUCHI, University of Tokyo, Japan
Gender gaps in skill and its utilization: An international perspective
- ▶ Grégory PONTIÈRE, Paris School of Economics, France
The tragedy of the commons and socialization: Theory and policy

3RD WORKSHOP ON INDUSTRIAL ORGANIZATION ON THE DIGITAL ECONOMY

The Liège Competition and Innovation Institute organized, jointly with HEC Liège and CORE, the third edition of the "**Industrial Organization in the Digital Economy workshop**". It took place in HEC Liège on March 10-11, 2017.

This 2-day workshop was targeted at Ph.D. students and young postdoctoral scholars with an interest in the industrial organization of the digital economy. We welcomed empirical and theoretical contributions related to the following (non-exhaustive) list of topics: multi-sided platforms, big data, net neutrality, digitalization of payments, internet advertising, user-generated content, digital piracy, economics of privacy, reputation and recommender systems, open source software, sharing economy, patents and innovation, etc.

PROGRAM

KEYNOTE LECTURE

- ▶ Markus REISINGER, Frankfurt School of Finance & Management, Germany
Segmentation or agglomeration: Platform markets with competing sellers

THEMATIC SESSIONS

ADVERTISING SESSION

- ▶ Martin QUINN, University of Leicester, United Kingdom
Do you see what I see? Ad viewability and the economics of online advertising
- ▶ Leonardo MADIO, University of York, United Kingdom
Effects of ad-blockers adoption on digital piracy: A blessing or a curse?
- ▶ Philipp DIMAKOPOULOS, Humboldt Universität zu Berlin, Germany
User data and platform competition

E-COMMERCE ECONOMIC SESSION

- ▶ Anastasia PARAKHONYAK, Toulouse School of Economics, France
Showrooming on a market of tangible goods with heterogeneous agents
- ▶ Arhtur CAZAUBIEL, ENSAE Paris Tech, France
Strategic obfuscation or disclosure by a monopoly when today's substitutes are tomorrow's products
- ▶ Slobodan SUBARIC, Humboldt Universität zu Berlin, Germany
Crowdfunding with demand uncertainty and moral hazard

CROWDFUNDING AND DATA PROTECTION SESSION

- ▶ Ying LEI TOH, Toulouse School of Economics, France
Data security in the digital age: Reputation and strategic interactions in security investments
- ▶ Gracia CECERE, Telecom Ecole de Management, Paris, France
Giving up your privacy for free after Snowden's revelation
- ▶ Zhaoxin PU, Max Planck Institute for Innovation and Competition, München, Germany
Taking the crowd by the hand - the intermediary role of crowdfunding platforms

PLATFORM COMPETITION SESSION

- ▶ Frank SCHÜTTLER, Zentrum für Europäische Wirtschaftsforschung GmbH, Mannheim, Germany
Evaluation of best price clauses in hotel booking
- ▶ Georgios PETROPOULOS, Bruegel, Bruxelles, Belgium
Quality provision in a search engine environment
- ▶ Vincent MALARDÉ, Université de Rennes 1, France
Platform versus traditional firm: Competition and entry regulation
- ▶ Timothy YEUNG, Université Paris-Dauphine, France
Understanding AirBnB in fourteen European cities

CONTENT PROVISION SESSION

- ▶ Anna KERKHOF, Universität zu Köln, Germany
Coverage bias on Wikipedia? Evidence from biographies of German members of parliament
- ▶ Olga SLIVKO, Higher School of Economics, Moscow, Russia
Do immigrants return knowledge home? The evidence on knowledge dissemination via Wikipedia
- ▶ **Robert SOMOGYI**, CORE, UCL, Belgium
The economics of zero-rating and net neutrality

CORE NOBEL TALK: ROBERT AUMANN, 2005 NOBEL PRIZE LAUREATE IN ECONOMICS

CORE had also the privilege to welcome Robert AUMANN, Professor at the Hebrew University of Jerusalem in the framework of its Nobel Talk series. Robert AUMANN is an internationally renowned scholar in economic and game theory. In 2005, he was awarded the Sveriges Riksbank Nobel Prize in Economic Sciences for his work on conflict and cooperation through game-theory analysis.

On May 9, 2017, Robert AUMANN gave a lecture entitled "**Rule-rationality: A Synthesis of Behavioral and Mainstream Economics**". Rule-rationality is a paradigm according to which people do not maximize utility in each of their acts, but rather follow rules or modes of behavior that usually - but not always - maximize utility, providing a synthesis between rationalistic neo-classical economic theory and behavioral economics.

Professor Auman's talk is available on our YouTube channel: [HTTPS://YOUTU.BE/JHEUF9AB2WE](https://youtu.be/JHEUF9AB2WE).

WEEKLY CORE SEMINARS

Econometrics and Finance Seminars

- ▶ September 16, 2016.
Antoon PELSSER, Universiteit Maastricht, The Netherlands
Pricing and hedging in incomplete markets with model ambiguity
- ▶ September 23, 2016.
Olivier LE COURTOIS, EMLyon Business School, France
Credit benchmarking, risk premium adjustment factors, and credit solvency capital requirements. A recovery-based approach
- ▶ September 30, 2016.
Marc HALLIN, Université libre de Bruxelles, Belgium
R-estimation in semiparametric dynamic location-scale models
- ▶ October 7, 2016.
Francis X. DIEBOLD, University of Pennsylvania, Philadelphia, USA
Estimating global bank network connectedness
- ▶ October 14, 2016.
Paolo ZAFFARONI, Imperial College London, United Kingdom
Estimating risk premia using large cross-sections
- ▶ October 21, 2016.
Geneviève GAUTHIER, HEC Montréal, Canada
Firm-specific credit risk modelling in the presence of statistical regimes and noisy prices
- ▶ October 28, 2016.
Arnaud DOUCET, Oxford University, United Kingdom
The correlated pseudo-marginal method for inference in latent variable models
- ▶ November 25, 2016.
Christian BROWNLEES, Universitat Pompeu Fabra, Barcelona, Spain
Impulse response estimation by smooth local projections
- ▶ December 2, 2016.
Laurent E. CALVET, HEC Paris, France
Rich pickings? Risk, return, and skill in the portfolios of the wealthy
- ▶ December 9, 2016.
Damiano BRIGO, Imperial College, London, United Kingdom
Multi currency credit default swaps: Quanto effects and FX devaluation jumps
- ▶ February 3, 2017.
Hans DEGRYSE, KU Leuven, Belgium
The impact of clearing fees on market quality
- ▶ February 10, 2017.
Peter FELDHUTTER, London Business School, United Kingdom
The myth of the credit spread puzzle

- ▶ March 10, 2017.
Gregor KASTNER, Institute for Statistics and Mathematics, Vienna, Austria
Bayesian estimation and prediction of high-dimensional dynamic covariance matrices
- ▶ March 17, 2017.
Christian ROBERT, Université Paris Dauphine, France
Asymptotic properties of approximate Bayesian computation
- ▶ March 24, 2017.
Sophie MOINAS, Toulouse School of Economics, France
Funding constraints and market liquidity in the European treasury bond market
- ▶ April 21, 2017.
Jing Cynthia WU, The University of Chicago Booth School of Business, USA
Time-varying lower bound of interest rates in Europe
- ▶ May 5, 2017.
Kris BOUDT, KU Leuven, Belgium
Shrinkage approaches to the estimation of higher order moments
- ▶ May 12, 2017.
Pasquale DELLA CORTE, Imperial College London, United Kingdom
The cross-section of currency volatility premia
- ▶ June 9, 2017.
Benjamin MOLL, Princeton University, USA
Monetary policy according to HANK
- ▶ June 19, 2017.
Christiane BAUMEISTER, University of Notre Dame, USA
Inference in structural vector autoregressions when the identifying assumptions are not fully believed: Re-evaluating the role of monetary policy in economic fluctuations

Operations Research Seminars

- ▶ October 18, 2016.
Sebastian STICH, CORE, UCLouvain, Belgium
Randomized algorithms for convex optimization
- ▶ November 8, 2016.
Ignacio ARAVENA SOLIS, CORE, UCLouvain, Belgium
An asynchronous distributed algorithm for solving stochastic unit commitment
- ▶ November 22, 2016.
Ignace LORIS, Université libre de Bruxelles, Belgium
A line-search based proximal algorithm for convex and non-convex optimization, with applications to image processing
- ▶ December 6, 2016.
Hamza FAWZI, Massachusetts Institute of Technology, Cambridge, USA
Semidefinite approximations of matrix logarithm
- ▶ December 13, 2016.
Robert M. GOWER, Ecole Normale Supérieure, Paris, France
Randomized quasi-Newton updates are linearly convergent matrix inversion algorithms
- ▶ December 20, 2016.
Bismark SINGH, University of Texas at Austin, USA
An adaptive model with joint chance constraints for a hybrid wind-conventional generator system
- ▶ January 24, 2017.
Victor MARTINEZ DE ALBENIZ, Universidad de Navarra, Spain
Using early click information in online flash sales campaigns
- ▶ January 31, 2017.
Kostas MARGELLOS, Oxford University, United Kingdom
Proximal algorithms for distributed optimisation over uncertain networks
- ▶ February 7, 2017.
Carlos RUIZ MORA, Universidad Carlos III de Madrid, Spain
Retail competition with switching consumers in electricity markets
- ▶ February 7, 2017.
Geovani NUNES GRAPIGLIA, Federal University of Parana, Brazil
Derivative-free trust-region algorithms for composite nonsmooth optimization
- ▶ March 14, 2017.
Francis DE VERICOURT, European School of Management and Technology, Berlin, Germany
Determining efficient audit and remediation strategies: A dynamic mechanism design approach
- ▶ March 14, 2017.
Jean-Paul WATSON, Sandia National Laboratories, Albuquerque, USA
Stochastic unit commitment: Scenario generation, scalable computation and experimental results
- ▶ March 21, 2017.
Vladimir SHIKHMAN, Technische Universität Chemnitz, Germany
Tatonnements of Cobb-Douglas economy based on the power method
- ▶ April 25, 2017.
Benjamin F. HOBBS, Johns Hopkins University, Baltimore, USA
Crediting renewables in electricity capacity markets: The effects of alternative definitions upon market efficiency
- ▶ May 2, 2017.
George LIBEROPOULOS, University of Thessaly, Volos, Greece
Critical review of pricing schemes in markets with non-convex costs
- ▶ June 30, 2017.
Sauleh SIDDIQUI, Johns Hopkins University, Baltimore, USA
An exact solution method for binary equilibrium problems with compensation and the power market uplift problem

Quantitative and Economic Geography Seminars

- ▶ October 4, 2017.
Cyrille MÉDARD DE CHARDON, Université du Luxembourg, Luxembourg
A geographical analysis of bicycle sharing systems
- ▶ March 1, 2017.
Olivier FINANCE, Université Paris 1 Panthéon-Sorbonne, Paris, France
Scaling laws to compare transnational integration of cities into the economic and financial globalization

UCLouvain Economics Seminars

- ▶ September 22, 2016.
Pedro TELES, Universidade Católica Portuguesa, Lisboa, Portugal
More on the taxation of capital
- ▶ September 29, 2016.
Valérie SMEETS, Aarhus Universitet, Denmark
Multi-product firms, import competition and the evolution of firm-product technical efficiencies
- ▶ October 6, 2016.
Albert MARCET, Barcelona Graduate School of Economics, Spain
Stock price booms and expected capital gains?
- ▶ October 13, 2016.
Nuno PALMA, European University Institute, Firenze, Italy and Rijksuniversiteit Groningen, The Netherlands
The existence and persistence of liquidity effects: Evidence from a large-scale historical natural experiment
- ▶ October 20, 2016.
Sandra McNALLY, University of Surrey, United Kingdom
Entry through the narrow door: The costs of just failing high stakes exams
- ▶ November 3, 2016.
Karen MARCOURS, Paris School of Economics, France
Schooling, learning and earnings: Long-term effects of a conditional cash transfer program in Nicaragua
- ▶ November 10, 2016.
Shankha CHAKRABORTY, University of Oregon, USA
Age-specific effects of mortality shocks and economic development
- ▶ November 17, 2016.
Fabian HERWEG, Universität Bayreuth, Germany
Optimal cost overruns: Procurement auctions with renegotiation
- ▶ December 1, 2016.
Fabrice COLLARD, Universität Bern, Switzerland
Public debt as private liquidity: Optimal policy
- ▶ December 8, 2016.
John EARLE, Central European University, Budapest, Hungary
Does higher productivity dispersion imply greater misallocation? A theoretical and empirical analysis
- ▶ December 15, 2016.
Andreas MOXNES, Universitetet i Oslo, Norway
Better, faster, stronger: Global innovation and trade liberalization
- ▶ February 2, 2017.
Piero GOTTARDI, European University Institute, Firenze, Italy
A theory of repurchase agreements, collateral re-use, and repo intermediation
- ▶ February 9, 2017.
Pierre CAHUC, Ecole Polytechnique, Paris, France
Short-time work and employment in the great recession in France
- ▶ February 16, 2017.
Kalina MANOVA, Oxford University, United Kingdom
Managing trade: Evidence from China and the US
- ▶ February 23, 2017.
Antonio CABRALES, University College London, United Kingdom
What you know ... can't hurt you? A field experiment on relative performance feedback in higher education
- ▶ March 2, 2017.
Takeshi MUROOKA, Universität München, Germany
The timing of choice-enhancing policies
- ▶ March 9, 2017.
Pedro VICENTE, Universidade Nova de Lisboa, Portugal
Introducing mobile money in rural Mozambique: Evidence from a field experiment
- ▶ March 16, 2017.
Céline POILLY, Aix-Marseille School of Economics, France
Do misperceptions about demand matter? Theory and evidence
- ▶ March 23, 2017.
Jose I. SILVA, Universitat de Gerona, Spain
Local labor market effects of public employment
- ▶ March 30, 2017.
Arnaud COSTINOT, Massachusetts Institute of Technology, Cambridge, USA
The more we die, the more we sell? A simple test of the home-market effect
- ▶ April 20, 2017.
Jérôme POUYET, Paris School of Economics, France
Vertical mergers in platforms markets
- ▶ April 27, 2017.
Alessandro TAROZZI, Universitat Pompeu Fabra, Barcelona, Spain
Evaluation of alternative strategies to increase demand for and responses to information on arsenic-contaminated tubewell water in Bangladesh
- ▶ May 4, 2017.
David NEUMARK, University of California at Irvine, USA
Is it harder for older workers to find jobs? New and improved evidence from a field experiment
- ▶ May 11, 2017.
Gerard LLOBET, CEMFI, Madrid, Spain
The inverse Cournot effect in royalty negotiations with complementary patents
- ▶ May 18, 2017.
Juan DOLADO, European University Institute, Firenze, Italy
From dual to unified unemployment protection: Transition and steady state
- ▶ June 15, 2017.
Murat IYIGUN, University of Colorado, Boulder, USA
Why wait? A century of education, marriage timing and gender roles

PARTICIPATION OF CORE MEMBERS IN MEETINGS ORGANIZATION

- ▶ **CORE Distinguished Lecture Series by Jacques Drèze "Uncertainty and Economic Policy: General Equilibrium, incomplete Markets and Macroeconomics"**, CORE, UCLouvain, Belgium, September 2016
CORE organizer: Pierre DEHEZ
- ▶ **Dynamics On and Of Networks IX**, Amsterdam, The Netherlands, September 2016
CORE organizer: Jean-Charles DELVENNE

- ▶ **WDR 2006 Anniversary Conference "Equity and Development: Ten Years On"**, World Bank, Washington, USA, October 2006
CORE organizer: Koen DECANCO
- ▶ **NBB, CORE, VUB and Louvain Finance joint Ph.D. course on Big-Data in Dynamic Predictive Econometric Modeling**, Brussels, Belgium, October 2016
CORE organizer: Leonardo IANIA
- ▶ **Médiatiser l'Innovation**, Ecole des Mines, Paris, France, November 2016
CORE organizer: Paul BELLEFLAMME
- ▶ **Conference of the Canadian Public Economist Group**, Montréal, Canada, November 2016
CORE organizer: Marie-Louise LEROUX
- ▶ **UECE Game Theory Lisbon Meetings**, Universidade Técnica de Lisboa, Portugal, November 2016
CORE member of the Program Committee: Ana MAULEON and Vincent VANNETELBOSCH
- ▶ **BRU-NET WORKSHOP ON BIG DATA AND URBAN GEOGRAPHY**, CORE, UCLouvain, Belgium, November 2016
CORE organizers: Arnaud ADAM and Isabelle THOMAS
- ▶ **ERSA and DG-REGIO a two-day workshop on Big Data and Regional Sciences**, CORE, UCLouvain, Belgium, November 2016
CORE organizer: Isabelle THOMAS
- ▶ **Ph.D. course on Credit Risk Modeling**, Copenhagen Business School, Denmark, November 2016
CORE organizer: Frédéric VRINS
- ▶ **7th CEMS PHD COURSE ON IDENTIFICATION STRATEGIES IN BUSINESS AND FINANCE**, CORE, UCLouvain, Belgium, November 2016
CORE organizers: Leonardo IANIA and Yue ZHANG
- ▶ **2nd UNAMUR-UCL/CORE WINTER SCHOOL ON NETWORKS IN ECONOMICS AND FINANCE**, CORE, UCLouvain, Belgium, December 2016
CORE organizer: Sophie BÉREAU
- ▶ **11th Workshop on Economic Design and Institutions**, Université Saint-Louis, Bruxelles, Belgium, December 2016
CORE organizers: Ana MAULEON and Vincent VANNETELBOSCH
- ▶ **9th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMS Statistics 2016)**, Sevilla, Spain, December 2016
CORE member of the Program Committee: Léopold SIMAR
- ▶ **2017 ASSA Annual Meeting**, Chicago, USA, January 2017
CORE organizer: Koen DECANCO
- ▶ **2nd ARC Workshop on Transformations: Incentives and Norms**, Durbuy, Belgium, January 2016
CORE organizer: David DE LA CROIX
- ▶ **3rd Workshop on Industrial Organization in the Digital Economy**, Université de Liège, Belgium, March 2016
CORE organizers: Axel GAUTIER and Johannes JOHNEN
- ▶ **2nd Belgian-Japanese Public Finance Workshop**, CORE, UCLouvain, Belgium, March 2017
CORE organizers: Jean HINDRIKS and Pierre PESTIEAU
- ▶ **Ph.D. course on Monte Carlo Methods with Applications to Finance**, ISBA, UCLouvain, Belgium, March 2017
CORE organizer: Frédéric VRINS
- ▶ **Spring School and Workshop on Volatility Dynamics and Option Prices and Econometrics of Intraday Data**, Ecole Polytechnique Fédérale de Lausanne, Switzerland, April 2017
CORE organizer: Luc BAUWENS
- ▶ **Final Conference "Stochastic Dynamical Models in Mathematical Finance, Econometrics and Actuarial Sciences"**, Ecole Polytechnique Fédérale de Lausanne, Switzerland, May-June 2017
CORE organizer: Luc BAUWENS
- ▶ **ECORES Summer School on Individual Heterogeneity in Organizations**, CORE, UCLouvain, Belgium, May-June 2017
CORE organizers: Jean HINDRIKS and François MANIQUET
- ▶ **Professor Darrell Duffie Bernoulli Lecture "Continuous-time Random Matching"**, Ecole Polytechnique Fédérale de Lausanne, Switzerland, May 2017
CORE organizer: Luc BAUWENS
- ▶ **Nobel Talk by Robert J. Aumann on "Rule-rationality: A Synthesis of Behavioral and Mainstream Economics"**, CORE, UCLouvain, Belgium, May 2017
CORE organizer: Pierre DEHEZ
- ▶ **IMMAQ/ICTEAM/EPL/SC "Data Science" DHC Ceremony**, EPL, UCLouvain, Belgium, May 2017
CORE organizer: François GLINEUR
- ▶ **Joint Ph.D. KUL-UCL Day in Mathematical Finance and Finance Engineering**, CORE, UCLouvain, Belgium, May 2017
CORE organizer: Frédéric VRINS
- ▶ **22nd Coalition Theory Network Workshop**, Glasgow, United Kingdom, May 2017
CORE organizer: Vincent VANNETELBOSCH
- ▶ **CEMS Ph.D. course on Bayesian Dynamic Modelling for Multivariate Time Series Analysis**, CORE, UCLouvain, Belgium, May-June 2017
CORE organizer: Leonardo IANIA
- ▶ **Professor Robert Engle Bernoulli Lecture "Systemic Risk with Endogenous Cycles"**, Ecole Polytechnique Fédérale de Lausanne, Switzerland, June 2017
CORE organizer: Luc BAUWENS
- ▶ **17th Conference of the Society of the Advancement of Economic Theory (SAET)**, Faro, Portugal, June 2017
CORE members of the Program Committee: Claude D'ASPREMONT and Julio DAVILA

- ▶ **Dynamics On and Of Networks X**, Indianapolis, USA, June 2017
CORE organizer: Jean-Charles DELVENNE
- ▶ **SoFIE FINANCIAL ECONOMETRICS SCHOOL 2017**, National Bank of Belgium, Brussels, Belgium, June 2017
CORE organizer: Leonardo IANIA
- ▶ **8th Workshop on Institutions, Individual Behavior and Economic Outcomes**, Alghero, Italy, June 2017
CORE organizer: Dimitri PAOLINI
- ▶ **15th European Workshop on Efficiency and Productivity (EWEPA)**, Loughborough University, London, United Kingdom, June 2017
CORE member of the scientific committee: Léopold SIMAR

PARTICIPATION OF CORE MEMBERS TO CONFERENCES AND SEMINARS

Arnaud ADAM

- ▶ *Measuring urban complexity in Brussels: Communities, clusters and urban transportation issues*
NECTAR XIV International Conference "Transport in a Networked Society", Universidad Politecnica de Madrid, Spain, May-June 2017

Per AGRELL

- ▶ *The prosumer: Challenges for regulation and tariff design in electricity distribution*
Workshop on Network Regulation and Rate Review, Norsk Energi, Oslo, Norway, September 2016
- ▶ *Twenty years of frontier analysis in the service of regulatory economics: Perspectives and open questions*
15th European Workshop on Efficiency and Productivity Analysis (EWEPA 2017) Conference, Loughborough University, London, United Kingdom, June 2017

Andreu ARENAS

- ▶ *Party bans, deterrence or backlash? Evidence from the Basque Country*
Macroeconomics Lunch Seminar, IRES, UCL, Belgium, February 2017
1st Catalan Economic Society Conference, Institut d'Estudis Catalans, Barcelona, Spain, May 2017
Universidad del Pais Vasco, Vizcaya, Spain, June 2017
- ▶ *Countercyclical educational attainment and intergenerational mobility*
Microeconometrics Working Group, European University Institute, Firenze, Italy, March 2017
- ▶ *School segregation and intergenerational mobility*
LEER Workshop on Education Economics, KU Leuven, Belgium, March 2017

Luc BAUWENS

- ▶ *Forecasting comparison of long term component models for realized covariance matrices*
Workshop "Recent Advances in Financial Econometrics", Università di Messina, Italy, September 2016
10th International Conference on Computational and Financial Econometrics (CFE'16), Universidad de Sevilla, Spain, December 2016

Paul BELLEFLAMME

- ▶ *Tax incidence on competing two-sided platforms: Lucky break or double jeopardy*
Paris School of Economics, France, October 2016
- ▶ *La fonction média du crowdfunding*
Médiatiser l'Information, Ecole des Mines, Paris, November 2016
- ▶ *Price discrimination and dispersion under asymmetric profiling of consumers*
Aix-Marseille School of Economics, France, May 2017
Université de Montpellier, France, May 2017
8th Workshop on Institutions, Individual Behavior and Economic Outcomes, Alghero, Italy, June 2017
- ▶ *The economics of digital goods*
CREATe Copyright & Innovation Network (CIN), London, United Kingdom, May 2017
- ▶ *The interplay of law and economics in understanding the digital single market*
Conference "Towards a Digital Single Market: Competition law has parts to play", Vienna, Austria, June 2017

Gilles BERTRAND

- ▶ *Optimal dispatch of wind farms facing market prices*
14th International Conference on the European Energy Market, Technische Universität Dresden, Germany, June 2017

Avinash BHARDWAJ

- ▶ *Submodular knapsacks*
2016 INFORMS Annual Meeting, Nashville, USA, November 2016

Philippe CHEVALIER

- ▶ *Economic models for horizontal collaboration*
CLAIO-2016: XVIII Latin-Iberoamerican Conference on Operations Research, Santiago, Chile, October 2017

Marion COLLEWET

- ▶ *Measuring labour supply preferences using hypothetical questions*
14th Belgian Day for Labour Economists, IRES, UCL, Belgium, May 2017

Caude D'ASPREMONT

- ▶ *Managerial objectives, competition regimes and delegation in a model à la Hotelling*
6th International Conference on Industrial Organization and Spatial Economics, St. Petersburg, Russia, June 2017
- ▶ *Revealed preference analysis of semi-cooperative household behavior*
17th Conference of the Society of the Advancement of Economic Theory (SAET), Faro, Portugal, June 2017

Julio DAVILA

- ▶ *On private capital falling into public domain*
Universidade de Vigo, Spain, April 2017
- ▶ *Optimal human capital bequeathing*
2017 Asian Meeting of the Econometric Society, Chinese University of Hongkong, China, June 2017
18th Annual Meeting of the Association for Public Economic Theory (PET 2017), Paris, France, July 2017

Koen DECANQ

- ▶ *Well-being inequality and preference heterogeneity*
Université d'Auvergne, Clermont-Ferrand, France, November 2016
UNamur, Belgium, April 2017
International Labor Organization, Genève, Switzerland, May 2017
Conference "New Challenges in the Measurement of Economic Inequalities and Injustices", Aix-Marseille School of Economics, France, June 2017
- ▶ *Implementing the capability approach with respect for individual valuations: An illustration with Colombian data*
Workshop "Determinants of Multidimensional Poverty Levels and Trends", University of Oxford, December 2016
- ▶ *Non-parametric well-being comparisons*
London School of Economics, United Kingdom, February 2017
University of Oxford, United Kingdom, March 2017
KU Leuven, Belgium, April 2017

Perre DEHEZ

- ▶ *Multiple causation, apportionment and the Shapley value*
2016 Annual Meeting of the Association of Southern European Economic Theorists, Thessaloniki, Greece, November 2016
- ▶ *Edmond Malinvaud et l'école franco-belge du déséquilibre*
"Theory, measurement and expertise Edmond Malinvaud and the reconfigurations of economic theory, 1950-2000", Université Paris 1 Panthéon-Sorbonne, December 2016

David DE LA CROIX

- ▶ *Clans, guilds, and markets: Apprenticeship institutions and growth in the pre-industrial economy*
Dynamics, Economic Growth and International Trade DEGIT XXI Conference, University of Nottingham, United Kingdom, September 2016
- ▶ *Religions, fertility, and growth in South-East Asia*
Overlapping Generation Days, Luxembourg, Luxembourg, December 2016
- ▶ *Childbearing postponement, its option value, and the biological clock*
2nd ARC Workshop on Family transformations: incentives and Norms, Durbuy, Belgium, January 2017
- ▶ *Decessit sine prole - Childlessness, celibacy, and survival of the richest in pre-Industrial England*
2017 Growth Theory Conference, Brown University, USA, May 2017

4 Scientific Exchanges and Collaborations

- ▶ *French fertility and education transition: Rational choice vs cultural diffusion*
5th Toulouse Economics and Biology Workshop, Toulouse, France, June 2017
Society for Economic Dynamics Annual Meeting 2017, Edinburgh, Scotland, June 2017
- ▶ *Endogenous childlessness and stages of development*
Health and Development 2017 Conference, Taipei, Taiwan, June 2017

Justin DELLOYE

- ▶ *Distributions of building geometric attributes: A stochastic muth-mills approach*
63rd Annual North American Meetings of the Regional Science Association International, Minneapolis, United States, November 2016
- ▶ *A complex approach to the economics of buildings geometry*
Université du Luxembourg, Belval, Luxembourg, December 2016
- ▶ *Homothetic scaling of urban land use and population density profiles in monocentric models*
Summer School in Urban Economics, Paris, France, June 2017

Jean-Charles DELVENNE

- ▶ *Dynamics and mining on large networks*
Technische Universiteit Eindhoven, The Netherlands, June 2017

Cyrille DOSSOUGOIN

- ▶ *Measuring sovereign risk spillovers and assessing the role of transmission channels: A spatial econometrics approach*
6th Ph.D. Student Conference in International Macroeconomics and Financial Econometrics, Université Paris Nanterre, France, March 2017

Jacques DRÈZE

- ▶ *"Growth and Employment: The scope for a European initiative" twenty years later*
Theory, measurement and expertise Edmond Malinvaud and the reconfigurations of economic theory, 1950-2000, Université Paris 1 Panthéon-Sorbonne, France, December 2016

Mery FERRANDO

- ▶ *Evolution of income poverty under unequal growth: Settling the dispute between absolutists and relativists*
7th Meeting of the Society for the Study of Economic Inequality, CUNY, New York, USA, July 2017

Zhengyuan GAO

- ▶ *An attempt to understand economic inequality from a non-abstract perspective*
Macroeconomics Lunch Seminar, IRES, UCL, Belgium, February 2017

François GLINEUR

- ▶ *Performance estimation of first-order methods for composite convex optimization*
Workshop "Optimisation, Distributed Computation and Machine Learning", Télécom ParisTech, France, September 2016
FoCM 2017, Foundations of Computational Mathematics, Barcelona, Spain, July 2017

Andras GREGOR

- ▶ *Politically motivated targeting of Hungarian municipal liquidity grants*
28th Annual Congress of the Italian Society of Public Economics (SIEP2016), Lecce, Italy, September 2016
- ▶ *Political motives behind the allocation of investment grants in Hungary: A regression discontinuity design approach*
European Public Choice Society Meeting, Budapest, Hungary, April 2017
34^{èmes} Journées de Microéconomie Appliquée, Le Mans, France, June 2017

Thuc Huan HA

- ▶ *Scraps collection for recycling, how far should we go?*
10th Belgian Environmental Economics Day, KU Leuven, Belgium, February 2017
24th Ulvon Conference on Environmental Economics, CERÉ, Umeå Universitet, Sweden, June 2017
- ▶ *The sharing economy and the environment, impacts of a P2P sharing platform?*
GREQAM Ph.D. seminar, Aix-Marseille School of Economics, France, June 2017

CHRISTIAN HAFNER

- ▶ *Estimation of a multiplicative covariance structure*
Workshop "Recent Advances in Econometrics", Università di Messina, Italy, September 2016
10th International Conference on Computational and Financial Econometrics (CFE2016), Universidad de Sevilla, Spain, December 2016
Universität Bonn, Germany, January 2017
10th Annual Society for Financial Econometrics (SoFiE) Conference, New York University, USA, June 2017
- ▶ *Exponential-type GARCH models with linear-in-variance risk premium*
University of St. Gallen, Switzerland, April 2017

Jean HINDRIKS

- ▶ *School segregation and intergenerational mobility*
16th Journées Louis-André Gérard-Varet, Aix-en-Provence, France, June 2017

Leonardo IANIA

- ▶ *The consequences of Brexit for the EU and Japan*
50th EU-Japan conference, Bruxelles, Belgium, October 2016
- ▶ *The response of euro area sovereign spreads to the ECB unconventional monetary policies*
National Bank of Belgium International Conference 2016 on "The Transmission Mechanism of New and Traditional Instruments of Monetary and Macprudential Policy", Bruxelles, Belgium, October 2016
Bundesbank Workshop on Term Structure Modelling, Frankfurt, Germany, October 2016
Université de Liège, Belgium, November 2016
Institut Bachelier, Paris, June 2017
- ▶ *The UCLouvain Bloomberg experience*
Bloomberg World Conference, Paris, France, February 2017

Johannes JOHNEN

- ▶ *Screening procrastinators with automatic-renewal contracts*
6th Christmas Meeting of Belgian Economists, IRES, UCLouvain, Belgium, December 2016
4th International Meeting on Experimental and Behavioral Social Sciences, Universidad de Barcelona, Spain, April 2017
3rd Annual Early-Career Behavioral Economics Conference, Carnegie Mellon University, Pittsburgh, USA, June 2017
32nd Annual Congress of the European Economic Association (EEA), Universidade de Lisboa, Portugal, August 2017
44th Conference of the European Association for Research in Industrial Economics, Maastricht, The Netherlands, August 2017

Bart JOURQUIN

- ▶ *Estimation of travel time elasticities with a multimodal freight transport model calibrated and validated on publicly available regional data*
2017 BIVEC-GIBET-Transport Research Days : "Towards an Autonomous and Interconnected Transport", HEC, Université de Liège, Belgium, May 2017
NECTAR XIV International Conference, Escuela Técnica de Ingenieros de Caminos, Madrid, Spain, May 2017

Dimitra KYRIAKOPOULOU

- ▶ *Asymptotic normality of the QML estimator in the EGARCH(1,1) model*
10th International Conference on Computational and Financial Econometrics (CFE 2016), Universidad de Sevilla, Spain, December 2016
- ▶ *Exponential-type GARCH models with linear-in-variance risk premium*
25th Annual Symposium of the Society for Nonlinear Dynamics and Econometrics (SNDE), Paris, France, March 2017
2017 Asian Meeting of the Econometric Society, Chinese University of Hong Kong, China, June 2017
70th European Meeting of the Econometric Society (ESEM), Universidade de Lisboa, Portugal, August 2017

Marie-Louise LEROUX

- ▶ *Nursing Home Choice, Family Bargaining and Optimal Policy in a Hotelling Economy*
1st Meetings of the Society of Economics of the Household (SEHO 2017), San Diego, USA, June 2017
18th Annual Meeting of the Association for Public Economic Theory (PET 2017), Paris, France, July 2017

François MANIQUET

- ▶ *Well-being poverty and labor income taxation: Theory and application to Europe and the US*
ETH Zürich, Switzerland, October 2016
Queen Mary University of London, United Kingdom, October 2016

4 Scientific Exchanges and Collaborations

- ▶ *(Un)fair tax-benefit systems: Evidence from selected OECD countries*
109th Annual Conference on Taxation, Baltimore, USA, November 2016

Ana MAULEON

- ▶ *Constitutions and groups*
UECE Game Theory Lisbon Meetings 2016 "Game Theory and Applications", Universidade Técnica de Lisboa, Portugal, November 2016
- ▶ *Matching with myopic and farsighted player*
CEREC Workshop in Economics, Université Saint-Louis, Bruxelles, Belgium, March 2017
Université de Grenoble, France, March 2017
Brown University, Providence, USA, April 2017
22nd Coalition Theory Network Workshop, University of Glasgow, United Kingdom, May 2017
17th Conference of the Society of the Advancement of Economic Theory (SAET), Faro, Portugal, June 2017
- ▶ *Constitutions and groups in social networks*
3rd Annual Conference on Network Science and Economics, Washington University in Saint-Louis, USA, April 2017

Florian MAYNERIS

- ▶ *Improving or disappearing: Firm-level adjustments to minimum wages in China*
JRC Seminar, European Commission, Ispra, Italy, September 2016
- ▶ *One way to the top: How services boost the demand for goods*
Singapore Management University Singapore, May 2017
- ▶ *Providing services to boost goods exports: Theory and evidence*
The Chinese University of Hong Kong, China, May 2017

Ilyes MEZGHANI

- ▶ *Application of the stochastic dual dynamic programming and the progressive hedging algorithms to the modeling of natural gas markets: A numerical comparison*
18^{ème} Conférence ROADEF de la Société Française de Recherche Opérationnelle et Aide à la Décision, Metz, France, February 2017

JUAN MORENO-TERNERO

- ▶ *Poverty performance of taxation rules*
2nd GRODE Workshop: Claims Problems, Universitat Rovira i Virgili, Reus, Spain, May 2017
- ▶ *Sharing the revenues from broadcasting sport events*
International Conference "Advances in Fair Division", St. Petersburg, Russia, August 2017

Yuting Mou

- ▶ *Application of priority service pricing for mobilizing residential demand response in Belgium*
Edinburgh 14th International Conference on the European Energy Market (EEM 17), Dresden, Germany, June 2017

Dimitri PAOLINI

- ▶ *Strategic promotion and release decisions for cultural goods*
TELECOM ParisTech, France, January 2017
- ▶ *Content acquisition by streaming platforms: Premium vs freemium*
44th Conference of the European Association for Research in Industrial Economics, Maastricht, The Netherlands, August 2017

Anthony PAPAVALIOU

- ▶ *An asynchronous distributed subgradient algorithm for solving stochastic unit commitment*
Edinburgh University, Scotland, October 2016
- ▶ *Remuneration of power generation capacity in conditions of scarcity in Belgium*
Workshop on Transition to Power Systems with Weather-dependent Generation, Universität zu Köln, Germany, November 2016
INFORMS Annual Meeting 2016, Nashville, USA, November 2016
- ▶ *Multi-stage stochastic economic dispatch under renewable energy supply uncertainty*
National Technical University of Athens, Greece, December 2016
- ▶ *Market design for a decarbonized electricity market*
Eurelectric, Bruxelles, Belgium, June 2017
- ▶ *Incentivizing flexibility in Central and Western Europe*
IEEE Power and Energy Society General Meeting, Chicago, USA, July 2017

Risa PAVIA

- ▶ *Tax evasion by domestic and foreign-invested Portuguese firms: A bunching analysis*
Oxford University, United Kingdom, September 2016
University of Exeter, United Kingdom, November 2016
Tax Administration Research Centre's 5th Annual Workshop, University of Exeter, United Kingdom, April 2017
16th Journées Louis-André Gérard-Varet, Aix-en-Provence, France, June 2017
11th Annual Meeting of the Portuguese Economic Journal, University of Trás os Montes e Alto Douro, Vila Real, Portugal, July 2017
73rd Annual Congress of the International Institute of Public Finance, Tokyo, Japan, August 2017

Pierre PESTIEAU

- ▶ *The public policy implications of increased longevity*
University of Auckland, New Zealand, October 2016
- ▶ *LTC social insurance. How to avoid big losses?*
Centre d'Etudes et de Recherches sur le Développement International (CERDI), Clermont-Ferrand, France, November 2016
THEMA, Strasbourg, France, March 2017
Università di Pisa, Italy, April 2017

Pierre PICARD

- ▶ *Currency areas and voluntary transfers*
Academia Sinica, Taipei, Taiwan, September 2016
Universität Bielefeld, Germany, November 2016
- ▶ *Income effects and vertical differentiation in international trade*
European Trade Study Group, Helsinki, Finland, September 2016
- ▶ *Spatial structures with forward and backward linkages*
European Regional Science Association, Vienna, Austria, September 2016
5th International Conference on Industrial Organization and Spatial Economics, St. Petersburg, Russia, June 2017
- ▶ *Airport congestion and inefficiency in slot allocation*
ITEA Annual Conference and School on Transportation Economics, Barcelona, Spain, June 2017

Erik SCHOKKAERT

- ▶ *Fairness in cost-benefit analysis, an application to health technology assessment*
York University, United Kingdom, September 2016
- ▶ *Risk adjustment in Belgium*
Wissenschaftliches Institut der AOK, Berlin, Germany, October 2016
- ▶ *Well-being inequality and preference heterogeneity*
LISER, Luxembourg, October 2016
- ▶ *Equality of opportunity: Key concepts and empirical work*
Universiteit Amsterdam, The Netherlands, November 2016
- ▶ *Utopian thinking in our days?*
Universiteit Utrecht, The Netherlands, 2017
- ▶ *Distributive justice in health: Individual well-being and responsibility*
Workshop Wellbeing and Justice in The Social Sciences, Aix-Marseille School of Economics, France, June 2017

Simon SCHOPHOL

- ▶ *Information transmission in hierarchies*
12th Doctorissimes, Université Paris 1, France, November 2016
Université Paris 1 Panthéon-Sorbonne, France, December 2016
University of Leicester, United Kingdom, December 2016
22nd Coalition Theory Network Workshop, Glasgow, United Kingdom, May 2017
17th SAET Conference on Current Trends in Economics, Faro, Portugal, June 2017
28th International Conference on Game Theory in Honor of Pradeep Dubey and Yair Tauman, Stony Brook, USA, July 2017
- ▶ *Information centralization in networks*
13th European (formerly Spain-Italy-Netherlands) Meeting on Game Theory (SING13), Paris, France, July 2017

Léopold SIMAR

- ▶ *Nonparametric estimation of efficiency in the presence of environmental variables*
ORSTAT, KU Leuven, Belgium, March 2017

4 Scientific Exchanges and Collaborations

- ▶ *Central limit theorems for aggregate efficiency*
15th European Workshop on Efficiency and Productivity (EWEPA) Loughborough University, London, United Kingdom, June 2017

Robert SOMOGYI

- ▶ *The economics of zero-rating and net neutrality*
HASS Colloquium Series, Singapore University of Technology and Design, Singapore, February 2017
9th ICT Paris Conference on The Economics of Information and Communications Technologies, TELECOM ParisTech, France, March 2017
66th Annual Congress of the French Economic Association (AFSE), Nice, France, June 2017
15th ZEW Conference on The Economics of Information and Communication Technologies, ZEW, Mannheim, Germany, June 2017

Yu SUN

- ▶ *Adaptative intertemporal decision making under the threat of intense earthquakes*
10th Belgian Environmental Economics Day, KU Leuven, Belgium, February 2017

Joe THARAKAN

- ▶ *Distributions of urban geometric attributes: A stochastic Muth-Mills approach*
18th Annual Meeting of the Association for Public Economic Theory (PET 2017), Paris, France, July 2017

Jacques-François THISSE

- ▶ *Monopolistic competition without apology*
Lancaster University, United Kingdom, February 2017
- ▶ *Optimal firm behavior and game-theoretic modeling of competition*
Oligo Workshop 2017, New Economic School, Russia, June 2017
- ▶ *What can TE learn from spatial economics?*
ITEA Annual Conference and School on Transportation and Economics, Barcelona, Spain, June 2017

Isabelle THOMAS

- ▶ *On-line rail travel requests: Big data for revisiting geography?*
64th Annual North American Meetings of the Regional Science Association International, Minneapolis, USA, November 2016
- ▶ *Comparing 75 bicycle sharing systems: A critical appraisal*
NECTAR XIV International Conference "Transport in a Networked Society", Universidad Politecnica de Madrid, Spain, May-June 2017
- ▶ *"Big data" in urban and economic geography: Revolution or evolution?*
DHC/Data Sciences, UCL, Belgium, May 2017

Henry TULKENS

- ▶ *Après la COP 21 : institutions et mécanismes de coopération pour le climat*
Atelier chaire DDX-EdF-Polytechnique, Ecole Polytechnique, Paris, France, January 2017

Dirk VAN DE GAER

- ▶ *Effects of high versus low quality preschool: A longitudinal study in Mauritius*
CSAE Conference 2017: Economic Development in Africa, St Catherine's College, Oxford, United Kingdom, March 2017
7th Meeting of the Society for the Study of Economic Inequality (ECINEQ), City University of New York, USA, July 2017

Vincent VANNETELBOSCH

- ▶ *R&D network formation with myopic and farsighted firms*
2nd Workshop KISS (Knowledge, Innovation, Internationalization, Strategy), Universidad de Valencia, Spain, November 2016
3rd Annual NSF Conference on Network Science in Economics, Washington University in St. Louis, USA, April 2017
Universidad del Pais Vasco, Bilbao, Spain, June 2017

Mathieu VAN VYVE

- ▶ *Polyhedral results for the fixed charge transportation problem*
Journées Polyèdres et Optimisation Combinatoire JOC10, Université Paris 13, Villetaneuse, France, June 2017

Frédéric VRINS

- ▶ *Disentangling wrong way risk: Pricing CVA with changes of measure and drift adjustment*
Séminaire de Probabilités et Mathématiques Financière, Université d'Evry, France, February 2017
EMLyon Business School, France, March 2017
- ▶ *CVA wrong-way risk via change of measure: Actuarial vs risk-neutral pricing*
Conference Innovations in Insurance, Risk- and Asset Management, Technische Universität München, Germany, April 2017

Laurence WOLSEY

- ▶ *Reflections on the work of George Nemhauser*
NemFest, A Celebration of Professors George Nemhauser and Arkadi Nemirovski, Atlanta, Georgia, USA, May 2017
- ▶ *On simple mixed integer sets and extended formulations*
Benelux MC16, Amsterdam, The Netherlands, March 2016

Yue ZHANG

- ▶ *Bankruptcy and the cost of organized labor: Evidence from union elections*
NFA Conference 2016, Mont Tremblant, Canada, September 2016
3L Finance Research Workshop, Bruxelles, Belgium, December 2016
2017 Annual Meeting, Chicago, USA, January 2017



5

PEOPLE

- ▶ MANAGEMENT
- ▶ FACULTY
- ▶ ADMINISTRATIVE STAFF
- ▶ ADMINISTRATIVE COLLABORATORS

PEOPLE

MANAGEMENT



Philippe CHEVALIER
President



Isabelle THOMAS
Research Director



Francisco SANTANA FERRA
Executive Director



Thierry BRÉCHET
Co-Director
Economics



Leonardo IANIA
Co-Director
Finance



Anthony PAPAVALIOU
Co-Director
Operations Research

FACULTY

CORE BOARD MEMBERS

During the 2016-2017 academic year, Board members of CORE consisted of *Faculty Members* of Université catholique de Louvain, Université Saint-Louis, Bruxelles, KU Leuven, and Université du Luxembourg.



Per AGRELL

- ▶ **Present positions:** Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; Chairman, doctoral commission in economics and management (UCLouvain); Academic Director IEMBA, Louvain School of Management (UCLouvain).
- ▶ **Fields of interest:** *SUPPLY CHAIN MANAGEMENT, ENERGY ECONOMICS, OPERATIONS RESEARCH.*
- ▶ **Education:** Ph.D. in Production Economics, Linköping University, Sweden, 1995.
- ▶ **Previous positions in the last five years:** Adjunct Professor, Norwegian School of Economics, Department of Management Science, 2012-2017.
- ▶ **Current editorial activities:** Editorial Board Member, *International Journal of Production Economics* and *Business Research*.



Paul BELLEFLAMME

- ▶ **Present positions:** Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; Professor, Aix-Marseille Université, France; Research Affiliate, Center for Economic Studies and Ifo Institute for Economic Research; Co-holder of the Chair Lhoist Berghmans in Environmental Economics and Management.
- ▶ **Fields of interest:** *MICROECONOMICS, INDUSTRIAL ORGANIZATION, AND INNOVATION*
- ▶ **Education:** Docteur en sciences économiques, Université de Namur, Belgium, 1997.
- ▶ **Previous positions in the last five years:** Co-director, CORE, Université catholique de Louvain, Belgium, 2014-2016.
- ▶ **Prizes & Awards:** Prix du Fonds International WERNAERS for scientific research and knowledge diffusion, 2012; Francqui Chair, Université de Liège, 2013; Louvain School of Management Research Award 2014; Louvain School of Management Best Education Award, 2014.

- ▶ **Current editorial activities:** Associate Editor, *Economics*, the *Open-Access, Open Assessment E-Journal* and *Review of Networks Economics*. Editorial Board Member of *Regards Economiques*.



Sophie BÉREAU

- ▶ **Present positions:** Assistant Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus); Assistant Professor, Université de Namur, Belgium.
- ▶ **Fields of interest:** APPLIED ECONOMETRICS, FINANCE (EXCHANGE RATES AND ASSET PRICES DYNAMICS, FINANCIAL NETWORK MODELING).
- ▶ **Education:** Ph.D. in Economics, Université Paris 10 Ouest Nanterre, 2010.
- ▶ **Prizes & Awards:** Fondation Banque de France Prize for the Best Ph.D. in Monetary, Financial and Banking Economics, 2011.



Thierry BRÉCHET

- ▶ **Present positions:** Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; Co-holder of the Chair Lhoist Berghmans in Environmental Economics and Management; Scientific Director at the Climate Economics Chair, Paris; Co-director, CORE, Université catholique de Louvain, Belgium.
- ▶ **Fields of interest:** ENVIRONMENTAL ECONOMICS.
- ▶ **Education:** Docteur en sciences économiques, Université Paris 1 Panthéon-Sorbonne, France, 2000.
- ▶ **Previous positions in the last five years:** Visiting Professor, European University of St Petersburg, Russia, 2009–2015; Associate Research Fellow, Grantham Institute for Climate Change, Imperial College London, 2011–2012.



Philippe CHEVALIER

- ▶ **Present positions:** Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; President, CORE (UCLouvain); President, IMMAQ (UCLouvain); President, jury bachelier ingénieur de gestion (UCLouvain).
- ▶ **Fields of interest:** OPERATIONS RESEARCH, SUPPLY CHAIN MANAGEMENT, OPERATIONS MANAGEMENT, STOCHASTIC MODELS.
- ▶ **Education:** Ph.D. in Operations Research, Massachusetts Institute of Technology, Cambridge (MA), USA, 1992.



Julio DÁVILA

- ▶ **Present positions:** Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium; Directeur de Recherches CNRS, Paris, France (on leave); President, Ecole d'Economie de Louvain (UCLouvain).
- ▶ **Fields of interest:** ECONOMIC THEORY, MACROECONOMICS, GROWTH THEORY, PUBLIC ECONOMICS
- ▶ **Education:** Docteur en sciences économiques, Ecole des Hautes Etudes en Sciences Sociales, Paris, France, 1994.
- ▶ **Previous positions in the last five years:** Co-director, CORE, Université catholique de Louvain, Belgium, 2012–2014; Fernand Braudel Fellow, European University Institute, Italy, 2016.
- ▶ **Current editorial activities:** Associate Editor, *Economics Bulletin*; Editorial Advisor, *Canadian Journal of Economics*.



David DE LA CROIX

- ▶ **Present position:** Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.
- ▶ **Fields of interest:** GROWTH THEORY, HUMAN CAPITAL AND DEMOGRAPHY, OVERLAPPING GENERATIONS.
- ▶ **Education:** Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1992.
- ▶ **Prizes & Awards:** Francqui Chair, Universiteit Gent, Belgium, 2004; Chercheur Qualifié Honoraire, Fonds National de la Recherche Scientifique (FNRS), Belgium; United Nations: Panel on New Challenges in Population and Development (IUSSP), 2010–2013; Francqui Research Professor, 2014–2017.
- ▶ **Current Editorial Activities:** Editor-in-Chief, *Journal of Demographic Economics*; Associate Editor, *Journal of Development Economics*, *Journal of Public Economic Theory*; Editorial Board Member, *Biometrika*, *Fiscal Studies*.



François GLINEUR

- ▶ **Present positions:** Professor, Université catholique de Louvain (Ecole Polytechnique de Louvain, Pôle en ingénierie mathématique), Belgium; Member of the Institute of Technologies, Electronics and Applied Mathematics (ICTEAM, UCLouvain), Mathematical engineering division (INMA).
- ▶ **Fields of interest:** OPTIMIZATION/MATHEMATICAL PROGRAMMING, OPERATIONS RESEARCH, NUMERICAL ALGEBRA
- ▶ **Education:** Docteur en sciences appliquées, Faculté polytechnique de Mons (Université de Mons), Belgium, 2001.



Christian HAFNER

- ▶ **Present positions:** Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium; Member of the Institut de Statistique, Biostatistique et Sciences Actuarielles (UCLouvain).
- ▶ **Fields of interest:** *TIME SERIES AND FINANCIAL ECONOMETRICS.*
- ▶ **Education:** Ph.D. in Economics, Humboldt-Universität zu Berlin, Germany, 1996.
- ▶ **Previous positions in the last five years:** President, Louvain School of Statistics, Biostatistics and Actuarial Science, UCL, Belgium, 2010–2015.
- ▶ **Current editorial activities:** Associate Editor, *Studies in Nonlinear Dynamics and Econometrics, Journal of Business and Economic Statistics.*



Jean HINDRIKS

- ▶ **Present positions:** Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium; Senior Fellow, Itinera Institute, Bruxelles, Belgium; Member of the Belgian pension reform committee and Member of the Belgian price scientific committee.
- ▶ **Fields of interest:** *PUBLIC ECONOMICS, HEALTH, EDUCATION AND WELFARE*
- ▶ **Education:** Docteur en sciences économiques, Facultés universitaires Notre-Dame de la Paix, Namur, Belgium, 1996.
- ▶ **Current Editorial Activities:** Associate Editor, *Journal of Public Economic Theory.*



Leonardo IANIA

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- ▶ **Education:** Ph.D in Econometrics, KU Leuven, Belgium, 2012.
- ▶ **Former positions over the last five years:** Post-doctoral position, Universiteit Maastricht, The Netherlands, 2015-2016.



François MANIQUET

- ▶ **Present position:** Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.
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- ▶ **Previous positions in the last five years:** Part-time Professor, University of Warwick, United Kingdom, 2008-2014; Research Director, CORE, UCLouvain, Belgium, 2011–2014.
- ▶ **Prizes & Awards:** SCW Prize, 2004, best paper in Review of Economic Design, 2004; Chercheur qualifié honoraire, Fonds National de la Recherche Scientifique (FNRS), Belgium; Francqui Chair 2009–2010, Université Saint-Louis, Bruxelles, Belgium; Francqui Prize, 2010; ERC grant laureate 2010.
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- ▶ **Education:** Ph.D. in Applied Mathematics, Institute of Control Sciences, Moscow, Russia, 1984.
- ▶ **Prizes & Awards:** Dantzig Prize, 2000; John Von Neumann Theory Prize, 2009; Best Paper Award, Optimization Methods and Software, 2010; EUROPT fellow, 2010; Francqui Chair 2012, Université de Liège, Belgium; Honorable Simon Stevin Lecture on Optimization in Engineering, KU Leuven, Belgium, 2013; SIAM Outstanding paper award, 2014; EURO Gold Medal 2016.
- ▶ **Current editorial activities:** Associate Editor, *Journal of Optimization Theory and Applications, Optimization and Engineering,* and *Optimization Methods and Software.*



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- ▶ **Previous positions in the last five years:** Postdoctoral Researcher: University of California at Berkeley, USA, 2011–2012; Consulting and internships: Belgian regulatory commission of electricity and gas, N-SIDE, Pacific Gas and Electric, Quantil, Sun Run, United States Federal Energy Regulatory Commission, the Palo Alto Research Center and the E3MLab of the National Technical University of Athens, Holder of the Engie Faculty Chair in Quantitative and Energy Economics, 2013-2015.
- ▶ **Prizes & Awards:** Best publication in Energy, INFORMS, 2015.



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- ▶ **Prizes & Awards:** Prix Aydalot in Regional Science, 1989; BMW Scientific Award, 2001; Prix de la Compagnie du Bois Sauvage 2011-2012; Francqui Chair 2015 in Antwerpen; Distinguished speaker, Transport Lecture Series 2015, The University of Hong Kong, 2015; Edward L. Ullman Award 2017. Board Member of ASRDLF, ERSa, FRS-FNRS, Belgian national Committee of Geography, Belgian National Council of Statistics.
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- ▶ **Prizes & Awards:** Prix Marie-Jeanne Laurent-Duhamel, 2005.
- ▶ **Current editorial activities:** Associate Editor, *Journal de la Société Française de Statistique*, *International Econometrics Review*.



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CORE FACULTY (NOT BOARD MEMBERS)



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- ▶ *Prizes & Awards:* Fellow, 1964 and President, 1970 of the Econometric Society; Francqui Chair, Université libre de Bruxelles, Belgium, 1970–1971 and KU Leuven, Belgium, 1982–1983; Andrew D. White Professor-at-Large, Cornell University, Ithaca (NY), USA, 1971–1977; President of the European Economic Association, 1985–1986; President of the International Economic Association, 1996–1999; Doctor *Honoris Causa*, 19 universities.



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- ▶ **Current editorial activities:** Co-editor, *Journal of Wine Economics.*



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- ▶ **Prizes & Awards:** Francqui Prize, 1989; AGF ASSUBEL Prize, 1995; Einaudi Chair in European Studies, Cornell University, Ithaca (NY), 1997; Prix Risque-Les Echos, 2006; Honorary Degree Uppsala University, 2011 and Université de Neuchâtel, Switzerland, 2016.
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- ▶ **Previous positions in the last five years:** Visiting Professor, Institut Français du Pétrole, Rueil, France, 1991–2013; Clemson University (SC), USA, 2007–2012; University of Salento, Lecce, Italy, 2010–2016; University of Queensland, Brisbane, Australia, 2011–2016; Università degli Studi di Roma “La Sapienza”, Italy, 2011–2016; Toulouse School of Economics, France, 2010–2016.
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- ▶ **Current editorial activities:** Associate Editor, *Journal of Productivity Analysis*, *Operations Research*, and *Computational Statistics & Data Analysis*.



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- ▶ **Previous positions in the last five years:** Visiting Research Fellow, KAPSARC, Riyadh, Kingdom of Saudi Arabia, 2013–2015.
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- ▶ **Previous positions in the last five years:** Chief Research Fellow, National Research University Higher School of Economics, Moscow, Russia; W.C. Mitchell Visiting Research Professor, Columbia University, New York, USA; and Visiting Professor, Institute of Developing Economies, Chiba, Japan.
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FUNDING

- ▶ UCLOUVAIN FUNDING
- ▶ INTERNATIONAL FUNDING
- ▶ BELGIAN FUNDING

FUNDING

UCLouvain Funding

FSR PROJECTS

► *Application of High Performance Computing in the Short-term Scheduling of Electric Power Systems under Uncertainty*

The purpose of this project is to develop parallel algorithms for the short-term scheduling of electric power systems under uncertainty caused by the large-scale integration of renewable energy sources and demand response. This project responds to an increasing need for the improvement of day-ahead and real-time power systems scheduling and market clearing by leveraging parallel computation.

Anthony PAPAVALIOU (CORE, UCLouvain) is the promoter of this project. Ignacio ARAVENA (CORE, UCLouvain) works under the scope of the project.

► *Optimizing Over Unrooted Binary Tree: Impact on Real Life Applications*

The introduction of Single-Cell Sequencing (SCS) has opened a new era in cancer research, by providing new insights into the genetic determinants controlling intra-cellular heterogeneity. Combining SCS with phylogenetic approaches could enable the characterization and the classification of the sequence of genetic events driving tumor progression in patients, by adding a key piece into the development of personalized prevention methods and treatments. Although many classes of estimation models are suitable to describe evolutionary processes on short-time scales, none of them can currently handle SCS data due to a number of intrinsic limitations related to the evolutionary hypotheses at their core as well as the presence of extensive technical errors during whole genome amplification. This research project aims to overcome these limitations, by investigating the mathematical foundations of a specific class of phylogenetic estimation model suitable to describe evolutionary processes on short-time scales.

Daniele CATANZARO (CORE, UCLouvain) is the promoter of this project. Martin FROHN (CORE, UCLouvain) will work on the project as from September 2017.

► *Strategic Supply Chain Design and Impacts of Demand Uncertainty*

The strategic design of its logistics network highly impacts the performance of a company, determining its tactical and operational decisions. Therefore, this must be taken into account when establishing the network. In this project, we are particularly interested in demand uncertainty, which is increasing in practice. It has two main implications for the supply chain network: safety stocks to react in short-term and robustness to adapt in medium term. These effects will be incorporated into a mathematical location-inventory model, heuristics will be developed, and managerial insights will be provided.

Jean-Sébastien TANCREZ (CORE and LSM, UCLouvain) is the promoter of this project. Matias Schuster PUGA (LSM, UCLouvain) works under the scope of the project.

INTERNATIONAL FUNDING

European Commission Projects

► *European Doctorate in Economics Erasmus Mundus (EDEEM)*

EDEEM is a research-oriented programme aiming to produce top-quality researchers, who will gain international experience working within the research units with some of Europe's leading researchers in economics. Students are trained for positions in academia at the international level as well as for management positions in government, research organizations, and business enterprises. High focus is made on research work, publication and presentation, with dedicated jamborees and summer schools being an integral part of the training. This program gathers the following universities: Universiteit Amsterdam, Universität Bielefeld, Universidade Nova de Lisboa, Université catholique de Louvain, Université Paris 1 Panthéon-Sorbonne, Ecole des Hautes Etudes en Sciences Sociales (Paris), and Università Ca'Foscari Venezia.

This project, financed under the **Erasmus Mundus** program, is coordinated by Frédéric DOCQUIER (IRES, UCLouvain) at UCLouvain. Sinem BAS, Risa PAVIA and Simon SCHOPHOL are currently enrolled in this program at CORE.

► **Poverty, Resource Equality, and Social Policies (PoRESP)**

This project is dedicated to theoretical and empirical research on the measurement of poverty, the determinants of poverty, the design of policies aimed at alleviating poverty and, individual responses to anti-poverty policies.

This project is financed under a **European Research Council (ERC)** program. François MANIQUET (CORE, UCLouvain) is the promoter. Sinem BAS and Mery FERRANDO (CORE, UCLouvain) work under the scope of this project.

► **Social Networks and Travel Behavior**

This COST action aims to initiate a new collaboration framework for various EU research groups that develop a new transport paradigm based upon ICT social networks and their subsequent travel behavior in the urban environment. The goals are to explore ways in which social activities become mobilized in space, identify how social ties affect the integration of local public transport into urban patterns, and develop a rigorous conceptual framework for new ideas and methodologies. This work will be achieved by creating a joint discussions platform that includes seminars, thematic working groups, discussion sessions, workshops and published scientific results.

This project is financed by the **Framework Programme Horizon 2020** under a **COST Action**. Prina PLAUT (Technion - Israel Institute of Technology, Haifa, Israël) is the promoter. Isabelle THOMAS (CORE, UCLouvain) is a project partner.

► **Computational Methods for Societal Challenges**

The project was inspired by the FuturICT Pilot, and its goal is to find a path for understanding and managing complex, global, socially interactive systems. From financial crisis to climate change, from crime and conflicts to resource management: the world is currently facing grand social challenges, which need to be addressed with new approaches and tools. FuturICT 2.0 aims at creating an incentive system to take on some of the main challenges of modern society. This will be achieved through what we call Finance 4.0 – a circular and sharing economy that would allow to create a high quality of life for more people with less resources. Under this “Finance 4.0” label, we will integrate experiments and computer simulations, to provide an operational, effective example of how the mixed ICT/Social Science approach could lead towards a more resilient and adaptive society.

This project is financed under a **FuturICT 2.0** international project. Louise-Amélie COUGNON (ILC, UCLouvain), Jean-Charles DELVENNE (CORE and INMA, UCLouvain), Renaud LAMBIOTTE (UNamur), Tom LENAERTS (Université libre de Bruxelles), and several European partners work on this project.

► **Mixed-Integer Nonlinear Optimization (MINO)**

Complex decision making in enterprises should involve mathematical optimization methods because the best choice has to be made out of a huge number of feasible options. A mathematical description of such decision processes typically involves both continuous and discrete decisions. If the latter are present, the customary modelling approach is to use integer variables, which are also used to represent all possible nonlinearities, so that the remaining part of the model is linear. This leads to Mixed-Integer Linear Optimization (MILO) problems, which can be handled nowadays by many packages, but are often very difficult to solve.

The difficulty of MILO problems is often due to the fact that objective functions or constraints that are structurally nonlinear (e.g. quadratic) are linearized by introducing new integer variables. In many cases, it was observed that this is not the best way to proceed, as facing the nonlinearity directly without the new variables leads to much better results. Algorithmic technology for the resulting Mixed-Integer Nonlinear Optimization (MINO) problems is still at its early stage.

The present situation is such that enterprises facing a MINO problem generally give up due to the lack of efficient solvers, or try to convert it to a MILO one often too hard to be solved in practice. On the other hand, in academia, there is now increasing expertise in MINO, which is, however, hardly exported outside due to the lack of interaction with the industrial world. The purpose of this project is to help satisfy the increasing demand for highly qualified researchers receiving, at the same time, state-of-the-art scientific training from academia and hands-on experience with real-world applications from the industry.

The project is financed under a **FP7-People project (Marie-Curie Action: "Initial Training Networks" (ITN))**. Andrea LODI (Università di Bologna) is the coordinator. The local coordinators at CORE are Mathieu VAN VYVE and Laurence WOLSEY. Bartosz FILIPECKI (CORE, UCLouvain) works under the scope of this project.

Public Institutions Projects

► **Huge-Scale Sparse Optimization: Theory, Algorithms and Applications**

Experiments and observations in many areas of science and engineering are currently generating terabytes of data. In another perspective, as the increasingly huge amounts of information are typically dispersed in space and time, the Big Data paradigm is inherently linked to network paradigm (a network system consists of multiple interacting subsystems, connected through a network which enables the

subsystems to coordinate their activities; e.g. power grids). Learning from these large volumes of data is expected to bring significant science and engineering advances along with improvements in quality of life. However, the efficient exploitation of big data demands the development of efficient computational methods. Classical first/second order optimization algorithms are not designed to scale at instances of huge sizes. As a consequence, new mathematical programming tools and methods are required to solve efficiently these big data problems. The goal of this project is to develop new and efficient tools and optimization algorithms with low per-iteration cost and good scalability properties for solving Big Data optimization problems. The project brings together researchers with expertise in optimization capable of dealing with the big data network setting.

François GLINEUR (CORE, UCLouvain) and Ion NECOARA (Politechnica University of Bucharest) are the investigators of this project initiated by the Romanian Academy of Sciences and funded by the **World Bank Institute in Romania**.

► **Networks, Innovations, Culture, Employment and Growth**

It is well known that social structures, the position of individuals in these structures and social segregation determine the success of individuals, groups and societies as a whole. We will formally introduce social structures in the economic analysis in order to determine whether part of the difference in wages between men and women or between different socio-economic groups can be explained by their position in social structures and social segregation, and will also analyze their implications for professional success.

The project is financed by the **Spanish Ministry of Economy and Competition**. Ana MAULEON (Université Saint-Louis, Bruxelles and CORE, UCLouvain) and Vincent VANNETELBOSCH (CORE, UCLouvain) are external investigators of this project coordinated by Javier GARDEAZABAL and Maria Paz ESPINOSA (Universidad Del País Vasco, Bilbao, Spain).

► **Performance Analysis, Competitiveness and Economic Progress**

The project aims at developing consolidated non-parametric efficient and productivity measures for the analysis of economic performance, both under regulation and competition.

The project is financed by the **Spanish Ministry of Science and Education**. Per AGRELL (CORE, UCLouvain) and Emili GRIFELL-TATJE (Universitat Autònoma Barcelona) coordinate this project.

► **R&D Strategies in a Global Economy: Intramural Investment, Competition And International Business Profitability**

The recent global crisis has shaken the foundations of western economies, in many cases holding back the growth of productivity. Restoring competitiveness is vital for recovery, and this depends, among other factors, on R&D and innovation investment and the existence of a business fabric capable of translating this investment effort into innovative outcomes that confer a global innovation advantage at both national and enterprise level. In this context, which R&D strategies can help firms position themselves better in a global market? What criteria should guide public and private investment? Which factors count most in confronting the international dimension of competition?

This project sets out to offer answers to these questions and to put forward recommendations both from a managerial standpoint and for those charged with implementing economic (industrial and commercial) policy. It will revolve around four lines of research:

- Study the complementarity or substitutability between company R&D investment and technology acquisition strategies, the idea being to assess their impact on R&D returns in terms of productivity;
- Analyze the impact of lowering tariff barriers on the relationship between degree of competition and firms' incentives to innovate, and the effects of the interaction between the protection of industrial property and the strength of competition;
- Determine the role of the technological and geographical distance between Spanish and foreign firms in determining the existence and intensity of the spillovers generated by investment in foreign R&D;
- Analyze whether R&D activities can reduce or offset the negative impact of the crisis on company profit margins.

This project is financed by the **BBVA Fundación** and coordinated by Rafael MONER COLONQUES (Universitat de València, Spain). Vincent VANNETELBOSCH (CORE, UCLouvain) is partner of the project.

BELGIAN FUNDING

Belgian Science Policy (BELSPO)

PAI PROJECTS

► **Combinatorial Optimization: Metaheuristics and Exact Methods (COMEX)**

The main objectives of this project are to:

- ▶ Bring together the available Belgian expertise on combinatorial optimization problems, exploit synergies between the partner research groups, and create a network with a sufficient mass to attract young and experienced top-level scientists in Belgium, and further financing for research in the field;
- ▶ Train young researchers in the field of combinatorial optimization, as these profiles are in high demand, both in academic research centers worldwide and in private organizations;
- ▶ Develop new models, algorithmic techniques and implementations for complex, large-scale combinatorial optimization problems;
- ▶ Develop new international collaborations with other large teams working in the field of combinatorial optimization. An active and recognized Belgian network would facilitate international collaborations, in particular in the framework of large-scale international projects.

This project (PAI 7/36-COMEX) is coordinated by Bernard FORTZ (Université libre de Bruxelles) and Mathieu VAN VYVE (CORE, UCLouvain). Bartosz FILIPECKI and Avinash BHARDWAJ (CORE, UCLouvain) work under the scope of this project.

▶ ***Exact Nonnegative Matrix Factorization: Algorithms, Bounds and Applications to Optimization***

Many combinatorial optimization problems can be formulated as the optimization of a linear objective over a polytope. However, this polytope may have a very large number of facets, possibly growing exponentially with the dimension. Because of the high number of facets, computing the optimal solution can be very time-consuming. However, if one can find an extension of this polytope with a moderate number of facets, one can solve the optimization problem over the extension efficiently and project the optimal solution on the original polytope. Finding an extension for a convex polytope can be done with exact nonnegative matrix factorization. The goals of this research are (i) the development of algorithms that compute exact nonnegative factorizations and (ii) the development of lower bounds (optimality guarantees for the algorithms) on the minimum inner dimension of such factorizations.

This project (IAP P7/19-DYSCO) is coordinated by François GLINEUR (CORE, UCLouvain). Julien DEWEZ (CORE, UCLouvain) works under the scope of this project.

BRAIN PROJECTS

▶ ***Application of High Performance Computing in the Short-term Scheduling Integrated Economic Modeling of Material Flows (IECOMAT)***

The IECOMAT project develops complementary numerical and analytical tools designed to study a particular aspect of sustainable material management, the circular economy. The models to be employed and to be developed range from input-output models over partial, computable and general equilibrium models as well as analytical industrial organisation models of economic incentives. The project will deliver different modeling frameworks, scenario analyses, a wide variety of policy analyses and ultimately an assessment of the potential of a more circular economy model for Belgium.

The IECOMAT project brings together a multidisciplinary team of experienced scientists from material and environmental engineering, environmental economics, industrial organisation and stakeholder consultation practice. This multidisciplinary team from a leading Flemish research institute on sustainable material management (VITO) and two research universities (KU Leuven and UCLouvain) interact intensively. This leads to an interdisciplinary analysis of key scenarios for the Belgian economy. Some specific areas of expertise are subcontracted to national and international specialists in their domain. In all approaches, three fundamental perspectives are included: physical material flows, environmental effects and socio-economic impacts, and business incentives. Therefore, the IECOMAT project is about integrated assessment models for the transition towards a circular economy. In order to strengthen a transdisciplinary dimension, the input of policy makers, practitioners and business stakeholders is actively sought.

Johan EYCKMANS and Sandra ROUSSEAU (KU Leuven) are the promoters of this project coordinated at CORE by Paul BELLEFLAMME and Thierry BRÉCHET (CORE, UCLouvain). Thuc Huan HA (CORE, UCLouvain) works under the scope of this project.

▶ ***Impact of Green/Blue Spaces on Specific Morbidity and Cause-Specific Mortality in Belgium (GRES-HEALTH)***

Living in green/blue areas is associated with better health. This may be due to low air and/or noise pollution, opportunities for physical activity, facilitation of social contacts, and promotion of recovery from fatigue and stress. Yet, socio-economic (SE) factors also explain inequalities in health and access to green/blue spaces. The GRES-HEALTH project evaluates the associations between living in/close to a green/blue area on morbidity and mortality in Belgium. It assesses all-cause and cause-specific mortality, specific morbidities and perceived health, considering environmental pollutants and SE factors.

The project includes individuals registered in the Belgian censuses of 1991 and/or 2001. Three levels of observation are studied: individual, statistical sector (SS) and group of SS, following individual and ecological designs. Mortality information is based on the National Mortality Database (a linkage between cause-specific mortality (2001-2010), perceived health (2001 census) and SE factors (1991 and 2001 censuses)). Morbidity information (2004-2012) is derived from the IMA (Intermutualistisch Agentschap) database, which contains reimbursement data of prescriptions. For green/blue spaces, the surface, shape, accessibility and type are calculated for each SS. Residential area-specific exposure to air pollutants is obtained from satellite images. Traffic noise databases are used whenever possible. We will consider SE factors such as material deprivation, education, and occupation. The analyses will be conducted separately in different age specific populations and types of area (urban, sub-urban, rural). We will use multilevel models for clustered data within geographical areas. Interactions of green/blue

spaces with air pollution and SE factors will be evaluated and stratified analyses in areas with similar SE and environmental characteristics will be performed. Moreover, specific population groups (gender, employment status) will be considered. The GRESP-HEALTH project will improve the scientific knowledge about the hitherto uncertain associations between living close to green/blue spaces and health.

Benoît NEMERY (KU Leuven) is the coordinator of this project. The other promoters are Isabelle THOMAS (CORE, UCLouvain), Tim NAWROT (Universiteit Hasselt), Catherine BOULAND (Université libre de Bruxelles), Patrick DEBOOSERE (Vrije Universiteit Brussels) and An VAN NIEUWENHUYSE (Institut de Santé Publique, Bruxelles). Sonia TRABELSI (CORE, UCLouvain) works under the scope of this project.

► ***Measuring Equivalent INcomes: The Implementation of Individual Well-being Measures from Belgian Data (MEQIN)***

This project is dedicated to the production, the analysis and the diffusion of a socio-economic database of Belgian households; the database is constructed in such a way that individual well-being levels can be measured according to several concepts of well-being, with a particular focus on equivalent income.

Béa CANTILLON (Universiteit Antwerpen), Bram DE ROCK (Université libre de Bruxelles), François MANIQUET (CORE, UCLouvain) and Erik SCHOKKAERT (CORE and KU Leuven) are the promoters of this project. Eve RAMAEKERS (CORE, UCLouvain) works under the scope of this project.

► ***Nature impact on Mental health Distribution (NAMED)***

NAMED aims: (1) to develop indicators for the characterization of the built/non-built environment in function of the size, shape, fragmentation, accessibility of built/non-built environment and considering air and noise pollution (quantitative approach); (2) to investigate the relationships between mental health and the built/non-built environment, taking into account demographic, socioeconomic factors and lifestyle (quantitative approach); (3) to explore the role of potential intermediary variables (quantitative approach); (4) to formulate hypotheses and knowledge gaps that are to be explored further (quantitative approach); (5) to triangulate results, answer knowledge gaps from quantitative analyses through multiple case studies exploring citizens' perceptions, preferences regarding their living environment in relation to mental health (qualitative approach); (6) to investigate citizens' awareness and opportunities for improvement (qualitative approach); (7) to propose new questions and/or alternative data collection methods for improvement of future HIS (qualitative & quantitative approaches); and (8) to formulate integrated urban, nature and health management and policy recommendations (qualitative & quantitative approaches).

Hans KEUNE (Universiteit Antwerpen) is the coordinator of this project. The other promoteurs are Hilde BASTIAENS and Roy REMMEN (Universiteit Antwerpen), Tim NAWROT (Universiteit Hasselt), Isabelle THOMAS (CORE, UCLouvain) and An VAN NIEUWENHUYSE (Institut de Santé Publique, Bruxelles).

Fonds de la Recherche Scientifique (FNRS)

ASPIRANT

► ***Uncertainty, Monetary Policy and Market Fragmentation***

This project is aiming to account explicitly for mixed-frequency in term structure modelling. This research project originates from the observation that most of the macro-finance literature try to assess the link between financial markets and the real economy by aligning (high frequency) market data with (low-frequency) macro data. This alignment of high-frequency data to a lower frequency involves a misrepresentation of the co-dynamics between these variables and can lead to spurious inference. The project is aiming to account explicitly for the mixed-frequency setting inherent to macro-finance models and see whether we can revisit the recent results in the literature about the spanning of macroeconomic information by the yield curve of interest rates.

Leonardo IANIA is the promoter of this project. Jean-Charles WIJNANDTS (CORE, UCLouvain) works on this project.

FRESH PROJECTS

► ***Evaluating the Effectiveness of Price-based Policies in Reducing Unhealthy Food demand under Models of "Non-standard" Consumption Behaviour***

The subject of this research is to address the obesity issue in the context of a public health and market efficiency perspectives. The main objective of the research is to test empirically whether consumer behavior (and response to price changes) are consistent with the rational model of consumer choice. Different deviations from the rational model will be tested such as the attention bias, the present bias and the projection bias. This empirical testing will be carried out based on scanning data from a supermarket in Belgium. The demand system will be estimated separately for two different categories of junk food: salty snacks and sweet sugar beverages. The expected output is the estimation of own price and cross price elasticities and income elasticities of the demand for healthy and non-healthy food. The estimation will also provide the empirical distribution of addicted and inattentive consumers.

Jean HINDRIKS (CORE, UCLouvain) is the promoter of this project. Valerio SERSE (CORE, UCLouvain) works under the scope of the project.

► *High Dimensional Econometrics*

High dimensional models arise today in a lot of economic studies. In a linear regression model, for instance, it corresponds to the situation where the number of covariates is large, i.e. close or larger than the sample size. In a multivariate time series setting, high dimensionality refers to the high number of time series that are studied jointly. Due to the ease of data collection today, the empirical researcher faces such large data sets more frequently. High dimensionality also appears in linear models when the covariate is not a random variable but a random function. Examples are given by the spot electricity prices that are observed continuously over time, or fertility curves used in development economics to measure the density of birth rate over mother's age.

The wide availability of large data sets has increased the hope to address empirically major substantive questions. In the two cited examples, they are, for instance, the impact of electricity spot prices on future contracts or the impact of the shift in fertility curve on economic growth. However, these new promising directions of research are also hampered by several major methodological obstacles. Classical methods of modeling and inference (e.g. estimation by GLS) are not robust to a large increase in the dimension of the econometric model. The goal of the present research program is to address a number of those methodological obstacles with a view to provide workable and theoretically justified econometric methods and efficient inferential tools. In particular, the program is organized around three interlocking aspects: the failure of stationarity in time series collection, the modelling of large dimensional covariance matrices and the endogeneity of covariates in high dimensional regression.

Sébastien VAN BELLEGEM (CORE, UCLouvain) is the promoter of this project.

► *Three-dimensional Urban Morphodynamics*

This project aims at studying the socio-economic determinants of urban built-up morphology. Scientific contribution lies in the introduction of buildings verticality in a dynamic setting using different modelling tools such as microeconomics, stochastic methods and agent-based simulations.

Dominique PEETERS and Isabelle THOMAS (CORE, UCLouvain) are the promoters of this project. Justin DELLOYE (CORE, UCLouvain) works under the scope of the project.

FRIA PROJECTS

► *Control and Optimization of Networked Systems with Poorly Understood Couplings*

The deployment of wind turbines has experienced a dramatic increase over the recent years, and wind power is expected to represent a significant part of electricity production in the future. For practical and economical reasons, it is often advantageous to deploy several wind turbines in the same location, on a "wind farm". Certain of these farms contain up to 100 turbines.

The complex couplings and interactions between turbines on these farms create new challenges in control and optimization (and indeed in fluid dynamics). In order to produce electricity, a turbine takes energy from the wind, which may decrease the strength of the wind arriving at some of the other turbines and create complex perturbations and turbulences. In this context, nothing guarantees that selfish maximization of the production of each turbine is globally optimal, and indeed current simulation results show that it is not. Similar problems arise when one is trying to stabilize the production of the wind farm under varying conditions in order to avoid sharp variations on the electricity network. Understanding exactly how to control or optimize the production of these farms is challenging as the coupling between the turbines involves very complex fluid dynamics phenomena, the accurate simulation of which is already an important research subject on its own. In particular, it appears that an accurate simulation of the interferences taking place on a large farm will be beyond reach for long and would be extraordinarily costly from a computation point of view. On the other hand, a range of simplified models are available, but it is unclear how their (in)accuracy may affect the performances of the control laws relying on them. On the one hand, the control law should not be able to take all dynamical effects into account (wind speed is a very fast-varying input, and pitch actuators have a very limited speed), and on the other hand, the model should be accurate enough to allow the controller to be robust to its prediction faults. The research goal is to develop control and optimization methods for such networked systems with unknown or poorly understood coupling, which is thus directly related to wind farms.

This project is coordinated by Julien HENDRICKX (INMA, UCLouvain) and François GLINEUR (CORE and INMA, UCLouvain). Adrien TAYLOR (INMA, UCLouvain) works under the scope of the project.

► *Development of a Tool for Planning and Optimizing Active Autonomous Electrical Distribution Grids*

This research project is intended to develop a tool for the planning of active low-voltage distribution networks. The active nature covers four aspects: the presence of distributed generation, the flexibility of the load, the storage capacities, and the active management of the grid thanks to an increased level of automation. Furthermore, this study will focus on the case of autonomous networks in a context of rural electrification for developing countries. Those autonomous grids are self-sufficient in terms of production capability and may have the possibility to be connected to a higher voltage level.

The development of the planning tool will occur in two steps. First, it is necessary to model the load, the distributed generation, the storage and the grid with appropriate models. In particular, a fraction of the load and the dispersed generation based on renewables have a stochastic nature. Probabilistic provisional models need to be used at this level. Then, multi-objective optimization must be carried out based on a set of predefined technico-economic criteria and constraints such as the reliability of the supply, the minimization of the losses in the lines or the optimal location of storage elements. The integration of a set of models for the aspects above and an optimization tool, along with a process of decision support, should lead to a flexible and built-in tool. This tool will work by making a comparison with the traditional planning methods and will be tested on real study-cases in order to make the necessary adjustments.

This project is coordinated by Emmanuel DE JAEGER (EPL, UCLouvain) and François GLINEUR (CORE and INMA, UCLouvain). Benoît MARTIN (ICTEAM, UCLouvain) works under the scope of the project.

PDR PROJECTS

► *Optimal Fertility, Health and Education in Market Economics*

The proposed research aims at identifying policies that allow improving the steady state efficiency and welfare upon the laissez-faire market outcome. This is achieved by exploiting the externalities existing between households' decisions on savings, fertility, health, and education on their own incomes at the aggregate level. Such externalities are disregarded by households at the market equilibrium under laissez-faire, which creates room for improvement through policy intervention.

Julio DAVILA (CORE, UCLouvain) is the promoter of this project. Jonathan R. HUGHES (CORE, UCLouvain) works on this project.

► *Social Preferences and the Persistence of Poverty*

This project is aiming to theoretically and empirically explore how the social components of preferences such as identity, social norms and social categories, may help explain the persistence of poverty and social exclusion in rich societies.

François MANIQUET (CORE, UCLouvain) is the promoter of this project. Marion COLLEWET (CORE, UCLouvain) works under the scope of this project.

CDR PROJECTS

► *Information and (Dis)integration of Financial Markets*

We analyze two aspects related to information extraction and market functioning, namely the extraction of market expectations in the bond market and the interdependence between the bond and stock markets. By extracting market expectations from the bond markets and identifying the transmission of shocks from the bond to the equity markets, we aim to better understand the dynamics of financial contagion which is likely to hit the real economy again in the coming years.

Leonardo IANIA (CORE, UCLouvain) is the promoter of this project.

► *Optimizing over Unrooted Binary Tree*

Huffman coding is a classical example of optimal prefix coding in lossless data compression. It is possible to prove that, for a finite alphabet, the space of all binary Huffman codes defines a particular type of (majorization) lattice, ordered by the imbalance of the code trees. On such lattice, the weighted path-length of a tree (i.e., the objective function for Huffman coding) is convex and monotone, hence Huffman coding can be performed in polynomial time. This property is however lost in some general versions of Huffman coding which are very useful to perform data compression and encryption simultaneously. Which combinatorial reasons are at the core of this fact and which computational insights can we derive from them? This research project aims to address both questions as comprehensively as possible and to derive new optimization algorithms for that may turn out of use in practice.

Daniele CATANZARO (CORE, UCLouvain) is the promoter of this project.

► *Uncertainty and Monetary Policy*

This project will study how uncertainty and market fragmentation can impact the transmission of monetary policy to real activity and financial markets. We will be interested in uncertainty surrounding both economic conditions and the conduct of monetary policy itself.

Leonardo IANIA (CORE, UCLouvain) is the promoter of this project.

Fédération Wallonie-Bruxelles (ARC Projects)

► *Mining and Optimization of Big Data Models*

Computational science has entered the era of Big Data, fueled by unparalleled amounts of data coming from high-throughput technologies and electronic records collected by various sensors and communication devices. This trend is particularly visible in communication and social networks, where a growing number of individuals are more and more frequently connected to the Web and carry mobile sensors such as smart phones. This allows the gathering of data on human and social interactions at a very large scale. The efficient exploitation of that data raises important engineering, ethical and legal questions, but also demands the development of efficient computational methods.

This project aims at developing a theoretical, principled framework on which to build efficient algorithms tailored for the mining and optimization of Big Data models, i.e., for the extraction of high-level information and the subsequent identification of optimal decisions. Applications to a broad range of social, economic, health and urban problems are expected.

François GLINEUR (CORE and INMA, UCLouvain) is the promoter of this project. Pierre-Antoine ABSIL (INMA, UCLouvain), Vincent BLONDEL (INMA, UCLouvain), Jean-Charles DELVENNE (CORE and INMA, UCLouvain), Renaud LAMBIOTTE (UNamur) and YURII NESTEROV (CORE and INMA, UCLouvain) are other coordinators of the project.

► *Social and Economic Network Formation under Limited Farsightedness: Theory and Applications*

The global objective of the research project is to deepen our understanding of social and economic networks by bridging the gap between two approaches to network economics: the social networks approach and the Industrial Organization (IO) approach. The research activities will be articulated around the following three axes:

- Limited farsightedness in network formation;
- Networks in the knowledge economy;
- Group symbols and conventions in networks.

Ana MAULEON and Wouter VERGOTE (Université Saint-Louis, Bruxelles and CORE, UCLouvain) are the promoters of this project.

► *Stochastic Modelling of Dependence: Systems under Stress*

The project concerns fundamental research on statistical and econometric models for dependence. The aim of the project is to construct new ways of measuring and modelling risks in systems with intricate dependence structures. Particular attention is to be paid to such systems upon the arrival of shocks, after structural breaks or when comovements between risk factors are higher than usual.

Johan SEGERS (ISBA, UCLouvain) is the promoter of this project. Other coordinators are Luc BAUWENS (CORE, UCLouvain), Michel DENUIT (ISBA, UCLouvain), Christian HAFNER (ISBA, UCLouvain), Sébastien VAN BELLEGEM (CORE, UCLouvain) and Rainer VON SACHS (ISBA, UCLouvain). Dimitra KYRIAKOPOULOU (CORE, UCLouvain), Emanuela PUSCAS (ISBA, UCLouvain) and Michal WARCHOL (ISBA, UCLouvain) work under the scope of this project.

Région Bruxelloise (INNOVIRIS Projects)

► *A New Look on the Inter-Relationships Within the Metropolitan Area of Brussels*

The BRU-NET project aims at taking a new look at interactions within the Brussels metropolitan area. Our objective is to understand how people interact, work, move and entertain themselves within their living environments. We seek to develop new methodologies based on existing ones to allow a specific and objective understanding of the social, economic and morphologic organisation of the Brussels metropolitan area.

Isabelle THOMAS (CORE, UCLouvain) and Jean-Charles DELVENNE (ICTEAM, UCLouvain) coordinate this project. Arnaud ADAM, Adelyne DECUYPER and Olivier FINANCE (CORE, UCLouvain) work under the scope of the project.

► *Express Shipment Service Network Design: Challenges, Advances and Robustness*

Express carriers face huge network coordination and planning challenges, in a growing and competitive express delivery industry. These challenges call for advanced operations research and optimization methodologies. Our project aims at further exploring and developing the express shipment network design problem, i.e. how to best plan and schedule flights, decide on the fleet investment and allocation and locate hubs under strong timing and capacity constraints, and at proposing robust optimization methodologies for the problem. This project is done in collaboration with FedEx Express EMEA.

Jean-Sébastien TANCREZ (CORE and LSM, UCLouvain) coordinates this project. José Miguel QUESADA PÉREZ (LSM, UCLouvain) works under the scope of this project.

Private projects

► *Color Power*

Although a substantial amount of demand response resides in the residential sector, the mobilization of residential demand response has fallen short of expectations. The participation of residential flexibility in wholesale electricity markets can have a disruptive impact on the industry. Inspired by our collaboration with MIT start-up Zome, we analyze the long-run impact of residential demand response on the profitability of various technologies through long-run equilibrium models of electricity markets.

This project is financed by **Electrabel** and coordinated by Philippe CHEVALIER and Anthony PAPAVALIIOU (CORE, UCLouvain). Yuting Mou (CORE, UCLouvain) works under the scope of this project.

► *Coordinated Scheduling of Transmission and Distribution in Electric Power Systems*

The proliferation of distributed renewable resources at the distribution level, coupled with the presence of significant amounts of load flexibility in the residential and commercial sector, implies that a substantial amount of intelligence will have to be integrated at the distribution level of electric power systems. Moreover, the distribution system operator will need to assume a more active role in the operation of electric power systems and electricity markets, and its interaction with the transmission system operator will need to be clarified. The goal of this research is to model schemes for coordinating TSO-DSO interaction, and to develop scalable optimization algorithms for coordinating the optimal dispatch of transmission and distribution level resources which can deal with the large scale of the problem and the non-linear representation of power flow at the distribution level.

This project is sponsored by **Engie** and coordinated by Anthony PAPAVALIIOU (CORE, UCLouvain). Ilyes MEZGHANI (CORE, UCLouvain) works under the scope of the project.

► *Energetic Transition*

This project aims at shaping potential energy perspectives in Wallonia in the long run. The methodology is interdisciplinary, qualitative and quantitative. The objective is to scrutinize the impacts of such energy transitions on society.

This project is financed by **Electrabel** in collaboration with the Bureau Fédéral du Plan, l'Institut de Conseil et d'Etudes en Développement Durable (ICEDD), l'Institut pour un Développement Durable (IDD) and the LENTIC (Université de Liège). Thierry BRÉCHET (CORE, UCLouvain), is partner of this project.

► *Modeling Flexibility at Sub-Hourly Time Scales*

The large-scale integration of renewable energy sources is creating increasing needs for flexibility. The optimal dispatch of conventional resources at a sub-hourly time scale in order to prevent binding ramping constraints is increasing the challenges of short-term operations. This project aims at developing optimization models and algorithms that can support the optimal utilization of generator flexibility in short-term operations.

This project is financed by **Electrabel** and coordinated by Anthony PAPAVALIIOU (CORE, UCLouvain).

► *Study on the Remuneration of Capacity in Conditions of Scarcity*

Triggered by the resource adequacy problem that occurred in Belgium in 2014 due to the unplanned outage of nuclear capacity in the country, this project aims at analyzing the impact of operating reserve demand curves on energy and reserve prices in Belgium, as well as the implications for investment in generation capacity in Belgium.

The **Belgian Electricity and Gas Regulatory Commission** (CREG) awarded this research grant to Professors Anthony PAPAVALIIOU, Yves SMEERS and Mathieu VAN VYVE (CORE, UCLouvain).

► *Using Analytics and Optimization to Enable Africa to Leapfrog to Energy*

Africa has recently set ambitious renewable energy integration targets, best exemplified through the adoption of the African Renewable Energy Initiative (AREI) as well as by the large number of renewable infrastructure projects that are underway. The goals of this project are :

- To develop tools for optimizing the use of electricity in existing electric power systems, in particular optimally managing utility-scale storage in a system dominated by solar production;
- To develop tools for planning for future renewable systems, in particular randomized algorithms for obtaining optimal transmission expansion plans subject to net load and component outage uncertainty with probabilistic guarantees of optimality;
- Operating future distributed energy systems which rely less on centralized fossil fuel resources and more on decentralized renewable resources.

This project is sponsored by the **Fonds de Recherche Pierre et Colette Bauchau** and coordinated by Anthony PAPAVALIOU (CORE, UCLouvain).

▶ *Lhoist Berghmans Chair in Environmental Economics and Management*

It is a recognized fact that environmental issues are omnipresent in business today. This concern for the environment is quite rightly interpreted as the expression of collective aspirations for better quality of life. The Chair Lhoist Berghmans forms part of this framework and aims to underpin research likely to improve knowledge from three points of view:

- ▶ Evaluation of costs for an industry applying alternative technologies;
- ▶ Evaluation of benefits for a community applying these technologies;
- ▶ Evaluation of the global impact of industrial activities on the environment and on the improvement of living conditions through the use of their products.

An interdisciplinary approach to these problems is needed in order to integrate the environmental, economic, technological and institutional factors into a coherent process and to quantify the effects of new environmental policy instruments on the competitiveness of industries and countries and on the overall wealth of these countries. Improving decision-making tools, both on an enterprise and community scale, is the main theme of this research. In addition to the research, the Chair is responsible for the following courses:

- ▶ A course on "Environment and Global Economy" mainly aimed at students of economics;
- ▶ A course on "Environment and Enterprise" mainly for civil engineering and management studies;
- ▶ A seminar on "Management of Environmental Issues".

These courses aim to provide undergraduates with rigorous training in economic theory of the environment, as well as interdisciplinary and open training on economic policy issues.

Paul BELLEFLAMME and Thierry BRÉCHET (CORE, UCLouvain) coordinate this project sponsored by **Lhoist Berghmans**, Belgium.

Public projects

▶ *PRESupply Research Project*

This project proposes to facilitate access to advanced data analytics to SME's for supply chain management and optimization via the development of a flexible and modular platform. The PRESupply platform aims to increase the value of decisions that affects several parts of the supply chain using an integrated and predictive approach.

Philippe CHEVALIER and Isabelle THOMAS (CORE, UCLouvain) are the promoters of this project financed by **Logistics in Wallonia (Walloon competitiveness cluster dedicated to transport, logistics and mobility)**. N-Side is partner of this project.

Dagmara WRESZINSKA works under the scope of the project.



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STATISTICS

STATISTICS

For the first 50 years of CORE, statistics are collected by 10 years. As of 2016-2017, they are presented annually.

All details can be found on the CORE webpage (<https://uclouvain.be/en/research-institutes/immaq/core>)

Year	Discussion Papers	Books	Reprints	Thesis	Seminars			Conferences	Contracts
					Economics	Operations Research	Econometrics		
1966-1976	320	6	244	25	275	156	196		40
1976-1986	472	14	449	25	485	247	212	23	57
1986-1996	621	49	518	56	846	256	267	45	138
1996-2006	817	42	657	65	920	229	217	50	143
2006-2016	757	44	941	70	714	274	286	93	316
2016-2017	43	4	94	4	49	16	20	10	43
Total	3030	159	2903	245	3289	1178	1198	221	737

