Annual Report

CORE Research Director Report
Academic Year 2017-2018

UCLouvain

CORE

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PRESENTATION

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Please find herewith the new **CORE RESEARCH REPORT** covering the period of September 2017 to August 2018. New persons, new research projects, publications and seminar activities, many new and bright ideas! Research at CORE is much more multifaceted nowadays than it used to be, and this makes life at CORE even more challenging than ever. We got recently several new research projects including an ERC grant for Yuri Nesterov, making the future brighter than ever! Thank you to you all for making CORE **a hive**!

Based on last year's editions, this new report is structured so that everyone can hopefully 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! I hope you find herewith all the information you were looking for.

Isabelle Thomas
Research Director

CORE today

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

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 2017 to Summer 2018. A more dynamic follow-up of the current activities can be found on the CORE website (**https://uclouvain.be/en/research-institutes/lidam/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 2017-2018, 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 2017-2018, 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 2017-2018, the CORE OR research group worked on first order methods for convex optimization, the computation of economic equilibria, discrete optimization problems in graphs, electricity market design, and optimization under uncertainty in power systems.

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 2017-2018, 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 2017–2018, CORE members have published four **books** and 136 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. 44 papers contributed to the CORE Discussion Papers series in 2017-2018 and 78 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**: the Econometric Theory Multa Scripsit Award to Christian Hafner and the Bauchau Prize to Anthony Papavasiliou. Christian Hafner was elected Distinguished Fellow of the International Engineering and Technology Institute and Isabelle Thomas member of the Academia Europaea. Arnaud Adam and Johannes Johnen were award-winners in international scientific 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 2017-2018, CORE has hosted 45 **doctoral students** and 7 **postdoctoral research fellows**. These junior researchers develop their research under the supervision of one or several permanent CORE academic members. Eight doctoral students presented 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 2017-2018, and the **Innovative Training Network 'Expectations and Social Influence Dynamics in Economics'** (ExSIDE), with 2 students at CORE in 2017-2018.

CORE also co-organized a **Summer school** on financial econometrics and a **Ph.D. Day** aimed at junior (and not so junior) researchers. Doctoral students in economics at CORE also actively participated, together with students from other Belgian universities, in **Doctoral Workshops** in December 2017 and May 2018.

The **CORE Brown Bag seminar series,** launched in 2014 by junior researchers, provides a forum where junior researchers from CORE, UCLouvain 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 _Affiliate Members_, usually former CORE members, who regularly visit CORE, typically for a few weeks each year and participate in seminars and other research activities; and short-term visitors, about 20 of them in 2017-2018, 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**.
- 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. 66 research seminars were held at CORE in 2017-2018.
- 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 own 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 several **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 2017-2018, CORE hosted a new **Research Chair**: the Kronos Group Chair in Strategic Sourcing and Procurement. 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 **UCLouvain**.

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RESEARCH ACHIEVEMENTS AND RECOGNITION

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Publications

BOOKS AND EDITED BOOKS

Kristof De Witte et Jean Hindriks (eds.). *L'école de la réussite*. Bruxelles, Itinera Institute, 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.

Pierre Dehez. *Théorie des jeux : conflit, négociation, coopération et pouvoir*. Paris, Economica, 2017.

La théorie des jeux a pour objet la décision interactive. Elle est née dans les années 1940 avec le livre fondateur de John von Neumann et Oskar Morgenstern "*Theory of Games and Economic Behavior*". Cet ouvrage est une introduction, écrite de manière à être accessible à un large public, au-delà de l'économie. Il s'adresse aussi aux étudiants en science politique et en droit, et de manière plus générale, à l'ensemble des étudiants en sciences sociales. À cette fin, l'usage de l'outil mathématique y est volontairement limité et certains développements conceptuels difficiles ne sont pas couverts, comme l'information incomplète ou l'utilité non transférable. Le texte suit un chemin allant du non coopératif au coopératif. Une de ses originalités est de faire la part belle aux jeux coopératifs et à leurs applications normatives.

Pierre Pestieau et Mathieu Lefèbvre. *L'Etat-providence : défense et illustration*. Paris, Presses Universitaires de France, 2017.

L'État-providence n'a jamais été autant décrié qu'aujourd'hui, alors qu'il n'a sans doute jamais été aussi nécessaire. Les critiques qu'il doit essuyer viennent de ceux qui veulent en réduire la voilure comme de ceux qui le trouvent incapable de remplir ses principales missions. Les multiples fractures sociales qui ont conduit une partie de la population à douter des politiques censées la secourir pour finir par basculer dans le vote populiste redonnent toute sa justification à un État-providence plus performant et soucieux de combler le fossé séparant une partie de la population socialement intégrée de celle qui compte les exclus.
C'est dans cette perspective que se place cet ouvrage. Il présente d'abord un portrait social des pays européens en mettant l'accent sur la France. Il analyse la performance de leurs États-providence face à des obstacles qui ont pour noms "globalisation" et "individualisme". Il aborde ensuite les principaux domaines où il peut et doit avoir une action : la santé, l'emploi, la retraite et la famille. Il conclut en proposant un certain nombre de recommandations concrètes.

Pierre Pestieau and Mathieu Lefèbvre. *The Welfare State in Europe. Economic and Social Perspectives (2nd edition)*. Oxford, Oxford University Press, 2018.

Although in Europe there continues to be a large degree of consensus that it is the responsibility of government to ensure that nobody who is poor, sick, disabled, unemployed, or old is left deprived, there are mounting calls to roll back spending on the welfare state. It is argued that it fails to achieve its main objectives, that it is responsible for a decline in economic performance, and that it was conceived in a very different period and is therefore not adapted to modern realities.
The second edition of this book provides an informed analysis of the key criticisms of the welfare state and examines the prospects of this system in an increasingly integrated world. It answers important questions regarding the current social situation of European countries, the performance of the welfare states, and the reforms that should be undertaken. It calls for fundamental changes in social policies in order to address the rising inequality that hampers social cohesion in Europe.
Now focused on Europe in its entirety and including a new chapter on long term care, this new edition of an integral text on the welfare state places increased focus on social divisions and the populist vote to provide a balanced and up-to-date analysis of the performance of current systems.

CORE REPRINTS

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Energy Economics

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2909. Ibrahim Abada, Gauthier de Maere d'Aertrycke and Yves Smeers. On the multiplicity of solutions in generation capacity investment models with incomplete markets: A risk-averse stochastic equilibrium approach. *Mathematical Programming Series B,* 165, 5-69, 2017.

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2932. Ignacio Aravena and Anthony Papavasiliou. Renewable energy integration in zonal markets. *IEEE Transactions on Power Systems,* 32(2), 1334-1349, 2017.

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Finance

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2937. Nicolas Debarsy, Cyrille Dossougoin, Cem Ertur and Jean-Yves Gnabo. Measuring sovereign risk spillovers and assessing the role of transmission channels: A spatial econometrics approach. *Journal of Economic Dynamics & Control,* 87, 21-45, 2018.

2942. Monique Jeanblanc and Frédéric Vrins. Conic martingales from stochastic integrals. *Mathematical Finance,* 28, 516-535, 2018.

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Game Theory

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Industrial Organization

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Macroeconomic Policies

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Supply Chain Management

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PAPERS PUBLISHED BY CORE MEMBERS BUT NOT INCLUDED IN THE REPRINTS

Econometrics

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> **Christian Hafner** and Fabian Walders. Heterogeneous liquidity effects in corporate bond spreads. *Journal of Fixed Income,* 26, 73-91, 2017.

Energy Economics

> **Ilyès Mezghani**, **Anthony Papavasiliou** and Hélène Le Cadre. A generalized Nash equilibrium analysis of electric power transmisison-distribution coordination. In *e-Energy '18: The Ninth International Conference on Future Energy Systems, June 12–15, 2018, Karlsruhe, Germany*. ACM, New York, USA.

> **Anthony Papavasiliou**, Alex Papalexopoulos and Shmuel Oren. Market design for a decarbonized European electricity market. In N. Rossetto (ed.), *Design of the Electricity Market(s) of the Future. Proceedings from the Eurelectric-Florence School of Regulation Conference*. Firenze: European University Institute, 27-30, 2018.

> **Anthony Papavasiliou**. Analysis of distribution locational martingal prices. *IEEE Transactions on Smart Grids,* 9(5), 4872-4882, 2018.

Finance

> Victor Boullenger, Patrick Daguet and **Mikael Petitjean**. Venture capital and post-IPO short-term performance. *Revue Bancaire et Financière/ Bank- en Financiewezen,* 6, 1-14, 2017.

> **Yérali Gandica**, Marco Valerio Geraci, Sophie Béreau and Jean-Yves Gnabo. Fragmentation, integration and macroprudential surveillance of the US financial industry: Insights from network science. *PLoS One* 13(4)*,* April 2018.

> Paolo Mazza and **Mikael Petitjean**. Implicit transaction cost management using intraday price dynamics. *Applied Economics,* 50(39), 2018.

> **Mikael Petitjean**. What explains the success of reward-based crowdfunding campaigns as they unfold? Evidence from the French crowdfunding platform KissKissBankBank. *Finance Research Letters,* 26, 9-14, 2018.

> **Frédéric Vrins** and **Mikael Petitjean.** Extreme events and the cumulative distribution of net gains in gambling and structured products. *Applied Economics*, 50(58), 6285-6300, 2018.

Game Theory

> **Jean-Jacques Herings**. Equilibirum and matching under price controls. *Journal of Economic Theory*, 177, 222-244, 2018.

> **Jean-Jacques Herings**, Andrey Meshalkin and Arkadi Predtetchinski. A one-period memory folk theorem for multilateral bargaining games. *Games and Economic Behavior*, 103, 185-198, 2017.

- ❯ **Jean-Jacques Herings**, Andrey Meshalkin and Arkadi Predtetchinski. Subgame perfect equilibria in majoritarian bargaining. *Journal of Mathematical Economics*, 76, 101-112, 2018.
- ❯ **Jean-Jacques Herings**, Ronald Peeters and Michael Yang. Piracy on the internet: Accommodate it or figth it? A dynamic approach. *European Journal of Operational Research*, 266(1), 328-339, 2018.
- ❯ Anita van den Berg, **Jean-Jacques Herings** and Hans Peters. The economic order decision with continuous dynamic pricing and batch supply. *Operations Research Letters*, 45(4), 371-376, 2018.

Industrial Organization

- ❯ **Paul Belleflamme**. Modèles économiques des données : une relation complexe entre demande et offre. *Enjeux Numériques (Les Annales des Mines)* 2, 9-13, 2018.
- ❯ **Paul Belleflamme** and Martin Peitz. Platforms and network effects. In L. Corchon and M. Marini (eds). *Handbook of Game Theory and Industrial Organization, Vol. II*, Chelthenam: Edward Elgar, 286-317, 2018.
- ❯ **Paul Belleflamme** and Eric Toulemonde. Tax incidence on competing two-sided platforms. *Journal of Public Economic Theory,* 20, 9-21, 2018.
- ❯ **Axel Gautier**. La neutralité du net n'est pas neutre. In B. van Pottelsberghe (ed.), *Les enjeux de l'innovation : Quelles politiques ? Quelles gouvernances ?* Charleroi : Université Ouverte, 47-59, 2017.
- ❯ **Axel Gautier**. Analyse économique des plateformes collaboratives. In G. Rue (ed.), *Aspects juridiques de l'économie collaborative.* Wavre : Anthemis, 9-26, 2017.
- ❯ Philip Ushchev and **Jacques-François Thisse**. Monopolistic competition without apology. In L.C. Corchon and M.A. Marini (eds.), *Handbook of Game Theory and Industrial Organization, Vol. 1,* Chelthenam: Edward Elgar, 93-135, 2018.

Microeconomic Theory

- ❯ **Victor Ginsburgh**. Contingent valuation, willingness to pay, and willingness to accept. In B. Frey and D. Iselin (eds.), *Economic Ideas You should Forget.* Berlin: Springer, 2017.

Networks

- ❯ Benjamin Chiêm, Frédéric Crèvecoeur and **Jean-Charles Delvenne**. Supervised classification of structural brain networks reveals gender differences. *Proceedings 19th IEEE Mediterranean Electrotechnical Conference 2018, Marrakech, Morocco, May 2-4, 2018*, 269-274, 2018.
- ❯ Alexey Melvedev, **Jean-Charles Delvenne** and Renaud Lambiotte. Modelling structure and predicting dynamics of discusison threads in online boards. *Journal of Complex Networks*, cny010, 2018.
- ❯ Leto Peel, J**ean-Charles Delvenne** and Renaud Lambiotte. Multiscale mixing patterns in networks. *Proceedings of the National Academy of Sciences*, 115(16), 4057-4062, 2018.
- ❯ Hadrien Van Lierde, Tommy Chow and **Jean-Charles Delvenne**. Spectral clustering algorithms for the detection of clusters in block-cyclic and block-acyclic graphs. *Journal of Complex Networks,* cny011, 2018.

Optimization Methods and Operations Research

- ❯ **Per Agrell, Manuel Herrera Rodriguez**, Casiano Manrique-de-Lara-Peñate and Lourdes Trujillo. Liner ship fleet deployment models and the cost of time: The case of the China-USA maritimes routes. *Pre-Prints, Twentieth International Working Seminar on Production Economics, Innsbruck, Austria, February 19-23, 2018*. Vol. 1, 3-12, 2018.
- ❯ **Léopold Simar** and Valentin Zelenyuk. Central limit theorems for aggregate efficiency. *Operations Research*, 66(1), 137-149, 2018.
- ❯ Adrien Taylor, Julien Hendrickx and **François Glineur**. Performance ESTimation TOolbox (PESTO): Automated worst-case analysis of first-order optimization methods. In *Proceedings of the 56th IEEE Conference on Decision and Control (CDC 2017)*, 1278-1283, 2017.

Public Economics and Welfare

- ❯ Kristof Bosmans, **Koen Decancq** and Erwin Ooghe. Who is afraid of aggregating money metrics? *Theoretical Economics*, 13(2), 467-484, 2018.
- ❯ Philippe De Donder and **Marie-Louise Leroux**. The political choice of social long term care transfers when family gives time and money. *Social Choice and Welfare*, 49(3-4), 755-786, 2018.
- ❯ Justina Klimaviciute and **Pierre Pestieau**. Social insurance for long-term care with deductible and linear contributions. *FinanzArchiv: Public Finance Analysis*, 74(1), 88-108, 2018.
- ❯ Justina Klimaviciute and **Pierre Pestieau**. The public economics of long-term care. A survey of recent contributions. *Annals of Public and Cooperative Economics,* 89(1), 49-64, 2018.

Quantitative and Economic Geography

⊙ Takatoshi Tabuchi, **Jacques-François Thisse** and Xiwei Zhu. Does technological progress magnify regional disparities? *International Economic Review*, 59, 647-663, 2018.

⊙ **Jacques-François Thisse**. Human capital and agglomeration economies in urban development. *The Developing Economies*, 56, 117–139, 2018.

⊙ **Jacques-François Thisse**. The competitive paradigm in spatial economics. In J.L. Cardoso, H.D. Kurz and P. Steiner (eds.), *Economic Analyses in Historical Perspectives*. London: Routledge, 234-247, 2018.

Supply Chain Management

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Others

⊙ **Victor Ginsburgh** and **Juan Moreno-Ternero**. Compensation schemes for learning a lingua franca in the European Union. *The World Economy,* 41, 1775-1789, 2018.

CORE DISCUSSION PAPERS

Econometrics

2017/28 Guillaume Wunsch, **Michel Mouchart** and Federica Russo. Causal attribution in block-recursive social systems. A structural modeling perspective.

2018/07 Antonis Demos and **Dimitra Kyriakopoulou**. Finite sample theory and bias correction of maximum likelihood estimators in the EGARCH model.

2018/09 **Luc Bauwens** and Edoardo Otranto. Nonlinearities and regimes in conditional correlations with different dynamics.

2018/15 **Zhengyuan Gao**. An imaginary realistic market.

2018/16 **Zhengyuan Gao**. Uncertainty in economic growth and inequality.

2018/18 Matthias Weber, **Jonas Striaukas**, Martin Schumacher and Harald Binder. Network constrained covariate coefficient and connection sign estimation.

2018/19 **Christian Hafner**. Testing for bubbles in cryptocurrencies with time-varying volatility.

2018/20 **Christian Hafner**, Helmut Herwartz and Simone Maxand. Identification of structural multivariate GARCH models.

2018/28 Fabian Bocart, Eric Ghysels and **Christian Hafner**. Monthly art market returns.

Finance

2017/26 Mariarosaria Comunale and **Jonas Striaukas.** Unconventional monetary policy: Interest rates and low inflation. A review of literature and methods.

2017/31 Christophe Profeta and **Frédéric Vrins**. Piecewise constant martingales and lazy clocks.

Game Theory

2017/27 Segismundo Izquierdo, Luis Izquierdo and **Dunia Lopez-Pintado**. To mix or not to mix? Diffusion in groups.

2017/33 Ana Mauleon, **Simon Schopohl** and **Vincent Vannetelbosch**. Competition for leadership in teams.

2**018/12** Pierre Dehez and **Victor Ginsburgh**. Approval voting and Shapley ranking.

2018/13 **Simon Schopohl**. Communication games with optional verification.

2018/24 **Ana Mauleon**, Nils Roehl and **Vincent Vannetelbosch**. Common ranking and stability of overlapping coalitions.

2018/25 Chenghong Luo, **Ana Mauleon** and **Vincent Vannetelbosch**. Network formation with myopic and farsighted players.

2018/26 Ana Mauleon, Jose Sempere-Monerris and **Vincent Vannetelbosch**. R&D network formation with myopic and farsighted firms.

Industrial Organization

2017/30 Johannes Johnen. Screening procrastinators with automatic-renewal contracts.

2017/36 Johannes Johnen. Dynamic competition in deceptive markets.

2018/23 Axel Gautier and **Robert Somogyi**. Prioritization vs zero-rating: Discrimination on the internet.

2018/27 **Jean Gabszewicz**, Marco Marini and Skerdilajda Zanaj. Random encounters and information diffusion about markets.

Microeconomic Theory

2017/32 Claude d'Aspremont and Rodolphe Dos Santos Ferreira. The Dixit-Stiglitz economy with a 'small group' of firms: A simple and robust equilibrium markup formula.

2018/03 Jacques Drèze. Subjective expected utility with state-dependent but action/observation-independent preferences.

Optimization Methods and Operations Research

2017/24 Vladimir Shikhman, Yurii Nesterov and Victor Ginsburgh. Power method tâtonnements for Cobb-Douglas economies.

2018/01 Yurii Nesterov. Soft clustering by convex electoral model.

2018/05 Yurii Nesterov. Implementable tensor methods in unconstrained convex optimization.

2018/10 Geovani Grapiglia and Yurii Nesterov. Accelerated regularized Newton methods for minimizing composite convex functions.

2018/14 Thomas Hacardiaux and Jean-Sébastien Tancrez. Assessing the benefits of horizontal cooperation using a location-inventory model.

Public and Welfare Economics

2017/25 Harun Onder, Pierre Pestieau and Grégory Ponthière. The domestic welfare loss of Syrian civil war: An equivalent income approach.

2017/29 Andreas Gregor. Public finances under plurality and proportional electoral systems. Evidence from Hungarian municipalities.

2017/34 Marc Fleurbaey, Marie-Louise Leroux, Pierre Pestieau, Grégory Ponthière and Stéphane Zuber. Premature deaths, accidental bequests and fairness.

2017/35 Mathieu Lefèbvre, Pierre Pestieau and Grégory Ponthière. Missing poor and income mobility.

2017/38 Andreu Arenas and Clément Malgouyres. Countercyclical school attainment and intergenerational mobility.

2018/04 Jean Hindriks and Valerio Serse. Heterogeneity in the tax pass-through to spirit retail prices: Evidence from Belgium.

2018/06 Pierre Pestieau and Grégory Ponthière. An age-differentiated tax on bequests.

2018/08 Justina Klimaviciute, Harun Onder and Pierre Pestieau. The inherited inequality: How demographic aging and pension reforms can change the intergenerational transmission of wealth.

2018/11 Justina Klimaviciute, Pierre Pestieau and Jérôme Schoenmaeckers. Long-term care insurance with family altruism: Theory and empirics.

2018/17 Justina Klimaviciute, Pierre Pestieau and Jérôme Schoenmaeckers. Altruism and long-term care insurance.

2018/21 Koen Decancq and Annemie Nys. Non-parametric well-being comparisons.

2018/22 Philippe Jacques, Marie-Louise Leroux and Dalibor Stevanovic. Poverty among the elderly: The role of public pension systems.

Quantitative and Economic Geography

2017/37 Justin Delloye, Rémi Lemoy and Geoffrey Caruso. Alonso and the scaling of urban profiles.

2018/02 Justin Delloye, Dominique Peeters and Joe Tharakan. Equilibrium selection and stability in dynamic core-periphery models with heterogeneous preferences.

Supply Chain Management

2017/23 Alejandro Lamas and Philippe Chevalier. Joint dynamic pricing and lot-sizing under competition.

OTHER DISCUSSION PAPERS AND MANUSCRIPTS BY CORE MEMBERS

Econometrics

❯ Luisa Badin, Cinzia Dario and Léopold Simar. A bootstrap approach for bandwidth selection in estimating conditional efficiency measures. ISBA Discusison Paper 2018/07, UCLouvain, 2018.

❯ Abdelaati Daouia, Jean-Pierre Florens and Léopold Simar. Robustified expected maximum production frontiers. ISBA Discussion Paper 2018/02, UCLouvain, 2018.

❯ Cinzia Daraio, Léopold Simar and Paul Wilson. Fast and efficient computations of directional distances. ISBA Discussion Paper 2018/17, UCLouvain, 2018.

❯ Jean-Pierre Florens, Léopold Simar and Ingriid Van Keilegom. Estimation of the boundary of a variable observed with symmetric error. ISBA Discussion Paper 2018/08, UCLouvain, 2018.

❯ Alois Kneip, Léopold Simar and Paul Wilson. Inference in dynamic, nonparametric models of production: Central limit theorems for Malmquist indices. ISBA Discussion Paper 2018/10, UCLouvain, 2018.

❯ Camilla Mastromarco and **Léopold Simar**. Cross-section dependence and latent heterogeneity to evaluate the impact of human country performance. ISBA Discussion Paper 2017/30, UCLouvain, Belgium, 2017.

❯ Byeong Park, **Léopold Simar** and Valentin Zelenyuk. Forecasting of recessions via dynamic probit for time series: Replication and extension of Kauppi and Saikkonen (2008). ISBA Discussion Paper 2018/04, UCLouvain, Belgium, 2017.

❯ **Léopold Simar** and Paul Wilson. Technical, allocative and overall efficiency: Inference and hyothesis testing. ISBA Discusison Paper 2018/18, UCLouvain, 2018.

❯ **Léopold Simar** and Paul Wilson. Central limit theorems and inference for sources of productivity change measured by nonparametric Malmquist indices. ISBA Discussion Paper 2018/21, UCLouvain, 2018.

Environmental Economics

❯ Carmen Carmacho and **Yu Sun**. Longterm decision making under the threat of earthquakes. PSE Working Papers n°2017-60. 2017.

Game Theory

❯ **Jean-Jacques Herings**, **Ana Mauleon** and **Vincent Vannetelbosch**. Matching with myopic and farsighted players. Nota di Lavoro 2017.034, Fondazione Eni Enrico Mattei, Milano, 2017.

❯ **Ana Mauleon**, **Simon Schopohl** and **Vincent Vannetelbosch**. Competition for leadership in teams. Mimeo, 2018.

Industrial Organization

❯ **Paul Belleflamme** and Martin Peitz. Inside the engine room of digital platforms: Reviews, ratings, and recommendations. Working Paper 2018/6, Aix-Marseille School of Economics, 2018.

❯ **Paul Belleflamme** and Martin Peitz. Managing competition on a two-sided platform. Working Paper 2018/20, Aix-Marseille School of Economics, 2018.

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❯ Paul Heidhues, **Johannes Johnen** and Botond Köszegi. Browsing versus studying: A pro-market case for regulation. Mimeo, 2018.

Microeconomic Theory

❯ **Ana Mauleon**, Akylai Taalaibekova, **Simon Schopohl** and **Vincent Vannetelbosch**. Who matters in coordination problems on networks? Mimeo, 2018.

❯ **Simon Schopohl**. Communication games with optional verification. Document de travail du Centre d'Economie de la Sorbonne 2017.11, Paris, 2017.

❯ **Simon Schopohl**. Centralization in hierarchies. Mimeo, 2018.

Network and Systems

❯ **José Miguel Quésada Perez**. A Multi-hub express shipment service network design model with flexible hub assignment. Mimeo, 2018.

❯ **José Miguel Quésada Perez**. Multi-hub express shipment service network design model with complex routes. Mimeo, 2018.

Optimization Methods and Operations Research

❯ **Daniele Catanzaro** and Raffaele Pesenti. Enumerating vertices of the BMEP polytope. Submitted to *Computers and Operations Research,* 2018.

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❯ **Daniele Catanzaro**, **Martin Frohn**, Raffaele Pesenti and **Laurence Wolsey**. Optimizing over lattices of unrooted binary trees: A majorization perspective. Mimeo, 2018.

Public and Welfare Economics

❯ **Risa Pavia**. Tax evasion by domestic and foreign-owned Portuguese firms: A bunching analysis. Mimeo, 2018.

MEDIA

- ❯ **Arnaud Adam**, **Isabelle Thomas** en **Ann Verhetsel**. Belg is meer gebonden aan provinciegrenzen dan hij denkt. *Het Laatste Nieuws*, November 27, 2017.
- ❯ **Arnaud Adam**, **Jean-Charles Delvenne** en **Isabelle Thomas**. Brusselse communities lopen door tot in de rand. *Bruzz,* December 18, 2017.
- ❯ **Arnaud Adam**, **Jean-Charles Delvenne** et **Isabelle Thomas**. La téléphonie mobile redessine la communauté urbaine de Bruxelles. *Daily Science,* 18 décembre 2017.
- ❯ **Arnaud Adam**, **Isabelle Thomas** et Ann Verhetsel. Pas si ringardes qu'on le dit, les provinces. *Le Soir*, November 27, 2017.
- ❯ **Arnaud Adam**, **Isabelle Thomas** en Ann Verhetsel. Vlaming is meer gebonden aan provinciegrenzen dan hij denkt. *De Standaard*, November 27, 2017.
- ❯ **Arnaud Adam**, **Isabelle Thomas** et Ann Verhetsel. Provinces : les frontières provinciales existent toujours. *Antenne Centre Télévision,* 14 décembre 2017.
- ❯ **Paul Belleflamme**. Uber va-t-il mourir ? *The Conversation France*, 11 Décembre 2017.
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- ❯ **Victor Ginsburgh**. Haro sur les économistes ? *La Libre,* 10 novembre 2017.
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- ❯ **Victor Ginsburgh**. Il y a deux peuples juifs. *La Libre,* 19 mars 2018.
- ❯ **Victor Ginsburgh**. Dix mille ans d'inégalités. *L'Echo, 20* mars 2018.
- ❯ **Victor Ginsburgh**. Les petits pas assurés des femmes, enfin, mais ... *L'Echo,* 25 avril 2018.
- ❯ **Victor Ginsburgh**. Ken Loach: ils n'ont pas osé, mais "ceci n'est qu'un début". *Le Vif,* 4 mai 2018.
- ❯ **Victor Ginsburgh**. Le beau-fils juif de Ken Loach. *La Libre en Ligne,* 14 mai 2018.
- ❯ **Victor Ginsburgh**. Les plumes perdues des universités francopohnes. *La Libre en Ligne,* 11 juin 2018.
- ❯ **Victor Ginsburgh**. Si le Brexit a lieu. *La Libre,* 18 juillet 2018.
- ❯ **Victor Ginsburgh**. A qui la faute de la fausse science ? *L'Echo,* 16 août 2018.
- ❯ **Thomas Hacardiaux** et **Jean-Sébastien Tancrez**. Les promesses de la collaboration en logistique. *La Libre Entreprise,* 28 octobre 2017.
- ❯ **Jean Hindriks**. Les pensions méritent un vrai débat et une concertation sociale. *Le Soir,* 18 septembre 2017.
- ❯ **Jean Hindriks**. L'efficacité de l'enseignement ne doit pas être prise à la légère. *La Libre,* 9 janvier 2018.
- ❯ **Jean Hindriks**. Ces chiffres qui prouvent l'ampleur du défiit lié au financement des pensions. *L'Echo,* 13 janvier 2018.
- ❯ **Jean Hindriks**. On dit aux gens ce qu'ils veulent entendre et pas ce qu'ils doivent savoir. *L'Echo,* 16 mai 2018.
- ❯ **Jean Hindriks**. Pension à points ou saignante. *La Libre,* 13 juillet 2018.
- ❯ **Nathan Lassance** et Vincent Liévin. Le juste prix pour une "juste" couverture du risque. *FNRS News*, December, 2017.
- ❯ Mathieu Lefèbvre et **Pierre Pestieau**. Faut-il désespérer de l'Etat providence? *Risques*, #114, 2018.
- ❯ **Pierre Pestieau**. L'Etat providence, décrié et nécessaire (opinion). *La Libre*, 14 janvier 2018.
- ❯ **Mikael Petitjean**. Où est l'école de l'excellence pour tous ? *L'Echo,* 31 octobre 2017.
- ❯ **Mikael Petitjean**. Les corrections boursières ne doivent pas nous faire perdre la tête. *L'Echo,* 9 février 2018.
- ❯ **Mikael Petitjean**. L'illusion d'une nouvelle banque publique. *La Libre,* 21 février 2018.
- ❯ **Mikael Petitjean**. Le projet d'une nouvelle banque publique. *RTBF, Week-end Première,* 24 février 2018.
- ❯ **Mikael Petitjean**. Le sauvetage des instituions financières a épargné plusieurs milliards d'euros aux pouvoirs publics. *L'Echo,* 3 mars 2018.
- ❯ **Mikael Petitjean**. La Belgique est-elle un pays inégalitaire ? *La Libre,* 18 avril 2018.

REPORTS

- ❯ Robin Boadway and **Pierre Pestieau**. The doubtful case for an annual wealth tax. Ifo DICE Report (*Journal for Institutional Comparisons*), 2018.
- ❯ Robin Boadway and **Pierre Pestieau**. The tenuous case for an annual wealth tax. IEB Report on Fiscal Federalism and Public Finance, 2018.
- ❯ **Mikael Petitjean**. Parliamentary Commission of Inquiry into the Collapse of Optima Bank, Invitation to listen to the hearings and write a final report with recommendations, Chamber of Representatives, Brussels, 2016-2017 (http://www.dekamer.be/doc/FLWB/pdf/54/1938/54K1938007.pdf).

Prizes & Awards

- **Arnaud Adam** received the best poster award at the Young Researchers Workshop (COST TU 1305) held in Milano in February 2018.

- **Christian Hafner** received the *Econometric Theory Mutta Scripsit Award* in 2018 in recognition of its research contributions to the science of econometrics.

- **Christian Hafner** was elected *Distinguished Fellow of the International Engineering and Technology Institute* in 2018.

- **Johannes Johnen** has won one of the *2018 Young Economists' Essay Award* for his paper *Dynamic competition in deceptive markets*. This award recognizes innovative, impressive work that is likely to have an impact.

- **Anthony Papavasiliou** received the *Bauchau Prize 2017* on April 16, 2018. This prize was awarded by the Bauchau family for his proposal on "Using Analytics and Optimization to Enable Africa to Leapfrog to the Energy Systems of the Future".

- **Anthony Papavasiliou** was UCLouvain nominee for Francqui Foundation research professorship 2018-2021, ERC Starting Grant step 2 finalist funding.

- **Isabelle Thomas** was elected *member of the Academia Europaea* in 2017.

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TRAINING

TRAINING

Junior Researchers

PH.D. STUDENTS AND JUNIOR RESEARCHERS

Arnaud Adam · Ignacio Andrés Aravena Solís · Gautier Attanasi · Rytis Bagzdiunas · Sinem Bas · Gilles Bertrand · Xuyang Ghen · Justin Delloye · Julien Dewez · Jérôme Dollinger · Cyrille Dossougoin · Mery Ferrando Gutierrez · Bartosz Filipecki · Valeria Forlin · Martin Frohn . Céline Gérard · Andras Gregor · Madeleine Guyot · Thuc Huan Ha · THomas Hacardiaux · Manuel Herrera Rodriguez · Liana Sabina Luncasu · Chenghong Luo · Simone Martelli · Ilyes Mezghani · Gaëtan Montero Redondo · Yuting Mou · Risa Pavia · Wenli Peng · Erika Pini · José-Miguel Quedada Perez · Mathieu Sauvenier · Simon Schopohl · Matias Schuster Puga · Valerio Serse · Alice Servais · Yu Sun · Akylai Taalaibekova · Jonas Teusuch · Sonia Trabelsi · Dagmara Wrzesinska.

POST DOCTORAL FELLOWS

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

- ● Andreu Arenas, European University Institute, Firenze, Italy
- ● Avinash Bhardwaj, University of California at Berkeley, USA
- ● Marion Collewet, Universiteit Maastricht, The Netherlands
- ● Olivier Finance, Université Paris 1 Panthéon-Sorbonne, France

- ● Yérali Carolina Gandica, Université de Namur, Belgium
- ● Dimitra Kyriakopoulou, Bank of Greece, Greece
- ● Robert Somogyi, Ecole Polytechnique, Paris, France

Completed Ph.D. Dissertations

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

- ● **Simon Schopohl**, *Essays on communication and information transmission*
  Universität Bielefeld, Germany, Université Paris 1, France and Economics School of Louvain, UCLouvain, Belgium (EDEEM Student), November 13, 2017 under the supervision of Tim Hellmann, Agniezka Rusinowska and **Vincent Vannetelbosch**
  Current position: Université Saint-Louis, Bruxelles, Belgium

  This Ph.D. dissertation addresses different issues concerning communication and information transmission in a game theoretical framework. I analyze different dilemmas that a player who sends information has to deal with. These dilemmas correspond to the following questions: "Should I invest into a verifiable message?", "When should I pass my information?" and "Is it better if I do not send my information, but collect information from others?" This thesis includes an introduction and three chapters. The introduction contains a general motivation for the three different problems that I model in this thesis. I give a detailed overview of all the chapters, survey the related literature and compare it to my results.

- ● **Jonas Teusch**, *Horizontal integration under yardstick competition*
  Louvain School of Management, UCLouvain, Belgium, November 21, 2017 under the supervision of **Per Agrell** and **Axel Gautier**
  Current position: Center for European Policy Studies, Bruxelles, Belgium

  Horizontal integration through mergers and cross-ownership is ubiquitous; industries regulated by yardstick competition are no exception in this regard. However, even though yardstick competition is applied to sectors of vital economic importance, such as energy and water networks, the welfare effects of horizontal integration in these settings have largely escaped scientific scrutiny. The dissertation therefore studies the welfare implications of horizontal integration under yardstick competition and identifies potential trade-offs. Specifically, whereas mergers and cross-ownership may bring about efficiency gains, there is a possibility that horizontal integration simultaneously decreases the effectiveness of regulation, benefiting certain firms at the expense of consumers and competitors. Key conditions for such strategic effects to occur and to dominate efficiency effects are derived in a principal-agent model. The thesis also demonstrates that the issue is not merely of academic interest, but has affected the practical application of yardstick competition in the electricity distribution industries of both Belgium and Norway. Chapter 1 analyses how horizontal mergers, joint ventures and regulatory decentralisation complicate the application of yardstick competition in Belgian electricity distribution. Chapter 2 develops a theoretical model of mergers under yardstick competition - formalising the welfare trade-offs at the heart of this

dissertation. Chapter 3 leverages Data Envelopment Analysis to quantify both efficiency and strategic effects of horizontal restructuring in Norwegian electricity distribution and points to a recent merger that appears to have been driven by strategic motivations. Chapter 4 uses several econometric identification strategies - dynamic regression, matching on observables and instrumental variables - to establish that between 2007 and 2015, cross-ownership increased firm performance in Norwegian electricity distribution, which suggests that the net welfare effects were positive in this application.

› **Aditi Dimri**, *Essays on gender inequalities and poverty measurement with application to India*
Economics School of Louvain, UCLouvain, Belgium and Université Paris 1 Panthéon-Sorbonne, France (EDEEM student), December 4, 2017, under the supervision of **François Maniquet** and Thierry Verdier
Current position: University of Warwick, United Kingdom

This Ph.D. dissertation contributes to the literature on household economics and the measurement of poverty & sex-selective abortion. When social norms and preferences favour males over females, outcomes can reflect gender inequalities across various dimensions. I study the norm of patrilocality in the first chapter and ask how the household structure of four adult members affects the daughter-in-law's decision-making-say and autonomy outcomes. Using household level panel data from India, I estimate a difference-in-difference model comparing groups between 2005 ad 2012 that experience a death of the father-in-law or mother-in-law and those that do not. I find that the status of the daughter-in-law improves after death as power is redistributed among the members. However, the findings are not consistent with the conventional channel of the mother-in-law being the sole and strongest authority over the daughter-in-law. The second chapter studies the measurement of female sex-selective abortion and asks if there are repeated abortions between two consecutive births. As this question cannot be answered using existing methods, the paper proposes novel tests and methodology to estimate the fractions of the populations undergoing sex-selective abortions. Applying our methods to Indian data we find first quantitative evidence of repeated abortions. The third chapter proposes a new approach of absolute income poverty measurement that takes preference into account when agents differ in preferences and face different prices. This is done in two ways, first by suggesting a way to use individualised reference prices, and second by defining group/region specific poverty lines. Comparing our approach with conventional ones, we find that the different approaches lead to different poverty conclusions for India. We show that not taking preferences into account leads to severely underestimating urban poverty.

› **Matias Schuster Puga**, *Supply chain network design under demand uncertainty*
Louvain School of Management, UCLouvain, Belgium, December 12, 2017, under the supervision of **Jean-Sébastien Tancrez**
Current position: OM Partners, Leuven, Belgium

This thesis focuses on the modelling of supply chains operating under demand uncertainty. Supply chain network design models are an essential tool for companies to manage their supply chain efficiently, and thereby to reduce costs (e.g., facility, inventory, transportation) and to improve customer service. Supply chain network design decisions (i.e., number and location of facilities), which are highly influenced by the current volatile market conditions, have a significant impact on the performance of the company in the long term, and directly affect tactical and operational decisions. In the past recent years, researchers have refined classical supply chain network design models by integrating tactical and operational decisions. The present work provides different integrated location-inventory models, and analyses the impact of demand uncertainty and the trade-offs arising from including tactical and operational decisions in the supply chain design. The ultimately goal of this thesis is to provide insights that may support the decision-making process in the supply chain design, and may allow to mitigate the impact of demand uncertainty. This thesis consists of an introductory chapter that provides a background of the study and outlines the thesis, and of three chapters representing the collection of three scientific publications. Chapter 2 proposes a location-inventory model, including cycle inventory and safety stocks, for the design of large supply chains under uncertain demand. The model is solved using a heuristic algorithm, which obtains close to optimal solutions, and drastically reduces the computational time compared to a state-of-the-art conic quadratic mixed-integer program. This permits the analysis of larger supply chains, and provides interesting managerial insights on how the integration of safety stocks at retailers offsets risk pooling benefits, and affects the design of a supply chain. Chapter 3 integrates safety stock placement and delivery strategy decisions in the supply chain network design problem. Safety stock placement decisions are modelled using the guaranteed-service approach, avoiding the use of service time variables. The results capture the interdependencies between safety stock placement and location decisions, and addresses interesting managerial insights related to the location of facilities, demand variability and lead time pooling. Finally, Chapter 4 explores the impact of long-term demand uncertainty, and proposes a stochastic program for the design of robust supply chains. The model integrates several flexibility mechanisms at the operational level (e.g., reallocation, temporary DCs or lost markets), which allow to design cost-effective robust supply chains, and to obtain a more comprehensive uncertainty mitigation framework. Computational results show that the integration of flexibility mechanisms in the design of robust supply chains has a great influence in its configuration, and leads to important cost savings.

> **Bartosz Filipecki**, *Strengthened formulations for MIP problems in networks*
> Ecole Polytechnique de Louvain, UCLouvain, Belgium, January 25, 2018 under the supervision of **Mathieu Van Vyve**
> Current position: Technische Universität Chemnitz, Germany

Many real-world problems can be formulated in the framework of mixed-integer programming. This includes many problems in routing, scheduling and other fields, which affect our everyday lives, but remain largely unnoticed. Solving such problems of practical size can be difficult even on very powerful computers. This makes it necessary to develop new, better formulations and methods of approaching them. This dissertation studies methods of strengthening the formulations of three problems related to networks that fall under this framework. Chapter 1 gives a short introduction into the field of mathematical optimization. Chapter 2 presents contribution to a strong extended formulation for the convex recoloring problem, which has application in analysing the phylogenetic trees. It also presents new valid inequalities for this problem. Chapter 3 proposes and studies a new hierarchy of improving path-based extended formulations for the Steiner tree problem, which has applications in computational biology and network routing and wriring. It shows that this hierarchy provides better lower bounds on the so-called integrality gaps than currently used approaches. Chapter 4 considers the optimal power flow problem with additional binary variables related to decision, whether a power plant is scheduled for operation. It uses the recent semidefinite programming relaxation approach to the problem and studies polyhedral structure of subsets of constraints related to single nodes in the network.

> **Francesco Andrea Pirrone**, *Three essays on economics: Information aggregation, pension schemes and economic growth*
> Economics School of Louvain, UCLouvain, Belgium, February 5, 2018 under the supervision of **Julio Davila**
> Current position: Financial Conduct Authority, London

The dissertation can be divided into two parts. The first part is composed of one chapter focusing on information aggregation in a game theory model; the second part is composed of two chapters focusing on the link between pension schemes and economic growth. In Chapter 1, we define renegotiation-proof equilibria when players indirectly communicate through a public signal aggregating their private information. The result is of particular economic interest, as in most of economic activities prices aggregate and partially reveal the private information of each economic agent. In Chapter 2, we study the relation between pension schemes and financial intermediation in an overlapping generations model with Schumpeterian growth and consumption shocks. We show that a financial intermediary may be unable to adequately isolate consumers from the shocks, making a funded pension scheme equivalent to a research and production subsidy for the economy. In Chapter 3, we propose a new hybrid pension scheme. In recent years, governments have phased out pay-as-you-go pension schemes in favour of funded ones. Instead of dropping the intergenerational transfers of the pay-as-you-go pensions, we propose to invert them. Resources would flow from old generations to young ones, as if it were a system of public bequests. We show that the public bequests scheme outperforms the canonical pension schemes.

> **Justin Delloye**, *Urban morphodynamics: Reconciling location theory and complex systems*
> School of Geography, UCLouvain, Belgium, April 4, 2018 under the supervision of **Dominique Peeters** and **Isabelle Thomas**
> Current position: LISER, Luxembourg

In the global effort to achieve sustainable development, new adaptive approaches of urban planning call for a reliable understanding of urban morphodynamics: The evolution of the spatial structure of an urban system from elementary interactions between its components. In this thesis, theoretical and methodological contributions to urban morphodynamics are proposed from the integration of the two main strands of literature in quantitative urban geography: Location theory, which studies the economic determinants of the location of economic activities, and complex systems, which describe how cities self-organize from the dynamic interactions of many individuals. The first part of the thesis review the historical evolutions of location theory and complex systems from the perspective of urban morphodynamics and proposes original combinations of concepts and methods from both location theory and complex systems. First, using mathematical modelling, it exposes the scaling properties of the equilibrium monocentric city model. In a third part, it proposes a hybrid modelling framework that combines the behavioural foundations of discrete choice theory with the nonlinear dynamic models of synergetics. This framework is then applied to a core-periphery model of new economic geography in order to forecast regional development trajectories. In a fourth and last part, in light of the proposed models, this thesis argues that the theoretical foundations of location theory and complex systems can be reconciled in a consistent theory of urban morphodynamics. It also offers new research perspectives to extend the hybrid modelling framework to this end.

> **Mery Ferrando Gutierrez**, *Essays on income, education and intra-household poverty and inequality*
> Economics School of Louvain, UCLouvain, Belgium, August 28, 2018 under the supervision of **François Maniquet**
> Current position: Universiteit Tilburg, The Netherlands

This thesis speaks to the broad literature studying poverty and inequality issues. It presents novel contributions that cover a wide range of topics, from poverty measurement to determinants of inequality that have been overlooked in the past. In Chapter 1, jointly with Benoit Decerf, we explore the consequences of measuring income poverty in a way that balances

absolute and relative aspects by the use of a weight parameter. We develop new theoretical results to estimate the degree of robustness of poverty evaluations to this weight parameter. We apply these developments to study poverty under unequal growth in the US and find two main results. First, our measure concludes that poverty has decreased over the most recent period of unequal growth, in line with the official absolute measure. Second, poverty judgments are largely robust to the choice of the weight parameter. In Chapter 2, jointly with Véronique Gille, we focus on an unexplored potential mechanism behind a reduction in the race gap in education in the US. Specifically, we evaluate the effet of the election of the first black state governor in the history of the US on black students from the same state. We find a sizeable increase in the probability of getting a high school diploma for black relative to white teenagers in Virginia and other states, which cannot be fully explained by policy changes. Finally, Chapter 3 evaluates how the individual valuation of goods that are jointly consumed within a household can affect poverty and inequality measures. I use consumer data to estimate the marginal willingness to pay for joint consumption by gender within Belgian couples. My findings indicate that women get less utility from public goods than men. This suggests that inequality and in particular female poverty are larger than when we ignore these differences in the valuation of joint consumption.

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: Analysis of renewable energy integration in transmission-constrained electricity markets using parallel computing
- Supervisor: Anthony Papavasiliou
- Started: 2013
- Doctoral School: Ecole Polytechnique de Louvain, 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: Modeling the value of flexibility in power system operations at sub-hourly operating time scales
- Supervisor: Anthony Papavasiliou
- Started: 2016
- Doctoral School: Ecole Polytechnique de Louvain, UCLouvain, Belgium

Xyuan Chen

- ❯ Title: Endogenizing jurisdiction's policy selection in fiscal competition when ad valorem tax is levied
- ❯ Supervisor: Jean Hindriks
- ❯ Started: 2018
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Julien Dewez

- ❯ Title: Lower bounds on the nonnegative rank
- ❯ Supervisor: François Glineur
- ❯ Started: 2013
- ❯ Doctoral School: Ecole Polytechnique de Louvain, 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

Valeria Forlin

- ❯ Title: Essays in industrial organization
- ❯ Supervisors: Paul Belleflamme and Thierry Bréchet
- ❯ Started: 2014
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Martin Frohn

- ❯ Title: Greed, majorization, and their impact on optimization over lattices of unrooted binary trees
- ❯ Supervisor: Daniele Catanzaro
- ❯ Started: 2017
- ❯ Doctoral School: Ecole Polytechnique de Louvain, UCLouvain, Belgium

Céline Gérard

- ❯ Title: Mobilizing flexible demand in electric power systems through service quality differenciation
- ❯ Supervisor: Anthony Papavasiliou
- ❯ Started: 2017
- ❯ Doctoral School: Ecole Polytechnique de Louvain, UCLouvain, Belgium

Andras Gregor

- ❯ Title: Essays on empirical political economics
- ❯ Supervisor: Jean Hindriks
- ❯ Started: 2014
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Madeleine Guyot

- ❯ Title: Nature impact on mental health distribution
- ❯ Supervisors: Isabelle Thomas and Sophie Vanwambeke
- ❯ Started: 2017
- ❯ Doctoral School: Sciences, UCLouvain, Belgium

Thuc Huan Ha

- ❯ Title: Essays on industrial organization in circular economy
- ❯ Supervisors: Paul Belleflamme and Thierry Bréchet
- ❯ Started: 2015
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Thomas Hacardiaux

- ❯ Title: Benefits and triggering factors of horizontal cooperation in supply chains
- ❯ Supervisor: Jean-Sébastien Tancrez
- ❯ Started: 2015
- ❯ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Manuel Herrera Rodriguez

- ❯ Title: Three essays on port network optimization and Panama canal models
- ❯ Supervisor: Per Agrell
- ❯ Started: 2014
- ❯ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Liana-Sabina Luncasu

- ❯ Title: Nonparametric estimation of efficiency frontiers with noise in both variables
- ❯ Supervisor: Sébastien Van Bellegem
- ❯ Started: 2016
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

Chenghong Luo

- ❯ Title: Network formation with myopic and farsighted players
- ❯ Supervisors: Ana Mauleon and Vincent Vannetelbosch
- ❯ Started: 2017
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium and Ca' Foscari University of Venice, Italy (ExSide student)

Simone Martelli

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

Ilyès Mezghani

- ❯ Title: Coordinated scheduling of transmission and distribution operations in electric power systems
- ❯ Supervisor: Anthony Papavasiliou
- ❯ Started: 2016
- ❯ Doctoral School: Ecole Polytechnique de Louvain, 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: Mobilizing flexibility in power systems under renewable supply uncertainty
- ❯ Supervisors: Philippe Chevalier and Anthony Papavasiliou
- ❯ Started: 2015
- ❯ Doctoral School: Ecole Polytechnique de Louvain, 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)

Wenli 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: Economic inequality, political polarization and voter turnout
- ❯ Supervisor: François Maniquet
- ❯ Started: 2017
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

José-Miguel Quesada Perez

- ❯ Title: Express shipment service network design: Challenges, advances and robustness
- ❯ Supervisor: Jean-Sébastien Tancrez
- ❯ Started: 2014
- ❯ Doctoral School: Louvain School of Management, UCLouvain, Belgium

Mathieu Sauvenier

- ❯ Title: Sparse high dimension economic models
- ❯ Supervisor: Sébastien Van Bellegem
- ❯ Started: 2016
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium

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

Alice Servais

- ❯ Title: An interbank market in a DSGE model
- ❯ Supervisors: Sébastien Van Bellegem and Frank Smets
- ❯ Started: 2012
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium and KU Leuven, Belgium

Yu Sun

- ❯ Title: Sustainable economic growth and uncertainty
- ❯ Supervisor: Thierry Bréchet
- ❯ Started: 2015
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Beligum

Akylai Taalaibekova

- ❯ Title: Diffusion of opinions and innovations among limitedly forward-looking individuals
- ❯ Supervisors: Vincent Vannetelbosch And Michael Grabisch
- ❯ Started: 2018
- ❯ Doctoral School: Economics School of Louvain, UCLouvain, Belgium and Université Paris 1 Panthéon-Sorbonne, France (ExSide Student)

Sonia Trabelsi

- ❯ Title: Geographies of health: On the definition and measures of the Belgian (non-) built environments
- ❯ Supervisor: Isabelle Thomas
- ❯ Started: 2015
- ❯ Doctoral School: Sciences, UCLouvain, Belgium

Dagmara Wrzesinska

- ❯ Title: Distance in supply chain management problems
- ❯ Supervisors: Philippe Chevalier and Isabelle Thomas
- ❯ Started: 2016
- ❯ Doctoral School: Louvain School of Management, UCLouvain, Belgium

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: UCLouvain (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-la-Neuve, 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. 43 students are currently enrolled. Mery Ferrando, Thuc Huan Ha, Erika Pini and Yu Sun are currently staying at CORE under this program.

As part of the European Doctoral Program in Quantitative Economics, The Universität Bonn organized the Jamboree 2017-2018 for forty-nine students on September 7-8, 2017.

EDP JAMBOREE PROGRAM

Keynote lecture

- ❯ Benny Moldovanu, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
  Conscience or strategy: Voting in the Weimar National Assembly and in the Bundestag

Thematic sessions

Unemployment and Retirement

❯ **Andrea Pirrone**, CORE, UCLouvain, Belgium
Public bequests as a pension scheme

❯ Arthur Seibold, London School of Economics, United Kingdom
Statutory ages as reference points for retirement: Evidence from Germany

❯ Laura Khoury, Paris School of Economics, France
Unemployment benefits and the timing of dismissals: Evidence from bunching at a notch in France

Infrastructure

❯ Niclas Moneke, London School of Economics, United Kingdom
Infrastructure and structural transformation: Evidence from large scale road and electricity network expansion in Ethiopia

❯ Dana Kassem, London School of Economics, United Kingdom
What happens when the grid arrives? Evidence from Indonesian manufacturing firms

Financial Markets and Risk

❯ Chao He, London School of Economics, United Kingdom
Gross debt position, contagion and the great moderation

❯ Chutiorn Tontivanichanon, London School of Economics, United Kingdom
Liquidity insurance relationship in over-the-counter markets

❯ Anna Rogantini Picco, European University Institute, Firenze, Italy
International risk sharing in the European monetary union

Political Economy

❯ Michel Azulai, London School of Economics, United Kingdom
Political alliances and the allocation of public goods: Evidence from Brazilian matching grants

❯ **Erika Pini,** CORE, UCLouvain, Belgium
Political abstention and economic inequality

❯ Adam Levai, JURI, UCLouvain, Belgium
Access to justice and its impact on economic development

Tax and Investments

❯ Malka Guillot, Paris School of Economics, France
Impact of a sectoral tax on the working rich on wages, employment and profit

❯ Marcus Biermann, London School of Economics, United Kingdom
The role of management practices in acquisitions and greenfield FDI

Social Preferences

❯ Anne Hilger, Paris School of Economics, France
The role of social networks and skills in determining trust: Evidence from rural South India

❯ Xuezhu Shi, London School of Economics, United Kingdom
The role of grandchildren in old-age support: Evidence from China

❯ Egon Tripodi, European University Institute, Firenze, Italy
Sorting into incentives for prosocial behavior: The case of blood donations

Macroeconomics

❯ Boris Chafwehé, IRES, UCLouvain, Belgium
Optimal fiscal policy in DSGE models

❯ Kaspar Zimmermann, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Breaking banks or banking bad? Interest rate pass-through, bank profitability and monetary policy

❯ Dario Bonciani, European University Institute, Firenze, Italy
The long-run effects of uncertainty shocks

❯ Jiajia Gu, London School of Economics, United Kingdom
Do emigrants self-select along cultural traits? Evidence from the MENA countries

Education and Human Capital

❯ Marco Giovanni Nieddu, Universitat Pompeu Fabra, Barcelona, Spain
Promotion incentives and the production of knowledge: Evidence from the Italian national scientific habitation

❯ Clément Brébion, Paris School of Economics, France
Comparative analysis of apprenticeship training in France and Germany

Ambiguity and Risk

❯ Juni Singh, Paris School of Economics, France
Understanding decision under coarse feedback

❯ Christian Zimpelmann, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Individual preferences over risk and portfolio choice

Family Economics

❯ Fabio Blasutto, IRES, UCLouvain, Belgium
Premarital cohabitation as an information device and mating strategy differences by education

❯ Annalisa Frigo, IRES, UCLouvain, Belgium
Ageing (would-be) mothers and the role of assisted reproduction technology

❯ Quentin Lippmann, Paris School of Economics, France
Why don't women climb to the top? Evidence from French politics

Environmental Economics and Econometrics

❯ **Yu Sun**, CORE, UCLouvain, Belgium
Environmental uncertainty, health investment, and economic growth

❯ **Thuc Huan Ha**, CORE, UCLouvain, Belgium
Scraps collection for recycling, how far should we go?

❯ Hao Dong, London School of Economics, United Kingdom
Regression discontinuity design in the presence of measurement error

The Innovative Training Network 'Expectations and Social Influence Dynamics in Economics' (ExSIDE)

ExSIDE, as European Joint Doctorate, is an integrative part of Marie Skłodowska-Curie Actions (MSCA) in Horizon 2020. These actions aim to support the career development and training of researchers – with a focus on innovation skills – in all scientific disciplines through international and intersectoral mobility. The European Joint Doctorate has the objective of promoting international, intersectoral and multi/inter-disciplinary collaboration in doctoral-level training in Europe through the creation of joint doctoral programs, leading to the delivery of joint, double or multiple doctoral degrees. Long research stays at both degree granting universities as well as at other partner institutions are an integrative part of the program. These measures contribute in overcoming national, sectoral and interdisciplinary boundaries.

The ExSIDE consortium consists of eight leading European Universities (Universität Bielefeld, Università Ca' Foscari Venezia, Università Cattolica del Sacro Cuore Milano, UCLouvain, Université Paris 1 Panthéon Sorbonne, Universiteit van Amsterdam, University College London and University of Surrey) and nine non-academic partners (Capital Fund Management, Der Nederlandsche Bank, Fair Dynamic Sonsulting s.r.l., Italian National Institute of Statistics, Oesterreichische Nationalbank, Regione del Veneto - Direzione Lavoro, Talents' Friends GmbH, Vitae and Volterra Partners LLP). Doctoral fellows in ExSIDE are jointly supervised and a joint governance structure with joint admission, selection, supervision, monitoring and assessment procedures of all ExSIDE universities forms the basis of the three year doctoral training.

ExSIDE is coordinated by Universität Bielefeld in Germany. Vincent Vannetelbosch is the supervisor at UCLouvain. The program started in 2017. Fifteen students are currentlly enrolled from which two are staying at CORE: Chenghong Luo and Akylai Taalaibekowa.

Summer School

SOFIE FINANCIAL ECONOMETRICS SCHOOL

The SoFiE Financial Econometrics School is an annual week-long research-based course for Ph.D. students and new faculty in financial econometrics. The 2018 edition was held at the National Bank of Belgium in Brussels (June 4-8, 2018) under the umbrella "*Big Data in Macroeconomics and Finance*".

Classes

Domenico Giannone, Federal Reserve Bank of New York and Giorgio Primiceri, Northwestern University, gave the following lectures:

- Lecture 1. Big data and the curse of dimensionality in macroeconomics and finance: Sympthoms and cures
- Lecture 2. Principal components, ridge and lasso regressions, and other regularization techniques
- Lecture 3. Multivariate models: Dynamic factor models and their connection with principal components
- Lecture 4. A brief introduction to Bayesian inference
- Lecture 5. Priors and their connection with regularization techniques
- Lecture 6. Selection of regularization parameter/prior tightness: Model comparison and model choice
- Lecture 7. Multivariate models: VARs and Bayesian VARs
- Lecture 8. Unconditional, conditional forecasts and scenario analysis
- Lecture 9. Economic predictions with big data: The illusion of sparsity

Participants' presentation

- Lavinia Rognone, University of Manchester, United Kingdom
  How do cryptocurrencies returns react to high frequency news on currencies?
- Keven Bluteau, Université de Neuchâtel, Switzerland
  Questioning the news about economic growth: Sparse forecasting using thousands of news-based sentiment values
- Michael Stiefe, Universität Zürich, Switzerland
  Whatever it takes to change beliefs: Evidence from Twitter
- Jad Beyhum, Toulouse School of Economics, France
  Inference in panel data models with factor structures
- Monika Avila Marquez, Université de Genève, Switzerland
  Random coefficients models for multidimensional panel data

- Nicolas Tavernier, KU Leuven, Belgium
  Flexible shrinkage of large-dimensional covariance matrices
- Michael Stollenwerk, Universität Mannheim, Germany
  Dynamic principal component CAW models for high-dimensional realized covariance matrices
- **Jonas Striaukas**, CORE, UCLouvain, Belgium
  MIDAS-PRO-LASSO: Mixed frequency data regression models with parameter profiling and LASSO
- Monica Petrescu, Univeristy of Cambridge, United Kingdom
  The evolution of interdealer networks in corporate bond trading and implications for maket liquidity

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 UCLouvain, UNamur, 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 2017, UNIVERSITÉ SAINT-LOUIS, BRUXELLES

DEMOGRAPHY AND PUBLIC ECONOMICS

- ❯ Zainab Iftikhar, IRES, UCLouvain, Belgium
  The effect of fertility norms on the intensive and extensive margins of fertility and its implications for the quantity-quality trade-off in Pakistan
- ❯ **Valerio Serse**, CORE, UCLouvain, Belgium
  Heterogeneity in the tax pass-through to spirit retail prices: Evidence from Belgium
- ❯ Antoine de Mahieu, Université Saint-Louis, Bruxelles, Belgium
  Economic research on universal basic income

REGIONAL, DEVELOPMENT AND FAMILY ECONOMICS

- ❯ Christophe Ernaelsteen, UNamur, Belgium
  Possible congestion effects in regional production functions: A test on European data
- ❯ Ludovic Bequet, UNamur, Belgium
  Uncovering intra-household dynamics and technology adoption in the Philippines
- ❯ Keiti Kondi, IRES, UCLouvain, Belgium
  Population race and long term conflicts

MACROECONOMICS

- ❯ **Yu Sun**, CORE, UCLouvain, Belgium
  Environment uncertainty, health investment and economic growth
- ❯ Guillermo Santos, IRES, UCLouvain, Belgium
  Constrained efficiency in a model with sovereign default and heterogeneous agents
- ❯ Jolan Mohimont, UNamur, Belgium
  Welfare effects of business cycles and monetary policies in an emerging economy
- ❯ Olivier Hubert, UNamur Belgium
  Cross-country fiscal shocks in the Eurozone

LABOR ECONOMICS AND ECONOMETRICS

- ❯ Dalal Moosa, IRES, UCLouvain, Belgium
  Understanding informal enterprises: The case for four MENA countries
- ❯ Hannah Van Borm, Universiteit Gent, Belgium
  What drives hiring discrimination against transgenders?
- ❯ Brecht Neyt, Universiteit Gent, Belgium
  Do student internships pay off later? Evidence from a field experiment
- ❯ **Jonas Striaukas**, CORE, UCLouvain, Belgium
  MDDAS-PRO-LASSO: Mixed frequency data regression models with parameter profiling and LASSO

SPRING SESSION 2018, UCLOUVAIN

FINANCIAL ECONOMICS

- ❯ Jean-Charles Wijnandts, LFIN, UCLouvain, Belgium
  Skew-Gaussian term structure models
- ❯ Paolo Gambetti, LSM, UCLouvain, Belgium
  Recovery rates: Uncertainty certainly matters
- ❯ John Neve, Université Saint-Louis, Bruxelles, Belgium
  Is dividend growth predictability dead? Long-run evidence from the Brussels stock

ETHICS, PUBLIC AND POPULATION ECONOMICS

- ❯ Douglas Amuli, IRES, UCLouvain, Belgium
  Informality and the world distribution of income
- ❯ Louis Larue, HOOV, UCLouvain, Belgium
  Markets, community and freedom
- ❯ Eric Roca Fernandez, IRES, UCLouvain, Belgium
  Rare events, curiosity and development

LABOUR ECONOMICS

- ❯ Leda Inga, IRES, UCLouvain, Belgium
  Scrapping unemployment benefits for the youth
- ❯ Brecht Neyts, Universiteit Gent, Belgium
  Part-time vocational education and labour market outcomes: A dynamic approach

- ❯ Juliana Mesen Vargas, IRES, UCLouvain, Belgium
  Income effect on labour outcomes of people living in poverty: The case of PROGRESA
- ❯ Alexandre Ounas, IRES, UCLouvain
  Job plarization, grosso worker flows and unemployment dynamic

ECONOMETRICS

- ❯ **Mathieu Sauvenier**, CORE, UCLouvain, Belgium
  Assuming the sparsity of a linear model through a moment condition
- ❯ Da He, UCLouvain, Belgium
  A model of referrals in social networks
- ❯ Jonas Striaukas, LFIN, UCLouvain, Belgium
  Network constrained covariate coefficient and connection sign estimation
- ❯ **Gautier Attanasi**, CORE, UCLouvain, Belgium
  Large dimensional covariance estimation

MACROECONOMICS AND INDUSTRIAL ORGANIZATION

- ❯ Boris Chafwehé, IRES, UCLouvain, Belgium
  Endogenous forward guidance
- ❯ Charles de Beauffort, IRES, UCLouvain, Belgium
  Optimal fiscal and monetary policy when prices are flexible and agents are learning

Macroeconomics and Industrial Organization (Cont'd)

- Daniele Verdini, IRES, UCLouvain, Belgium
  Demand shocks, sector-level externalities, and the evolution of the comparative advantage
- **Jérôme Dollinger,** CORE, UCLouvain and Université Saint-Louis, Bruxelles, Belgium
  The interrelations between R&D and market sharing agreements, a multi-coalitions approach

Political Economics and Migration

- Riccardo Turati, IRES, UCLouvain, Belgium
  Skill of the immigrants and vote of the natives: Nationalism and immigration in EU elections 2007-2016
- **Erika Pini**, CORE, UCLouvain, Belgium
  Economic inequality, political polarization and voter turnout
- Adam Levai, IRES, UCLouvain, Belgium
  Access to justice and growth: The transmission channels
- Léo Czajka, IRES, UCLouvain, Belgium
  Spoilt votes and elecltoral preferences in the French municipal elections

Development Economics

- Arnaud Deseau, Université Saint-Louis, Bruxelles, Belgium
  The economic convergence during Malthusian times
- Modeste Daye, UNamur, Belgium
  Economic impacts of access to formal savings and liquidity devices: Evidence from a field experiment
- Esteban Callejas Pérez, Université libre de Bruxelles, Belgium
  Do remittances affect housing prices in an emerging economy? A study case for Columbia
- Anousheh Alamir, Université libre de Bruxelles, Belgium
  The global economic burden of violent conflict

Doctoral School of Management Ph.D. Day

The Doctoral School of Management Ph.D. Day took place on May 31, 2018. This forum aimed at gathering the DSM Ph.D. students around thematic oral workshop sessions and a research presentation contest. This year the doctoral students of other Belgian universities were also invited to participate.

My research proposal in 180 seconds

- Christian Dimitrescu, KU Leuven, Belgium
  Putting concepts in context: bibliometric perspectives on management and managerial innovation
- Natalia Ramirez, LouRIM, UCLouvain, Belgium
  How entrepreneurial support practices help disruptive innovators?

- Kazeem Salawu, UNamur, Belgium
  The maker movement in Belgium: Exploring the business models in this innovation community

Parallel sessions

Entrepreneurship

- Joshua K. Salawu, UNamur, Belgium
  The effects of passive innovation resistance on users: An analysis of influencing factors in healthcare
- Roxane De Hoe, LouRIM, UCLouvain, Belgium
  Restart after business failure: A cross-country
- Laetitia Lambillotte, LouRIM, UCLouvain, Belgium
  Web personalization experience: Value creation or value destruction?

Operations

- **Dagmara Wrzesinka**, CORE, UCLouvain, Belgium
  Distance in supply chain management: The geography of cabotage in Europe
- Juan Fernando Garcia Barragan, KU Leuven, Belgium
  The power of the circular economy
- **Manuel Herrera Rodriguez**, CORE, UCLouvain, Belgium
  Liner ship fleet deployment models and te cost of time: The case of China-USA maritime routes

Audit/Strategy

- Nathanaël Betti, LouRIM, UCLouvain, Belgium
  The relationship between the organizational strategy and the internal audit scope and role: A quantitative research
- Charlotte De Kort, LouRIM, UCLouvain, Belgium
  The management of informal knowledge networks

Brown Bag Seminar Series

A noteworthy initiative of the junior researchers was 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.

- October 11, 2017.
  Marion Collewet, CORE, UCLouvain, Belgium
  Measuring income-leisure preferences using hypothetical questions

- October 18, 2017.
  Justin Delloye, CORE, UCLouvain, Belgium
  On the scaling of urban land and population density profiles in monocentric models

- October 27, 2017.
  Mery Ferrando, CORE, UCLouvain, Belgium
  Intrahousehold allocations with public goods

- November 8, 2017.
  Ana Mauleon, Université Saint-Louis, Bruxelles and CORE, UCLouvain, Belgium
  Matching with myopic and farsighted players

- November 15, 2017.
  Huanwei Huang, London School of Economics, United Kingdom
  Germs, roads and trade: Resilience of globally sourcing firms in face of the SARS epidemic

- November 22, 2017.
  Valerio Serse, CORE, UCLouvain, Belgium
  Heterogeneity in the tax pass-through to spirit retail prices: Evidence from Belgium

- November 29, 2017.
  Hodaya Lampert, Ben Gurion University of the Negev, Israël
  Patents and pools in pyramidal innovation structures

- December 6, 2017.
  Andras Gregor, CORE, UCLouvain, Belgium
  The effect of political alignment on municipal finances: A natural experiment from Hungary

- January 31, 2017.
  José Miguel Quesada Perez, CORE, UCLouvain, Belgium
  Express shipment service network design: Challenges and advances

- February 7, 2018.
  Dávid Kopányi, Universiteit van Amsterdam, The Netherlands
  The effect of loyalty in the Kirman and Vriend (2001) fish market model

- February 21, 2018.
  Murat Yilmaz, Université libre de Bruxelles, Belgium
  The bargaining set of an exchange economy with discrete resources

- February 28, 2018.
  Jonas Striaukas, LFIN, UCLouvain, Belgium
  MIDAS-PRO-LASSO: Mixed frequency data regression models with parameter profiling and LASSO

- March 21, 2018.
  Shiva Shekhar, DICE, Stockholm, Sweden
  Supply chain innovations and backward partial ownership

- March 28, 2018.
  Samuel Kembou Nzale, Aix-Marseille School of Economics, France
  Regulation and altruism

- April 18, 2018.
  Ignacio Aravena, CORE, UCLouvain, Belgium
  Transmission capacity allocation in zonal electricity markets

- May 2, 2012.
  Pierre Dehez, CORE, UCLouvain, Belgium
  Approval voting and Shapley ranking

- May 9, 2018.
  Benson Tsz Kin Leung, Toulouse School of Economics, France
  Limited cognitive ability and selective information processing

- May 16, 2018.
  Axel Gautier, Université de Liège and CORE, UCLouvain, Belgium
  Prioritization vs zero-rating: Discrimination on the Internet

- May 23, 2018.
  Pontus Mattsson, Linnaeus University, Växjö, Sweden
  Impacts on efficiency of merging the Swedish district courts

- June 13, 2018.
  Zhengyuan Gao, CORE, UCLouvain, Belgium
  An imaginary realistic market

4

SCIENTIFIC EXCHANGES AND COLLABORATIONS

SCIENTIFIC EXCHANGES AND COLLABORATIONS

Research Visitors

AFFILIATE MEMBERS

CORE can count on the precious support of its affiliate members who are researchers and academics from outside UCLouvain that are contributing to the CORE scientific environment and domains of expertise.

- Rabah Amir, University of Iowa, USA
- Paul Champsaur, Arceps, France
- Bernard Cornet, Université Paris 1, France
- Koen Decancq, Universiteit Antwerpen, Belgium
- Jean-Charles Delvenne, EPL, UCLouvain, Belgium
- Marc Fleurbaey, Princeton University, USA
- Axel Gautier, Université de Liège, Belgium
- Michel Goemans, Massachusetts Institute of Technology, Cambridge, USA
- Adel Hatami-Marbini, De Monfort University, United Kingdom
- Elhanan Helpman, Harvard University, USA
- Jean-Jacques Herings, Universiteit Maastricht, The Netherlands
- Michel Lebreton, Toulouse School of Economics, France
- Marie-Louise Leroux, Université du Québec à Montréal, Canada
- Dunia Lopez Pintado, Universidad Pablo de Olavide, Seville, Spain
- Pascal Mossay, Newcastle University, United Kingdom
- George Nemhauser, Georgia Institute of Technology, Atlanta, USA
- Rigas Oikonomou, IRES, UCLouvain, Belgium
- Dimitri Paolini, Università degli Studi di Sassari, Italy
- Pierre Picard, Université du Luxembourg, Luxembourg
- Yves Pochet, PURATOS, Dilbeek, Belgium
- Heracles Polemarchakis, University of Warwick, United Kingdom
- Arie Preminger, Ben-Gurion University of the Negev, Israël
- Ernesto San Martin, Pontificia Universidad Católica de Chile, Santiago, Chile
- Erik Schokkaert, KU Leuven, Belgium
- Jose J. Monerris, Universidad de Valencia, Spain
- Jean-François Richard, University of Pittsburgh, USA
- Vladimir Shikhman, Technische Universität Chenmitz, Germany
- Joe Tharakan, Université de Liège, Belgium
- Giacomo Valletta, EDHEC Business School, Roubaix, France
- Dirk Van de Gaer, Universiteit Gent, Belgium
- Xavier Wauthy, Université libre de Bruxelles, Belgium
- Shlomo Weber, New Economic School, Moscow, Russia

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:

- Alessandro Araldi, Université Côte d'Azur, Nice, France
- Anouk Claes, Université Saint-Louis, Bruxelles, Belgium
- Daniel De Wolf, Université du Littoral Côte d'Opale, Dunkerque, France
- Pavel Dvurechensky, Weierstrass Institute, Berlin, Germany
- Cheng-ze Simon Fan, Lingnan University, Hong Kong
- Pierre Frankhauser, Université de Franche Comté, Besançon France
- Alexander Gasnikov, Moscow Institute of Physics and Technology, Russia
- Alexandre Girard, Université Saint-Louis, Bruxelles, Belgium
- Vera Jotanovic, AMAV Consulting, Roma, Italy
- Hodaya Lampert, Ben-Gurion University of the Negev, Israël
- Tsz Kin Leung, Toulouse School of Economics, France
- Pontus Mattsson, Linnaeus University, Sweden
- Yukihiro Nishimura, Osaka University, Japan
- Geovani Nunes Grapiglia, Federal University of Parana, Brazil
- Giada Andrea Prete, Università del Salento, Lecce, Italy
- Margarita Samartin, Universidad Carlos III de Madrid, Spain
- Yousra Sidqi, g2elab Grenoble, France
- Cécile Tannier, Université de Franche Comté, Besançon, Fance
- Claudio Telha Corneja, OM Partners, Wommelgem, Belgium

Scientific meetings

CORE LECTURE SERIES IN FINANCIAL ECONOMETRICS

On October 16-18, 2017, Professor Christiane Baumeister gave a series of lectures on "*A Bayesian Approach to Identification of Structural VAR Models*". Professor Baumeister is an Associate Professor at the University of Notre Dame (USA). Her primary research interests include the study of time-varying macroeconomic relationships with applications to the oil market and the transmission mechanism of both conventional and unconventional monetary policy using Bayesian methods.

These lectures challenged the current practice of identification of structural vector autoregressions which are the workhorse models in empirical macroeconomics and finance. Drawing structural inference from VAR models requires making use of prior information. This course provided formal tools of Bayesian analysis that allow to incorporate prior beliefs about the underlying economic structure in a flexible way and to characterize the contribution of prior information. The methods introduced in the lectures were illustrated with applications in economics and finance

Program

- ❯ **Lecture 1. Bayesian analysis of structural VAR models**
  The identification problem revisited
  Identification using inequality constraints
  Matlab application: labor market dynamics (part 1)
- ❯ **Lecture 2. The role of prior information**
  A Bayesian interpretation of traditional identification assumptions
  Matlab application: Oil supply and demand shocks
  Matlab application: Labor market dynamics (part 2)
- ❯ **Lecture 3. Inference in set-identified SVAR models**
  Optimal estimates of impulse response functions and historical decompositions
  Matlab Application: The effects of monetary policy

RECENT ADVANCES IN ECONOMETRICS (INTERNATIONAL CONFERENCE IN HONOR OF LUC BAUWENS)

Together with LFIN, UCLouvain and UNamur, CORE organized a conference to celebrate Prof. Luc Bauwens contributions to econometrics and CORE. The event was held at the Hilton Brussels City Hotel on October 19-20, 2017 and reunited Prof. Bauwens's former Ph.D. students, co-authors, colleagues and friends. We aimed at covering all important topics of Prof. Bauwens's long career, including Bayesian and financial econometrics.

Keynote Lectures

- ❯ Herman van Dijk, Erasmus Universiteit Rotterdam, The Netherlands
  Bayesian analysis of boundary and near-boundary evidence in econometric models with reduced rank
- ❯ Jean-Michel Zakoian, CREST, Paris
  Estimation risk for the VaR of portfolios driven by semi-parametric multivariate models
- ❯ Eric Ghysels, University of North Carolina, Chapell Hill, USA
  Liquidity and volatility in the US treasury market: Evidence from a new class of dynamic order book models
- ❯ Eric Renault, Brown University, USA
  Indirect inference with(out) constraints

Thematic sessions

BAYESIAN ECONOMETRICS AND VAR MODELS

- ❯ Christiane Baumeister, University of Notre-Dame, USA
  Structural interpretation of vector autoregressions with incomplete identification: Revisiting the role of oil supply and demand shocks
- ❯ Jeroen Rombouts, ESSEC Business School, Cergy-Pontoise, France
  Sparse change-point VAR models
- ❯ Arnaud Dufays, Université Laval, Canada
  Modelling time-varying parameters using artificial neural networks: A GARCH illustration

FINANCIAL ECONOMETRICS I

- ❯ Joachim Grammig, Universität Tübingen, Germany
  Empirical asset pricing with multi-period disasters and partial government defaults
- ❯ Sébastien Laurent, Institut Universitaire de France, Paris, France
  Estimation of realized betas in a multi-factor model in presence of noise and asynchronisity

FINANCIAL ECONOMETRICS I (CONTD)

- Kris Boudt, Vrije Universiteit Brussel, Belgium
  The minimum regularized covariance determinant estimator
- Davis Veredas, Vlerick Business School, Brussel, Belgium
  Flexible multivariate Hill estimators

FINANCIAL ECONOMETRICS II

- Genaro Succarat, BI Norwegian Business School, Oslo, Norway
  Equation-by-equation estimation of multivariate periodic electricity price volatility
- Juan Pablo Ortega, University of St. Gallen, Switzerland
  Option pricing and hedging with one-step Kalman filtered factors in non- stochastic volatility models

FINANCIAL ECONOMETRICS III

- Giuseppe Storti, Università degli Studi di Salerno, Italy
  Time varying heteroskedastic realized GARCH models for tracking measurement error vias in volatility forecasting
- Alvaro Escribano, Universidad Carlos III de Madrid, Spain
  Score-driven non-linear multivariate dynamic location models

ECONOMETRIC METHODOLOGY

- Geert Dhaene, KU Leuven, Belgium
  Polynomial shrinkage of larged-dimensional covariance matrices
- Yukai Yang, Uppsala Universitet, Sweden
  State-space models on Stiefel manifold: Specification and estimation
- Olivier Scaillet, Université de Genève, Switzerland
  Saddlepoint techniques for spatial panel data models

IMMAQ-LSM TALK WITH PAUL DE GRAUWE: THE LIMITS OF THE MARKET

IMMAQ, together with LSM, organized a talk with Paul de Grauwe (London School of Economics) where he presented his latest book, *The Limits of the Market: The Pendulum between Government and Market*. The event was held at UCLouvain on November 15, 2017.

Paul De Grauwe is a Belgian economist and professor in European Political Economy at the London School of Economics and Political Science as head of the European Institute. He is also professor emeritus in international economics at KU Leuven and a former member of the Belgian Federal Parliament. In his lucid new book, Professor de Grauwe explains how one should think about the balance between markets and governments - as systems interacting with one another over time. Its essential point is that neither a pure market economy nor a purely government-controlled economy is workable.

4TH INDUSTRIAL ORGANIZATION IN THE DIGITAL ECONOMY WORKSHOP

In collaboration with CORE, UCLouvain, the Liège Competition and Innovation Institute (LCII), with HEC Liège, Université de Liège organized the 4th edition of the *Industrial Organization in the Digital Economy workshop*, which took place on March 2–3, 2018, in Liège. This two-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, usergenerated content, digital piracy, economics of privacy, reputation and recommender systems, open source software, sharing economy, patents and innovation, etc.

Keynote lectures

- Jose Moraga, Vrije Universiteit Amsterdam, The Netherlands
  Consumer search and prices in the automobile market
- Pieter Van Cleynenbruegel, Université de Liège, Belgium
  The sharing economy and European Union law: Enabling innovation or regulating disruption?

Thematic sessions

SEARCH MATCHING AND INFORMATION

- Milena Petrova, Syracuse University, New York, USA
  Search and matching on an online marketplace for services
- Elias Carroni, Università di Bologna, Italy
  The price of discovering your needs online
- Antoine Dubus, Télécom ParisTech, France
  Selling strategic information in competitive markets

- Matthias Hunold, Universität Dusseldorf, Germany
  Hotel rankings of online travel agents, channel pricing and consumer protection
- Mats Köster, Universität Düsselford, Germany
  Sallience and online sales: the role of brand image concerns

ADVERTISING AND TARGETING

- Martin Quinn, Télécom ParisTech, France
  Targeting advertising preferences
- Maximilian Schaefer, German Institute for Economic Research, Berlin, Germany
  The effect of big data on recommendation quality. The example of Internet search
- Tim Reiz, Universität Düsseldorf, Germany
  Customer recognition and mobile geo targeting

BUSINESS MODELS FOR THE DIGITAL ECONOMY

- **Robert Somogyi**, CORE, UCLouvain, Belgium
  Prioritization vs zero rating: Discrimination on the Internet
- Esma Koca, Imperial College London, United Kingdom
  Double utilisation of consumer appreciation: Is the seamless connection the new monopoly leverage?

- David Ronayne, Univeirsity of Oxford, United Kingdom
  Competing sales channels
- Joe Lamesch, Universiteit Hasselt, Belgium
  Mergers in the digital economy

COMPETITION BETWEEN CONTENT PROVIDERS

- Leonardo Madio, University of York, United Kingdom
  The economics of video-on-demand platforms in a multi-pirate environment
- Armando Jose Garcia Pires, Institute of Research in Economics and Business Administration, Bergen, Norway
  Social media, echo chambers and content provision
- Jordan Viotto da Cruz, Université Paris-Dauphine, Paris, France
  Quality versus quantity in two-sided markets competition: Evidence from crowdfunding websites
- Justine Bulkaert, Universitié de Liège, Belgium
  Licence negotiations in SEP-intensive industries: Do the rules play the game?

3RD BELGIAN-JAPANESE PUBLIC FINANCE WORKSHOP

Profs. Jean Hindriks (CORE, UCLouvain) and Pierre Pestieau (Université de Liège and CORE, UCLouvain), together with a group of academics in Osaka University (Japan), organized their yearly *Public Finance Workshop* on March 2-3, 2018, with the purpose of promoting collaboration between Belgian and Japanese economics in the fields of public economis.

Program

- Kozo Kiyota, Keio University, Japan
  Factor intensity reversals redux
- Pierre Boyer, CREST, Ecole Polytechnique de Paris, France
  Politically feasible reforms of non-linear tax systems
- Motohiro Sato, Hitotsubashi University, Japan
  Efficiency and the taxation of bank benefits
- Kai Konrad, Max Planck institute for Tax Law and Public Finance, Münich, Germany
  Dynamics of the market for corporate tax-avoidance advice
- Daiji Kawaguchi, Tokyo University, Japan
  The power of moral suasion: The case of electricity conservation in post-Fukushima Japan
- Micael Castanheira, Université libre de Bruxelles, Belgium
  Population patterns and the economic effects of constitutions

- Yukihiro Nishimura, Osaka University, Japan
  Enforcement cooperation and tax competition among asymmetric countries
- Susana Peralta, Nova School of Business and Economics, Lisboa, Portugal
  An empirical evaluation of the effectiveness of fiscal incentives for coporate investment in Portugal
- Hiromi Hara, Japan Women's University, Tokyo, Japan
  Impediments to further gender wage gap reduction: A labor market system perspective
- Nicolas Gravel, Aix-Marseille Université, France
  Evaluating education systems
- **Johannes Johnen**, CORE, UCLouvain, Belgium
  Browsing versus studying offers
- Takeshi Murooka, Osaka University, Japan
  Market competition and informal incentives

KRONOS GROUP CHAIR "STRATEGIC SOURCING AND PROCUREMENT": OFFICIAL OPENING CEREMONY

The Kronos Group Chair "***Strategic Sourcing and Procurement***" is the fruit of a collaboration between Kronos Group and Louvain School of Management of UCLouvain. The objective of the Chair is to promote research and education in the sourcing and procurement domain, contributing to fostering the profession to continue its transformation into a value creating and strategic profession. The Chair is unique for Belgium and also launching a unique Master's level specialization in sourcing and procurement in Belgium, integrated in Louvain School of Management. Research in the Chair aims at empirical, economic and strategic studies of procurement under transformation, in particular the innovative, ethical and environmental dimensions of the area.

Program

- **Per Agrell**, CORE, UCLouvain, Belgium
  Inauguration of the Chair within LSM and CORE
- Pascal Reyntjens, Director Vx Distribution & Cold Chain of GSK Vaccines, Belgium
  Insights and experiences from the GSK Vaccines Chair
- Catherine Van Wonterghem and Benoit Graas, Directors of Kronos Group, Belgium
  Building strong partnerships between Kronos and UCLouvain
- **Constantin Blome**, Chairholder of the Chair, CORE, UCLouvain, Belgium and University of Sussex, United Kingdom
  Up or out: How strategic is procurement today and in the future?

ENERGY DAY

On April 16, 2018 Anthony Papavasiliou received the Bauchau Prize 2017, prize awarded by the Bauchau family for his proposal on "*Using Analytics and Optimization to Enable Africa to Leapfrog to the Energy Systems of the Future*" in particular the innovative, ethical and environmental dimensions of the area. For this occasion, a **One Day-workshop on Energy** was organized at UCLouvain. The workshop brought together CORE faculty who showcases the cutting-edge competencies of our group in three domains: (i) the state-of-the-art modelling of pressing energy policy challenges; (ii) the development of algorithmic solutions for tackling industrial scale energy problems; and (iii) the fostering of innovation through the spin-off of energy startups that are taking a place in the center stage of European and global energy analytics.

Thematic sessions

OPTIMIZATION IN ENERGY

- **Mathieu Van Vyve**, CORE, UCLouvain, Belgium
  Revisiting minimum profit conditions in uniform price day-ahead electricity auctions
- **Philippe Chevalier**, CORE, UCLouvain, Belgium and N-SIDE, Louvain-la-Neuve, Belgium
  Advanced analytics: A key enabler for the energy transition

EQUILIBRIUM MODELS IN ENERGY

- Gauthier de Maere d'Aertrycke, EnGIE, Louvain-la-Neuve and **Yves Smeers**, CORE, UCLouvain, Belgium
  Transmitting scarcity signal in the day ahead market: A stochastic equilibrium analysis
- **Anthony Papavasiliou**, CORE, UCLouvain, Belgium
  Market design considerations for scarcity pricing

REGULATION AND ECONOMIC POLICY

- **Per Agrell,** CORE, UCLouvain, Belgium
  Strategic behavior by energy networks under yardstick regulation
- **Ignacio Aravena**, CORE, UCLouvain, Belgium
  Transmission capacity allocation in zonal electricity market
- **Axel Gautier**, Université de Liège and CORE, UCLouvain, Belgium
  Integrating renewables into the grid

2018 SUPPLY CHAIN CORPORATE FORUM

In honor of all those who contribute to its development, the Supply Chain group of the Louvain School of Management and CORE had the pleasure of organizing the *2018 Corporate Forum*, on May 15, 2018.

Program

- **Philippe Chevalier**, CORE, UCLouvain, Belgium
  New from LSM and the CORE Supply Chain Group
- Catherine Van Wonterghem and Benoit Graas, Directors of Kronos Group, Belgium
  Building strong partnerships between Kronos and UCLouvain
- **Isabelle Thomas**, CORE, UCLouvain, Belgium
  Big data in transport geography: What do they reveal, what do they hide?
- Erik Mannaert, Team Leader Customer Service, and Kim Beirinckx, Sr. Manager Operations Management & Improvement, PFIZER, Belgium
  In transit visibility

Procurement 4.0: The Game Changer

As part of the Kronos Group Chair, Louvain School of Management and CORE organized the "*Procurement 4.0: The Game Changer*" Workshop in Louvain-la-Neuve on June 22, 118.

Program

- Michel Henke, Fraunhofer Institute for Material Flow and Logistics and Technische Universität Dortmund, Germany
  Digitalisation and procurement 4.0
- Wassim Mbarki, LSM Kronos Chair, UCLouvain, Belgium
  Industry 4.0 for the firm, the system and you
- **Constantin Blome**, CORE, UCLouvain, Belgium and University of Sussex, United Kingdom
  Making your organisation fit for procurement 4.0

Weekly CORE seminars

ECONOMETRICS SEMINARS

- September 22, 2017.
  Bertrand Candelon, Institut Louis Bachelier, Paris, France
  Globalization and the new normal hypothesis
- October 13, 2017.
  Francesco Ravazzolo, Free University of Bozen-Bolzano, Italy
  Assessing the predictive ability of sovereign default risk on exchange rate returns
- November 24, 2017.
  Dimitra Kyriakopoulou, CORE, UCLouvain, Belgium
  Exponential-type GARCH models with linear-in-variance risk premium

- January 26, 2018.
  Adelchi Azzalini, Università degli Studu di Padova, Italy
  An introduction to symmetry-modulated distributions
- April 27, 2018.
  Jean-Stéphane Mesonnier, Banque de France, Paris, France
  Dollar funding and firm-level exports
- May 4, 2018.
  Daniel Buncic, Sveriges Riksbank, Stockholm, Sweden
  Identification and estimation issues in exponential smooth transition autoregressive models

OPERATIONS RESEARCH SEMINARS

- September 26, 2017.
  Daniel Dewolf, CORE, UCLouvain, Belgium and Université de la Côte d'Opale, Dunkerque, France
  Optimal design of new hydrogen transmission pipeline networks for France
- November 14, 2017.
  Michaël Poss, Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier, France
  An introduction to robust combinatorial optimization
- November 14, 2017.
  Yuji Shinano, Zuse Institute Berlin, Germany
  Harnessing over a million CPU cores to solve a single hard mixed inter programming problem on a supercomputer
- November 21, 2017.
  Mette Björndal, Norwegian School of Economics, Bergen, Norway
  Congestion management in a stochastic dispatch model for electricity markets
- December 5, 2017.
  Georg Pflug, Universität Wien, Austria
  Model uncertainty and distributional robustness in stochastic organization
- December 12, 2017.
  Alejandro Llamas, Neoma Business School, Rouen, France
  Joint dynamic pricing decisions and operations planning

- December 19, 2017.
  Guillaume Roels, INSEAD, Paris, France
  Optimal practice processes for performance
- February 13, 2018.
  Geovani Nunes Grapiglia, Federal University of Paraná, Brazil
  Improved optimization methods for image registration problems
- February 27, 2018.
  Jenny Benois-Pineau, Université de Bordeaux, France
  Increasing stability of training of deep CNNs with stochastic gradient descent method. Application to image classification tasks
- March 6, 2018.
  Vladimir Shikhman, Technische Universität Chemnitz, Germany
  Dual subgradient method with averaging for optimal resource allocation
- March 13, 2018.
  Gauthier de Maere d'Aertrycke, ENGIE, Louvain-la-Neuve, Belgium
  Risk trading in capacity expansion models
- March 20, 2018.
  Pavel Dvurechensky, Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany
  Faster algorithms for (regularized) optimal transport
- April 24, 2018.
  Steffen Rebennack, Karlsruhe Institute of Technology, Germany
  Tailored benders decomposition for a long-term power expansion model with short-term demand response

May 15, 2018.
Adrien Taylor, INRIA, Paris, France
Automated design of first-order optimization methods

May 17, 2018.
Andrew Johnson, Texas A&M University, College Station, USA
Shape-constrained kernel-weighted least squares: Estimating production functions for Chilean manufacturing industries

May 29, 2018.
Maryam Kamgarpour, Eidgenössische Technische Hochschule Zürich, Switzerland
Multi-agent decision-making in uncertain environments

June 19, 2018.
Alexander Gasnikov, Moscow Institute of Physics and Technology, Russia
Optimal method for distributed convex optimization and some examples

UCLOUVAIN ECONOMICS SEMINARS

September 21, 2017.
Peter Dolton, University of Sussex, United Kingdom
The optimal length of the working day: Evidence from Hawthorne experiments

October 5, 2017.
Catherine Guirkinger, UNamur, Belgium
Buy as you need nutrition and food storage imperfections

October 25, 2017.
Luis Cabral, New York University, USA
Standing on the shoulders of dwarfs: Dominant firms and innovation incentives

November 2, 2017.
Felix Kübler, Universität Zürich, Switzerland
Self-justified equilibria in dynamic economies with heterogeneous agents

November 9, 2017.
Bilal Zia, World Bank Group, Washington, USA
Learning business practices from peers: Experimental evidence from small-scale retailers in Jakarta

November 16, 2017.
Paul Heidhues, Universität Düsseldorf, Germany
Unrealistic expectations and misguided learning

November 23, 2017.
Cheti Nicoletti, The University of York, United Kingdom
Do parental time investments react to changes in child's skills and health

November 30, 2017.
Alain Venditti, Aix-Marseille School of Economics, France
On sunspot fluctuations in infinite-horizon models: A general analysis

December 7, 2017.
Heiner Schumacher, KU Leuven, Belgium
Equilibrium contracts and boundedly rational expectations

December 14, 2017.
Ariell Reshef, Paris School of Economics, France
Techies, trade and skill-biaised productivity: Firm level evidence from France

February 1, 2018.
Filipe Martins Da Rocha, Université Paris-Dauphine, France
Self-enforcing debt limits and costly default in general equilibrium

February 8, 2018.
Heiko Karle, Frankfurt School of Finance & Management, Germany
Competition and information quality in the market for news

February 15, 2018.
Sebastian Krautheim, Universität Passau, Germany
The international organization of production in the regulatory vacuum

February 22, 2018.
Harris Dellas, Universität Bern, Switzerland
Fiscal policy with an informal sector

March 1, 2018.
Simon Cornée, Université de Rennes I, France
A theory of social finance

March 8, 2018.
Grégory Jolivet, University of Bristol, United Kingdom
A structural analysis of health and labour market trajectories

March 15, 2018.
Ingela Alger, Toulouse School of Economics, France
Uninvadable social behaviors and preferences in group-structured populations

March 22, 2018.
Stefano Gnocchi, Bank of Canada, Ottawa, Canada
Downward nominal wage rigidity meets the zero lower bound

March 29, 2018.
Manolis Galenianos, University of London, United Kingdom
Referral networks and inequality

April 19, 2018.
Bernard Sincler-Desgagné, HEC, Montréal, Canada
Measuring innovation and innovativeness: A data mining approach

April 26, 2018.
Simone Bertoli, Université d'Auvergne, France
Migration and co-residence choices: evidence from Mexico

May 3, 2018.
Hippolyte d'Albis, Paris School of Economics, France
Immigration and fiscal balance: Evidence from Western European countries

May 17, 2018.
Stefania Albanesi, University of Pittsburgh, USA
Changing business cycles: The role of women's employment

Participation of CORE members in meetings organization

Belgian SHARE Users Workshop, Universiteit Antwerpen, Belgium, October 2017
CORE organizer: Koen Decancq

Recent Advances in Econometrics: International Conference in Honor of Luc Bauwens, Bruxelles, Belgium, October 2017
CORE organizers: Christian Hafner and Leonardo Iania

- **CORE Lecture Series in Financial Econometrics with Christiane Baumeister: A Bayesian Approach to Identification of Structural VAR Models**, Louvain-la-Neuve, Belgium, October 2017
  CORE organizer: Leonardo Iania
- **IMMAQ-LSM Talk with Paul de Grauwe: The Limits of the Market**, Louvain-la-Neuve, Belgium, November 2017
  CORE organizer: Leonardo Iania
- **UECE Lisbon Meetings 2017: Game Theory and Applications, Technical University of Lisbon,** Lisbon, Portugal, November 2017
  CORE member of the scientific committee: Vincent Vannetelbosch
- **12th Workshop on Economic Design and Institutions,** Université Saint-Louis, Bruxelles, Belgium, December 2017.
  CORE organizers: Ana Mauleon and Vincent Vannetelbosch
- **Actuarial and Financial Mathematics Conference (AFMATH 2018): Interplay between Finance and Insurance**, Bruxelles, Belgium, February 2018
  CORE organizer: Frédéric Vrins
- **4th Industrial Organization in the Digital Economy Workshop**, Université de Liège, Belgium, March 2018
  CORE organizers: Axel Gautier and Johannes Johnen
- **Kronos Group Chair Strategic Sourcing & Procurement Opening Ceremony**, Louvain-la-Neuve, Belgium, March 2018
  CORE organizers: Per Agrell and Constantin Blome
- **3rd Belgian-Japanese Public Finance Workshop**, CORE, UCLouvain, Belgium, March 2018
  CORE organizers: Jean Hindriks and Pierre PESTIEAU
- **Atelier "Economie du Vieillissement"**, Paris School of Economics, France, March 2018
  CORE organizer: Pierre Pestieau
- **23rd Coalition Theory Network Workshop,** Universiteit Maastricht, The Netherlands, April 2018
  CORE organizer: Vincent Vannetelbosch
- **CORE Energy Day**, UCLouvain, Belgium, April 2018
  CORE organizer: Anthony Papavasiliou
- **Bauchau Prize Ceremony**, UCLouvain, Belgium, April 2018
  CORE organizer: Anthony Papavasiliou
- **2018 Supply Chain Corporate Forum**, Louvain-la-Neuve, Belgium, May 2018
  CORE organizers: Per Agrell and Philippe Chevalier
- **Doctoral School of Management - 2018 PhD Day**, Louvain-la-Neuve, Belgium, May 2018
  CORE organizers: Per Agrell and Philippe Chevalier
- **15th International Conference on the European Energy Market (EEM18)**, Łódź, Poland, June 2018
  CORE member of the scientific committee: Per Agrell
- **7ème Conférence Euro-Africaine en Finance et Economie (CEAFE 2018)**, Carthage, Tunisie, June 2018
  CORE organizer: Claude d'Aspremont
  CORE member of the scientific committee: François Maniquet
- **18th Annual SAET Conference**, Taipei, Taiwan
  CORE organizer: Julio Davila
- **SoFiE Financial Econometrics School**, Bruxelles, Belgium, June 2018
  CORE organizers: Luc Bauwens and Leonardo Iania
- **Procurement 4.0: The Game Changer**, Louvain-la-Neuve, Belgium, June 2018
  CORE organizer: Constantin Blome
- **Network-wide Meeting in Venice of the Innovative Training Network 'Expectations and Social Influence Dynamics in Economics'**, San Sevolo, Venice, Italy, June 2018
  CORE organizers: Ana Mauleon and Vincent Vannetelbosch

Participation of CORE members to conferences and seminars

Arnaud Adam

- *Revisiting the internal structure of Brussels with mobile phone data: Theoretical revolution or data evolution?*
  European Colloquium in Theoretical and Quantiative Geography (ECTQG2017), York, United Kingdom, September 2017
- *Revisiting the internal structure of Brussels with mobile phone data and socio-economics variables: Do we converge?*
  Belgium Geography Day, Brussels, Belgium, November 2017
- *Big-Data: (r)-évolution de la géographie ?*
  Midi de la géographie, Louvain-la-Neuve, Belgium, November 2017
- *Rediscovering urban models with non-conventional data and methods? The mosaic of Brussels*
  COST TU 1305, Young Researchers Workshop, Milano, Italy, February 2018

> *Track the trucks: Understanding movements of trucks within the metropolitan area of Brussels*
> Annual Meeting of the American Association of Geographers, New-Orleans, USA, April, 2018

Per Agrell

> *Regulatory path planning: Introducing competitive behaviour in infrastructure industries*
> Currents Trends in Competition Law, University of Bratislava and the Anti-monopoly Authority of Slovakia, Slovakia, October 2017
> *Sustainable energy transition: An operations research perspective*
> International Conference Sustainable Energy for Africa, Royal Academy for Overseas Sciences" (RAOS), Bruxelles, Belgium, October 2017
> *Delegating coordination or hands-on: Modelling supply chain investments under asymmetric information*
> 15th CEMS Research Seminar on Supply Chain Management, Riezlern, Austria, January 2018
> *Liner ship fleet deployment models and the cost of time: The case of the China-USA maritime routes*
> 20th International Working Seminar on Production Economics, Igls, Austria, February 2018
> *Horizontal mergers in the Swedish district court system: An ex ante and ex post efficiency analysis*
> DEA 40: International Conference on Data Envelopment Analysis, Aston University, Birmingham, United Kingdom, April 2018
> *The cost of regulatory decentralization*
> North American Productivity Workshop X (NAPW X), University of Miami, USA, June 2018

Andreu Arenas

> *Countercyclical school attainment and intergenerational mobility*
> 29th Annual Conference of the European Association of Labour Economists, St. Gallen, United Kingdom, September 2017
> 42 Simposio de la Asociación Espanola de Economía, Barcelona Graduate School of Economics, Spain, December 2017
> *Party bans, deterrence or backlash? Evidence from the Basque Country*
> 3rd Lille Workshop on Political Economy, France, November 2017
> Workshop on the Origins and Consequences of Group Identities, Universität Zurich, Stwitzerland, December 2017
> New York University Graduate Political Economy Seminar, USA, May 2018
> *The design of university entrance exams and its implications to gender gaps*
> 15th Belgian Day for Labour Economists, Université libre de Bruxelles, Charleroi Ville-Haute Campus, Belgium, June 2018

Luc Bauwens

> *The factorial hidden Markov volatility model*
> Inaugural Conference of the HeiKaMEtrics Network, Universität Heidelberg, Germany, September 2017
> GREQAM, Université d'Aix-Marseille, France, October 2017
> École supérieure des sciences économiques et commerciales (ESSEC), Cergy-Pontoise, France, February 2018
> *Nonlinearities and regimes in conditional correlations with different dynamics*
> Workshop on Time Series, École supérieure des sciences économiques et commerciales (ESSEC), Cergy-Pontoise, France, April 2018
> International Conference "Quantitative Finance and Financial Econometrics" - QFFE 2018, Université d'Aix-Marseille, France, May-June 2018

Gilles Bertrand

> *An analysis of threshold policies for trading in continuous intraday electricity markets*
> 15th International Conference on the European Energy Market (EEM18), Łódź, Poland, June 2018
> *Reinforcement-learning based threshold policies for continuous intraday electricity market trading*
> 29th European Conference on Operational Research (EURO2018), Valencia, Spain, July 2018

Daniele Catanzaro

> *Some combinatorial connections between phylogenetics and huffman coding*
> Joint EURO/ALIO International Conference 2018 on Applied Combinatorial Optimization, Università di Bologna, Italy, June 2018
> *Optimizing over lattices of unrooted binary trees: Part 1 - Foundations*
> 23rd International Symposium on Mathematical Programming (ISMP 2018), Bordeaux, France, July 2018

Philippe Chevalier

❯ *Joint dynamic pricing and lot-sizing under competition*
INFORMS Annual Meeting 2017, Houston, USA, October 2017
❯ *Joint purchasing with demand and technology level uncertainty*
StochMod18, European Working Group on Stochastic Models Meeting, Lancaster, United Kingdom, June 2018

Claude d'Aspremont

❯ *The Dixit-Stiglitz economy with a small group of firms*
19th April International Academic Conference on Economic and Social Development, Higher School of Economics, Moscow, Russia, April 2018
❯ *The Dixit-Stiglitz model after forty years: What can we do without 'large group' assumption*
7ème Conférence Euro-Africaine en Finance et Economie (CEAFE 2018), Carthage, Tunisie, June 2018
Summer Workshop in Economic Theory (SWET 2018), Université Paris 1 Panthéon-Sorbonne, France, June 2018
❯ *Some remarks on Bayesian mechanism design*
14th Meeting of the Society for Social Choice and Welfare, Seoul, South Korea, June 2018
❯ *Enlarging the collective model of household behavior: A revealed preference analysis*
Family Inequality Workshop Spring 2018, KU Leuven, Belgium, June 2018

Julio Davila

❯ *On the effects of private capital falling into the public domain*
12th REDg - Dynamic General Equilibrium Macroeconomics Workshop, Universidad Carlos III de Madrid, Spain, September 2017
University of California at Davis, USA, November 2017
❯ *Optimal human capital bequeathing*
ASSET Meeting of the Southern European Association for Economic Theory, Algiers, Algeria, October 2017
Society for Advancement of Economic Theory, Academia Sinica, Taipei, Taixan, June 2018
European Workshop on General Equilibrium Theory, Centre d'Economie de la Sorbonne, Paris, France, June 2018
European Meeting of the Econometric Society, Universität zu Köln, Germany, August 2018
❯ *Property rights and long-run capital*
CRETA Fiscal Policy Conference, University of Warwick, United Kingdom, March 2018
❯ *Optimal bequests and education*
Kyoto Institute for Economics Research, Japan, April 2018
Meeting of the Econometric Society, Fudan University, Shangai, China, June 2018

Daniel De Wolf

❯ *A comparison of distribution of energy between fuel cell electrical vehicles and battery electrical vehicles in Europe*
International Conference on Advanced Nanomaterials and Nanotechnology (ANM 2018), Aveiro, Portugal, July 2018
❯ *Generalized derivatives of the optimal value of a linear program with respect to matrix coefficients*
29th European Conference on Operational Research (EURO 2018), Valencia, Spain, July 2018

Koen Decancq

❯ *Measuring social progress*
2018 Prioritiarianism in Practice Conference, Duke University, Durham, USA, October 2017
❯ *Measuring successful aging with respect for the preferences of older persons*
Belgian SHARE Users Workshop, Universiteit Antwerpen, Belgium, October 2017
5th International Workshop on the Socio-Economics of Ageing, University of Lisbon, Portugal, October 2017
❯ *Non-parametric well-being comparisons*
Workshop Freedom, Preferences and Well-being, KU Leuven, Belgium, November 2017
University of Umeå, Sweden, January 2018
KU Leuven, Belgium, February 2018

Pierre Dehez

❯ *Approval voting and Shapley ranking*
Università Pisa, Italy, April 2018
7ème Conférence Euro-Africaine en Finance et Economie (CEAFE 2018), Tunis, Tunisia

Justin Delloye

❯ *Homothetic scaling of urban land use and population density profiles in monocentric models*
European Colloquium on Theoretical and Quantitative Geography (ECTQG 2017), York, United Kingdom, September 2017
64th Annual North American Meetings of the Regional Science Association International, Vancouver, Canada, November 2017

❯ *Expected dynamic trajectories of population distribution in core-periphery models*
64th Annual North American Meetings of the Regional Science Association International, Vancouver, Canada, November 2017

❯ *From individual relocation choices to the collective spatial dynamics: A general model with application to economic geography*
Annual Meeting of the American Association of Geographers, New-Orleans, USA, April 2018

Cyrille Dossougoin

❯ *Sovereign risk spillovers and cross-border financial positions*
17th International Workshop on Spatial Econometrics and Statistics, Dijon, France, May 2018

Olivier Finance

❯ *How far has come the European integration in shaping a unified system of cities?*
Annual Meeting of the American Association of Geographers, New-Orleans, USA, April 2018

❯ *Les interactions entre territoires révélées par les déplacements des camions en Belgique : caractérisation par transformation de traces GPS en matrices origine-destination*
1ères Rencontres Francophones Transport Mobilité, Vaulx-en-Velin, France, June 2018

Martin Frohn

❯ *Optimizing over lattices of unrooted binary trees. Part I. Foundations*
23rd International Symposium on Mathematical Programming (ISMP 2018), Bordeaux, France, July 2018

Yérali Gandica

❯ *Financial institutions vulnerability: Assessing the role of intra and inter-community dependences* (poster session)
International School and Conference on Network Science (NetSci 2018), Paris, France, June 2018

François Glineur

❯ *Performance estimation of first-order methods*
INRIA, Grenoble, France, November 2017
Optimization for Learning Workshop 2018, Pontificia Universidad Catolica de Chile, Santiago, Chile, January 2018

❯ *Extending performance estimation beyond the exact and convex setting*
23rd International Symposium on Mathematical Programming (ISMP 2018), Bordeaux, France, July 2018

Andras Gregor

❯ *The effects of electoral formula on public finances. Evidence from Hungarian municipalities*
Ph.D Seminar, Aix-Marseille School of Economics, France, February 2018
Augustin Cournot Doctoral Days (ACDD), Strasbourg, France, May 2018

❯ *The effect of political alignment on municipal finances. Natural experiment from Hungary*
The 2018 Meeting of the European Public Choice Society, Università cattolica del Sacro Cuore, Roma, Italy, April 2018

Madeleine Guyot

❯ *Multiple fabric assessment: Application to the case of Brussels*
Annual Meeting of the American Association of Geographers, New-Orleans, USA, April 2018

Thuc Huan Ha

❯ *Scraps collection for recycling, how far should we go ?*
4th FAERE Annual Conference, Nancy, France September 2017
International Conference on Environmental Economics, A Focus on Natural Resources, Université d'Orléns, France, April 2018
16th Annual International Industrial Organisation Conference (IIOC), Indiana, USA, April 2018

> *Servitization as a sustainable business model, an economic analysis*
  2018 Public Economic Theory Conference (PET2018), Hue, Vietnam, June 2018
  Vietnam Economist Annual Meeting, Foreign Trade University, Hanoi, Vietnam, June 2018

Thomas Hacardiaux

> *Assessing collaboration in supply chains*
  32nd Annual Conference of the Belgian Operational Research Society (ORBEL 32), Liège, Belgium
> *Assessing the environmental benefits of horizontal cooperation in logistics*
  EWG-ORD 2018 Workshop: OR for Sustainable Development, Madrid, Spain, July 2018
> *Evaluating horizontal cooperation in supply chains*
  29th European Conference on Operational Research (EURO 2018), Valencia, Spain, July 2018

Christian Hafner

> *Testing for bubbles in cryptocurrencies with time-varying volatility*
  Séminaire de Statistique et Econométrie, Ecole d'Economie d'Aix-Marseille, France, April 2018
  Big Data in Financial Markets, University of Cambridge, United Kingdom, May 2018
> *Negative skewness of asset returns with positive time-varying risk premia*
  Time Series Analysis of Higher Moments and Distributions of Financial Data, The Hong Kong University of Science and Technology, Hong Kong, May 2018
> *Monthly art market returns*
  11th Annual Meeting of the Society for Financial Econometrics (SOFIE 2018), Università della Svizzera Italiana, Lugano, June 2018

Jean Hindriks

> *Pension reform in Belgium*
  50th Anniversary of the Belgian Social Security, Bruxelles, Belgium, October 2017
  AG Insurance , Charleroi and Liège, Belgium, November 2017
> *The School of Opportunity*
  European Commission Conference "Empowering Schools", Bruxelles, Belgium, November 2017
  KU Leuven, Belgium, November 2017
> *Ecole de la réussite*
  Cabinet du Minsitre de l'Enseigement de Marie-Martine Schijns, Bruxelles, Belgium, December 2017
  Commission Parlementaire Mixte FWB-Canada, Bruxelles, Belgium, March 2018
  Centre Jean Gol, Bruxelles, Belgium, February 2018
> *Social security and the future of work*
  International Association of Social Security, Bruxelles, Belgium, March 2018
> *Eclairage sur une réforme en cours : la réforme générale des retraites en Belgique*
  Colloque du Sénat sur la Réforme des Retraites, Bruxelles, Belgique, April 2018
> *Heterogeneity in the tax pass-through to spirit retail prices: Evidence from Belgium*
  17èmes Journées Louis-André Gérard-Varet, Aix-en-Provence, France, June 2018

Johannes Johnen

> *Browsing versus studying offers*
  CEREC Workshop, Université Saint-Louis, Bruxelles, Belgium, October 2017
  Solvay Brussels School, Belgium, January 2018
> *Browsing versus studying offers: A pro-market case for regulation*
  Centre for Experimental Social Sciences, Flame University, Pune, India, April 2018
  Workshop on Behavioral Economics 2018, Frankfurt School of Finance and Management, Germany, April 2018
  Economic Theory Lunchtime Workshop, Nuffield College, University of Oxford, United Kingdom, June 2018
> *Screening procrastinators with automatic-renewal contracts*
  Workshop on Behavioral Industrial Organization, Tinbergen Institute, The Netherlands, June 2018

Dimitra Kyriakopoulou

> *Exponential-type GARCH models with linear-in-variance risk premium*
  Inaugural Conference of the HeiKaMEtrics Network, Universität Heidelberg, Germany, September 2017
  25th Annual Meeting of the Belgian Statistical Society, Leuven, Belgium, October 2017

11th International Conference on Computational and Financial Econometrics (CFE 2017), University of London, United Kingdom, December 2017

28th EC² Conference on Time-Varying Parameter Models, Amsterdam, The Netherlands, December 2017

Young Researchers Day, ISBA, UCLouvain, Belgium, March 2018

ECARES, Université libre de Bruxelles, Belgium, April 2018

EISTI, Ecole d'Ingénieurs Mathématiques - Informatique, Paris, France, May 2018

University of Cyprus, Nicosie, Cyprus, May 2018

11th Annual Meeting of the Society for Financial Econometrics (SOFIE 2018), Università della Svizzera Italiana, Lugano, June 2018

> *Negative skewness of asset returns with positive time-varying risk premia*
International Conference "Quantitative Finance and Financial Econometrics" - QFFE 2018, Université d'Aix-Marseille, France, May-June 2018

Marie-Louise Leroux

> *Long-term care insurance: Knowledge barriers, risk perception and adverse selection*
CESifo Area Conference on Public Sector Economics, Münich, Germany, April 2018
58ème Congrès de la Société Canadienne de Science Economique, Université du Québec à Montréal, Canada, May 2018

> *Premature deaths, accidental bequests and fairness*
52nd Annual Conference of the Canadian Economics Association, McGill University, Montréal, Canada, June 2018

François Maniquet

> *Poverty measurement (in India): Defining group-specific poverty lines or taking preferences into account?*
University of Leeds, United Kingdom, October 2017

> *Condorcet consistency in large elections with boundedly rational voters*
Indian Statistical Institute, Delhi, India, March 2018

> *Preference responsibility vs poverty reduction in the taxation of labor incomes*
University of Manchester, United Kingdom, March 2018
Public Economics Workshop, Delhi School of Economics, India, March 2018
14th Meeting of the Society for Social Choice and Welfare, Seoul, South Korea, June 2018

Ana Mauleon

> *Matching with myopic and farsighted players*
1st Spain-Japan Meeting on Economic Theory, Universidad Pablo de Olavide, Sevilla, Spain, October 2017
UECE Lisbon Meetings 2017: Game Theory and Applications, Unisersidade de Lisboa, Portugal, November 2017
3rd Workshop Knowledge, Innovation and Internationalization Strategies (KIIS III), Valencia, Spain, November 2017
University of Kent, Canterbury, United Kingdom, February 2018
Université de Paris 1 Panthéon-Sorbonne, France, March 2018
3rd Bilbao-Norwich-Malaga Workshop on Economics of Networks, Bilbao, Spain, June 2018

Ilyes Mezghani

> *Coordination schemes for the integration of transmission and distribution systems operations*
6th BAEE Research Workshop on Energy Economics, KU Leuven, Belgium, November 2017

> *A generalized Nash equilibrium analysis of electric power transmission-distribution coordination*
8th IEEE Benelux Young Researchers Symposium, Université libre de Bruxelles, Belgium, May 2018
9th International Conference on Future Energy Systems, Karlsruhe, Germany, June 2018

Gaëtan Montero Redondo

> *On urban boundaries: 3 methods, 3 solutions for Brussels*
European Colloquium on Theoretical and Quantitative Geography (ECTQG 2017), York, United Kingdom, September 2017
7th Belgian Geography Day, Université de Liège, Belgium, November 2017

> *Street networks' intersections and built-up footprint: Emergence of universal properties to delineate cities. The case of Brussels*
Annual Meeting of the American Association of Geographers, New-Orleans, USA, April 2018

Yuting Mou

> *A bi-level optimization formulation of priority service pricing*
29th European Conference on Operational Research (EURO 2018), Valencia, Spain, July 2018

Yurii Nesterov

- *Efficient implementation of the third-order methods*
  23rd International Symposium on Mathematical Programming (ISMP 2018), Bordeaux, France, July 2018

Anthony Papavasiliou

- *An asynchronous distributed algorithm for solving stochastic unit commitment*
  Massachusetts Institute of Technology, Boston, USA, September 2017
- *Coordination schemes for the integration of transmission and distribution system operations*
  INFORMS, Houston, USA, October 2017
- *Application of SDDP to the real-time dispatch of storage under renewable supply uncertainty*
  INFORMS, Houston, USA, October 2017
- *Market design for a decarbonized electricity market*
  Eurelectric Internal Workshop on Design of the Electricity Markets of the Future, Brussels, Belgium, October 2017
- *Remuneration of flexibility through scarcity pricing*
  2nd Complex Energy Systems Workshop, University of Chile, Santiago, Chile, November 2017

Pierre Pestieau

- *Can we afford to age?*
  World Bank, Washington, USA, November 2017
- *For a sustainable welfare state*
  Institut National de la Statistique et des Etudes Economiques, Luxembourg, Luxembourg, January 2018
- *Belgian and French pensions. A tale of two countries*
  The New World of Pensions and Retirement: An International Economic and Psychological Perspective, Ben-Gurion University of the Negev, Beer Sheva, Israël
- *Premature death, accidental bequests and fairness*
  PSE CESifo Conference, München, Germany, April 2018
  74th Annual Congress of the International Institute of Public Finance, Tampere, Finland, August 2018

Erika Pini

- *Economic inequality, political polarization and voter turnout*
  6th International Ph.D. Meeting in Economics, University of Macedonia, Thessaloniki, Greece, July 2018

José Miguel Quesada Pérez

- *Considering complex routes in the express shipment service network design problem*
  32nd Annual Conference of the Belgian Operational Research Society (ORBEL 32), Liège, Belgium, February 2018
- *Benefits and challenges of including complex routes when solving the multi-hub express shipment service network design problem*
  2018 INFORMS International Conference, Taipei, Taiwan, June 2018

Simon Schopohl

- *Competition for leadership in teams*
  CEREC Workshop in Economics, Université Saint-Louis, Bruxelles, Belgium, October 2017 and March 2018
  UECE Lisbon Meetings 2017: Game Theory and Applications, Universidade de Lisboa, Portugal, November 2017
  23rd Coalition Theory Network Workshop, Universiteit Maastricht, The Netherlands, April 2018
  4th Annual Conference on Network Science and Economics, Vanderbilt University, Nashville, USA, April 2018
- *Who matters in coordination problems on networks?*
  29th Stony Brook International Conference on Game Theory in Stony Brook, USA, July 2018

Jose Sempere-Moneris

- *Relative R&D intensity for exporters in an industry with spillovers*
  XXXII Jornadas de Economia Industrial, Universidad de Navarra, Spain, September 2017
- *High speed trains and airlines in a transport network: Price competition and infrastructure charges pricing*
  Annual Conference of the International Transportation Economics Association (ITEA), Hong Kong Polytechnic University, China, June 2018

Valerio Serse

❯ *Assessing the impact of sugar taxation on cola demand using supermarket scanner data*
Data Science for Social Good Conference, University of Chicago, USA, September 2017
27th European Childhood Obesity Group Annual Congress, Roma, Italy, November 2017

Robert Somogyi

❯ *Zero-rating and net neutrality*
32 Jornadas de Economía Industrial, Pamplona, Spain, September 2017
University of Groningen, The Netherlands, September 2017
Toulouse School of Economics, France, December 2017
Université de Nice Sophia-Antipolis, France, April 2018
International Conference on Public Economic Theory (PET 2018), Hue, Vietnam, June 2018
9th Workshop on Institution, Individual Behavior and Economic Outcomes, Alghero, Italy, June 2018

❯ *Prioritization vs zero-rating: Quality and financial discrimination on the internet*
10th Paris Conference on Digital Economics, Telecom ParisTech, France, April 2018
45th EARIE Conference Athens, Greece

Yu Sun

❯ *Uncertainty and dynamics in environmental economic modeling*
EAERE-ETH European Winter School, ETH Zürich, Switzerland, February 2018

Jean-Sébastien Tancrez

❯ *Flexibility mechanisms for the design of robust supply chains*
29th European Conference on Operational Research, Valencia, Spain, July 2018

Joe Tharakan

❯ *What is behind the purchase decision of long term care insurance? A dynamic discrete choice approach*
International Conference on Public Economic Theory (PET 2018), Hue, Vietnam, June 2018

Isabelle Thomas

❯ *Big data in urban geography: A smokescreen?*
6ème Congrès EUGO, Bruxelles, Belgium, September 2017

❯ *Lions and butterflies facing geography of cities*
ERC GeoDiverCity International Workshop: Theories and Models of Urbanization, Paris, France, October 2017

❯ *Structures urbaines à la lumière des communications sociales*
La Nuit du Savoir, Bruxelles, Mars 2018

❯ *Interaction fields and ICT data: Rediscovering (transport) geography?* Fleming Lecture
Annual Meeting of the American Association of Geographers, New-Orleans, USA, April 2018

Sonia Trabelsi

❯ *On measuring green: Comparing four databases in Namur*
European Colloquium on Theoretical and Quantitative Geography (ECTQG 2017), York, United Kingdom, September 2017
Annual Meeting of the American Association of Geographers, New-Orleans, USA, April 2018

Mathieu Van Vyve

❯ *An extended formulation of the convex recoloring problem on a tree*
22nd Combinatorial Optimization Workshop, Aussois, France, January 2018

Vincent Vannetelbosch

❯ *R&D network formation with myopic and farsighted firms*
CEREC Workshop in Economics, Université Saint-Louis, Bruxelles, October 2017
Hamburg Universität, Germany, October 2017

UECE Lisbon Meetings 2017: Game Theory and Applications, Universidade de Lisboa, Portugal, November 2017
Paris School of Economics, Paris, France, March 2018
Universität Freiburg, Switzerland, May 2018

> *Network formation games: Theory, experiments and applications*
ExSide Research Training School, Université Paris 1 Panthéon-Sorbonne, France, March 2018

Frédéric Vrins

> *CVA wrong-way risk via change of measure: Theory, implementation and performance analysis*
Actuarial and Financial Mathematics Conference (AFMATH 2018): Interplay between Finance and Insurance, Brussels, Belgium, Febuary 2018

> *CVA wrong-way risk via change of measure*
Séminaire de Mathématiques Financières et Probabilités Numériques, Université Paris 1 Panthéon-Sorbonne, France, March 2018
GERAD, HEC Montréal, Canada, April 2018

> *A dynamic stochastic recovery rate model with applications to credit derivatives pricing*
Quantitative Finance and Risk Analysis Symposium 2018, Monash Business School, Greece, June 2018

Laurence Wolsey

> *On constant capacity flow cover inequalities: A variant of lot-sizing*
22nd Combinatorial Optimizaiton Workshop, Aussois, France, January 2018

> *Cutting planes and simple MIPs*
2018 Optimization Days, HEC Montréal, Canada, May 2018

Dagmara Wrzesinska

> *The geography of road cabotage in Europe*
24th EURO Working Group on Locational Analysis, Edinburgh, United Kingdom, May 2018

5

PEOPLE

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Management

Philippe CHEVALIER
President

Isabelle THOMAS
Research Director

Francisco SANTANA FERRA
Executive Director

Faculty

Per Agrell

- **Current positions:** Professor, UCLouvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; Dean of the Faculty, Louvain School of Management (UCLouvain) as from September 2018.
- **Fields of interest:** **Supply chain management, energy economics, operations research**.
- **Education:** Ph.D. in Production Economics, Linköping University, Sweden, 1995, MSc in I.E.O.R, University of Massachusetts, USA, 1991.
- **Former positions over the last five years:** Adjunct Professor, Norwegian School of Economics, Department of Management Science, 2012-2017.
- **Current editorial activities:** Board Member, *International Journal of Production Economics* and *Business Research*.

Paul Belleflamme

- **Current positions:** Professor, UCLouvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium (on leave 2017-2018); Professor, Aix-Marseille Université, France (2017-2018); Visiting Professor, Kedge Business School (2017-2018) and Imperial College School of Business London (February 2017), Research Affiliate, Center for Economic Studies and Ifo Institute for Economic Research.
- **Fields of interest: Microeconomics, industrial organization, and innovation.**
- **Education:** Docteur en sciences économiques, UNamur, Belgium, 1997.
- **Former positions over the last five years:** Co-director, CORE, UCLouvain, 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:** Co-editor, *E-conomics,* Associate Editor: *Journal of Economics* and *Regards Economiques*.

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- **Fields of interest: Environmental economics.**
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- **Former positions over the last five years:** Visiting Professor, European University of St Petersburg, Russia, 2009–2015.

Daniele Catanzaro

- **Current position:** Assistant Professor, UCLouvain (Louvain School of Management, Mons & Louvain-la-Neuve campus).
- **Fields of interest: Discrete optimization, mixed integer programming, computational complexity, combinatorial and graph-theoretic algorithms, medical bioinformatics.**
- **Education:** Docteur en sciences informatiques (Operations Research), Université libre de Bruxelles, 2008.
- **Former positions over the last five years:** Chargé de Recherches at the Belgian National Fund for Scientific Research (FRS-FNRS), 2009-2013; Visiting researcher at the Tepper School of Business, Carnegie Mellon University, USA (2010-2011) and Department of Computational Biology, Carnegie Mellon University, USA (2012); Assistant Professor at Universiteit Groningen, the Netherlands, 2013-2014.
- **Prizes & Awards:** Prize Fonds Brachet funded by the Institute of Medicine and Molecular Biology (IBMM) of the Université libre de Bruxelles, Belgium, 2007; U.S. National Institutes of Health awards 1R01CA140214 and 1R01AI076318; Belgian American Educational Foundation (BAEF) Honorary Fellowship 2010-2011 for biomedical engineering research in the USA.

Philippe Chevalier

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- **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.
- **Current editorial activities:** Associate Editor, *Management Science*.

Julio Dávila

- **Current positions:** Professor, UCLouvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium; Directeur de Recherches CNRS, Paris, France (on leave).
- **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.
- **Former positions over the last five years:** President, Ecole d'Economie de Louvain (UCLouvain); Fernand Braudel Fellow, European University Institute, Italy, 2016; Co-director, CORE, UCLouvain, Belgium, 2012–2014.
- **Current editorial activities:** Associate Editor, *Economics Bulletin*; Editorial Advisor, *Canadian Journal of Economics.*

Zhengyuan Gao

- **Current position:** Assistant Professor, UCLouvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.
- **Fields of interest: Econometrics and economic theory**
- **Education:** Ph.D. in Econometrics, Universiteit Amsterdam, The Netherlands, 2012.
- **Former positions over the last five years:** Visiting Assistant Professor at University of Iowa, USA, 2012–2014; Associate Professor at Southwestern University of Finance and Economics, China, 2012–2014.

François Glineur

- **Current positions:** Professor, UCLouvain (Ecole Polytechnique de Louvain, INMA), Belgium; Member of the Institute of Technologies, Electronics and Applied Mathematics (ICTEAM, UCLouvain); Vice-dean: Ecole Polytechnique de Louvain.
- **Fields of interest: Optimization: algorithms, modelling and applications, nonnegative matrix factorization**
- **Education:** Docteur en sciences appliquées, Faculté polytechnique de Mons (Université de Mons), Belgium, 2001.
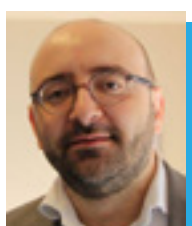
Christian Hafner

- › **Current positions:** Professor, UCLouvain (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.
- › **Former position over the last five years:** President, Louvain School of Statistics, Biostatistics and Actuarial Science, UCLouvain, Belgium, 2010-2015.
- › **Current editorial activities:** Associate Editor, *Studies in Nonlinear Dynamics and Econometrics, Journal of Business and Economic Statistics.*

Jean Hindriks

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- › **Fields of interest: Public economics, health, education and welfare**
- › **Education:** Docteur en sciences économiques, UNamur, Belgium, 1996.
- › **Current Editorial Activities:** Associate Editor, *Journal of Public Economic Theory*.

Leonardo Iania

- › **Current positions:** Assistant Professor, UCLouvain (Louvain School of Management, Louvain-la-Neuve campus); President of LFIN (UCLouvain); Research Affiliate, National Bank of Belgium, Bruxelles, Belgium; Visiting Professor, KU Leuven, Belgium.
- › **Fields of interest: Financial markets, money and interest rates, monetary policy, central banking, and the supply of money and credit**
- › **Education:** Ph.D in Econometrics, KU Leuven, Belgium, 2012.
- › **Former position over the last five years:** Post-doctoral position, Universiteit Maastricht, The Netherlands, 2015-2016.

Johannes Johnen

- › **Current position:** Assistant Professor, UCLouvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.
- › **Fields of interest: Behavioral economics, industrial organization, microeconomic theory.**
- › **Education:** Ph.D. in Economics, European School of Management and Technology, Berlin, Germany, 2016.
- › **Prizes & Awards:** Young Economists' Essay Award (YEEA) at the EARIE Conference in Athens 2018.

Bart Jourquin

- › **Current positions:** Professor, UCLouvain (Louvain School of Management, Mons campus), Belgium; President, Conseil de Faculté, Louvain School of Management (UCLouvain).
- › **Fields of interest: Operations Research, transport economics, transport modelling.**
- › **Education:** Ph.D. in Applied Economics, Facultés Universitaires Catholiques de Mons, Belgium, 1995.

François Maniquet

- › **Current position:** Professor, UCLouvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium; sabbatical leave, University College London, 2017-2018.
- › **Fields of interest: Poverty, public economics and welfare economics.**
- › **Education:** Docteur en sciences économiques, UNamur, Belgium, 1994.
- › **Former positions over 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.
- › **Current editorial activities:** Associate Editor, *Social Choice and Welfare*.

Ana Mauleon

- **Current positions:** Maître de Recherches, Fonds National de la Recherche Scientifique (FNRS), Belgium; Associate Professor, Université Saint-Louis (Faculté des sciences économiques, sociales et politiques), Bruxelles, Belgium; Director of the Center for Research in Economics (CEREC), Université Saint-Louis, Bruxelles, Belgium.
- **Fields of interest: Game theory, bargaining theory and matching theory, group formation, industrial organization, network theory.**
- **Education:** Ph.D. in Economics, Universidad del País Vasco, Bilbao, Spain, 1997.
- **Former positions over the last five years:** Co-director of the Center for Research in Economics (CEREC), 2008–2015, Université Saint-Louis, Bruxelles, Belgium.

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- **Current positions:** Professor, UCLouvain (Ecole Polytechnique de Louvain, INMA), Belgium; Member of the Institute of Technologies, Electronics and Applied Mathematics, Mathematical engineering division (UCLouvain).
- **Fields of interest: Optimization and operations research.**
- **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.*

Anthony Papavasiliou

- **Current position:** Associate Professor, UCLouvain (Ecole Polytechnique de Louvain, INMA), Belgium.
- **Fields of interest: Optimization techniques, computational techniques, energy markets.**
- **Education:** Ph.D. in Industrial Engineering and Operations Research, University of California at Berkeley, USA, 2011.
- **Former positions over the last five years:** Postdoctoral Researcher: University of California at Berkeley, USA, 2011–2012; Consulting: ACER/CEER, ENTSO-E, Belgian regulatory commission of electricity and gas, N-SIDE, Pacific Gas and Electric, Quantil, Sun Run, Holder of the Engie Faculty Chair in Quantitative and Energy Economics, 2013-2015.
- **Prizes & Awards:** Best publication in Energy, INFORMS, 2015; Bauchau Prize, 2017; Francqui research professor, 2018-2021.
- **Current editorial activities:** Associate Editor, *IEEE Transactions on Power Systems and Operations Research.*

Mikael Petitjean

- **Current positions:** Associate Professor, UCLouvain (Louvain School of Management, Louvain Finance Center), Belgium; Associate Professor, IESEG School of Management, Lille, France.
- **Fields of interest: Asset and risk management, financial modeling and forecasting, financial market microstructure, ethics in finance, structured products, fiscal policies and financial regulation.**
- **Education:** Docteur en sciences de gestion, UNamur, Belgium, 2006.
- **Previous positions in the last five years:** Assistant Professor, UCLouvain (Louvain School of Management, Mons & Louvain-la-Neuve campus), Belgium, 2011-2014.

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- **Fields of interest: Supply chain management, operations research, supply chain network design, stochastic modelling**
- **Education:** Docteur en sciences de l'ingénieur, UCLouvain, Belgium, 2009.

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- **Fields of interest: Quantitative and economic geography.**
- **Education:** Docteur en sciences géographiques, UCLouvain, Belgium, 1984; agrégée de l'enseignement supérieur, UCLouvain, Belgium, 2000.

- **Prizes & Awards:** Prix Aydalot in Regional Science, 1989; BMW Scientific Award, 2001; Prix de la Compagnie du Bois Sauvage 2011-2012; Francqui Chair 2015, Universiteit Antwerpen; Distinguished speaker, Transport Lecture Series 2015, The University of Hong Kong, 2015; Edward L. Ullman Award 2017; Member of Academia Europaea. Board Member of ASRDLF, ERSA, FRS-FNRS, Belgian National Committee of Geography, Belgian National Council of Statistics.
- **Current editorial activities:** Editorial Board Member, e-*Belgéo*, *Cybergéo*, *L'Espace Géographique*, and *Journal of Geographical Systems*.

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- **Education:** Docteur en sciences statistiques, UCLouvain, Belgium, 2003; HDR en économétrie, Université de Toulouse 1, France, 2008.
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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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- **Fields of interest: Discrete optimization, computational economics, operations research.**
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- **Fields of interest: Stochastic processes and mathematical finance.**
- **Education:** Docteur en sciences appliquées, UCLouvain, Belgium, 2007.

Emeriti

Luc Bauwens

- **Current position:** Professor Emeritus, UCLouvain, Belgium.
- **Fields of interest: Econometrics, statistics.**
- **Education:** Docteur en sciences économiques, UCLouvain, Belgium, 1983.
- **Prizes & Awards:** Leonard J. Savage Thesis Award, 1984; Francqui Chair, UNamur, Belgium, 2005–2006; Fellow of the Society for Financial Econometrics.
- **Current editorial activities:** Associate Editor, *Journal of Business and Economic Statistics*, *Journal of Financial Econometrics,* Board member, *Journal of Applied Econometrics.*
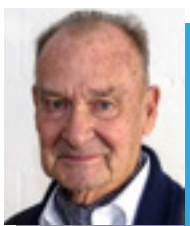
Claude d'Aspremont

- **Current position:** Professor Emeritus, UCLouvain, Belgium.
- **Fields of interest: Mathematical economics, social choice theory, mechanism design and game theory, and industrial organization.**
- **Education:** Ph.D. in Decision Sciences, Graduate School of Business, Stanford University (CA), USA, 1973.
- **Prizes & Awards:** Fellow of the Econometric Society, 1984; Francqui Prize, 1995; Doctor *Honoris Causa*, Université Louis Pasteur, Strasbourg, France, 2002; Founding Fellow of the Society for the Advancement of Economic Theory (SAET), 2011; President-elect of the Society for Social Choice and Welfare, 2016–2018.
- **Current editorial activities:** Associate Editor, *Journal of Public Economic Theory* and *Social Choice and Welfare*.

Pierre Dehez

- **Current position:** Professor Emeritus, UCLouvain, Belgium.
- **Fields of interest: Game theory and general equilibrium theory.**
- **Education:** Docteur en sciences économiques, UCLouvain (European Doctoral Program in Quantitative Economics), 1980.
- **Previous positions in the last five years:** Visiting Professor at University of Nancy, France and University of Pisa, Italy

Jacques Drèze

- **Current position:** Professor Emeritus, UCLouvain, Belgium.
- **Fields of interest: Economic theory and macroeconomics.**
- **Education:** Ph.D. in Economics, Columbia University, New York (NY), USA, 1958.
- **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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- **Former position over the last five years:** Visiting Professor, Università Sapienza di Roma, Italy, 2016.
- **Prizes & Awards:** Fellow of the Econometric Society, 1979; administrator of CEPREMAP, Paris, France; member of the Council of the European Economic Association, 1986–1989; Doctor *Honoris Causa*, Université d'Aix-Marseille II, France, 2003; Fellow of the European Economic Association, 2004.

Victor Ginsburgh

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- **Fields of interest: Microeconomics, economics and languages, economics of the arts.**
- **Education:** Docteur en sciences économiques, Université libre de Bruxelles, Belgium, 1972.
- **Prizes & Awards:** Francqui Chair, Université de Liège, Belgium, 1992–1993; President of the International Association of Cultural Economics, 2002–2004.
- **Current editorial activities:** Co-editor, *Journal of Wine Economics*.

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- **Fields of interest: programming: algorithmic and implementation issues, management and engineering applications of mathematical programming.**
- **Education:** Docteur en sciences appliquées, UCLouvain, Belgium, 1976.

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- **Prizes & Awards:** Elected Member of the International Statistical Institute; Elected Fellow of the International Society for Bayesian Analysis, Bernoulli Society, Société Belge de Statistique.
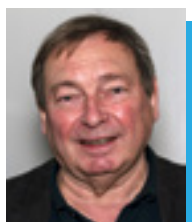- **Current editorial activities:** Associate Editor, *Statistica* and *International Econometric Review.*

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- **Education:** Docteur en sciences appliquées, UCLouvain, Belgium, 1980; agrégé de l'enseignement supérieur, UCLouvain, Belgium, 1995.

Pierre Pestieau

- **Current positions:** Professor Emeritus, Université de Liège, Belgium; Associate member, Paris School of Economics, France; CESIfo; and IZA Research Fellow.
- **Fields of interest: Public economics and population economics.**
- **Education:** Ph.D. in Economics, Yale University, New Haven (CT), USA, 1971.
- **Prizes & Awards:** Francqui Prize, 1989; AGF ASSUBEL Prize, 1995; Einaudi Chair in European Studies, Cornell University, Ithaca (NY), 1997; Prix Risque-Les Echos, 2006 and 2018; Honorary Degree Uppsala University, 2011 and Université de Neuchâtel, Switzerland, 2016.
- **Current editorial activities:** Associate-editor, *Journal of Public Economic Theory* and *Revue Française d'Économie.*

Léopold Simar

- **Current position:** Professor Emeritus, UCLouvain, Belgium.
- **Fields of interest: Mathematical statistics, nonparametric statistics, bootstrap, frontier estimation, production analysis.**
- **Education:** Docteur en sciences appliquées (mathématiques appliquées), UCLouvain, Belgium, 1974.
- **Former positions over the last five years:** Visiting Professor, Institut Français du Pétrole, Rueil, France, 1991–2013; University of Salento, Lecce, Italy, 2010–2018; University of Queensland, Brisbane, Australia, 2011-2016; Università degli Studi di Roma "La Sapienza", Italy, 2011–2018; Toulouse School of Economics, France, 2010–2018.
- **Prizes & Awards:** Chaire d'Excellence Pierre de Fermat, 2008-2009, Region Midi-Pyrénées, Toulouse School of Economics, France, 2013-2014 Messageri della Connoscenza, Italian Ministry of Research, University of Salento, Lecce, Italy; Elected Member of the International Statistical Institute; President of the Belgian Statistical Society, 1999-2002; Honorary Member of the Belgian Statistical Society; Fellow of the *Journal of Econometrics,* 2015; Econometric Theory, Multa Scripsit Award, 2016..
- **Current editorial activities:** Associate-editor, *Journal of Productivity Analysis.*

Yves Smeers

- **Current position:** Professor Emeritus, UCLouvain, Belgium.
- **Fields of interest: Computational economicsi and risk management in the electricity and gas industries.**
- **Education:** Ingénieur Physicien, Université de Liège, 1967, Master of Science (industrial administration), 1971; Ph.D. in Operations Research, Carnegie-Mellon University, Pittsburgh (PA), USA, 1972; Licencié en sciences économiques, UCLouvain, Belgium, 1973.
- **Former positions over the last five years:** Visiting Research Fellow, KAPSAR, Riyadh, Kingdom of Saudi Arabia, 2013-2015.
- **Prizes & Awards:** INFORMS Fellow, 2012.

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- **Fields of interest: INDUSTRIAL ORGANIZATION, INTERNATIONAL TRADE, ECONOMIC GEOGRAPHY.**
- **Education:** Docteur en sciences économiques, Université de Liège, Belgium, 1975.
- **Prizes & Awards:** Fellow of the Econometric Society, 1992; Fellow of the Regional Science Association International, 2003; Fellow of the European Economic Association, 2004; William Alonso Memorial Prize, 2004; Prix scientifique quinquennal Ernest-John Solvay (FNRS), 2005; European Prize in Regional Science, 2007; Doctor *Honoris Causa,* 4 universities.

- ▸ **Former positions over 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.
- ▸ **Current editorial activities:** Associate Editor, *International Journal of Economic Theory, Journal of Economic Geography, Journal of Economics and Management Strategy* and *Regional Science and Urban Economics.*

Henry Tulkens

- ▸ **Current position:** Professor Emeritus, UCLouvain, Belgium.
- ▸ **Fields of interest: Economic theory, public economics.**
- ▸ **Education:** Dr. jur., KU Leuven, Belgium, 1960; Docteur en sciences économiques, UCLouvain, Belgium, 1968.
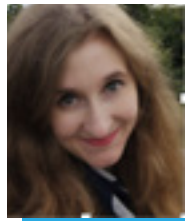
Laurence Wolsey

- ▸ **Current position:** Professor Emeritus, UCLouvain, Belgium.
- ▸ **Fields of interest: Combinatorial optimization, integer programming, mixed integer programming, polyhedral combinatorics, branch-and-bound, branch-and-cut.**
- ▸ **Education:** Ph.D. in Mathematics, Massachusetts Institute of Technology, Cambridge (MA), USA, 1969.
- ▸ **Prizes & Awards:** Orchard-Hays Prize (with T.J. Van Roy) awarded by the Mathematical Programming Society, 1988; Lanchester Prize (with G.L. Nemhauser) awarded by the Operations Research Society of America, 1989; Euro Gold Medal awarded by the European Association of Operations Research Societies, 1994; Dantzig Prize of the Mathematical Optimization Society, 2012; John von Neumann Theory Prize (INFORMS) (with G.L. Nemhauser), 2012; Glover-Klingman Prize (with A. Agra, H. Anderson and M. Christiansen) for the best paper of the year published in Networks, 2013.

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assistant

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FUNDING

FUNDING

UCLouvain Funding

FSR PROJECTS

> **Application of High Performance Computing in the Short-term Scheduling of Electric Power Systems under Uncertainty**
> (October 2013-February 2018)

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 Papavasiliou (CORE, UCLouvain) is the promoter of this project. Ignacio Aravena (CORE, UCLouvain) works under the scope of the project.

> **Conic Martingales and Credit Risk Modeling**
> (October 2017-November 2018)

Most often, credit risk is handled by modeling default time as first jump of Lévy processes governed by positive stochastic intensity processes. This specific setup corresponds to the standard Cox framework. However, the Doob-Meyer decomposition of the Azéma supermartingale - which ultimately needs to be modeled in the intensity approach- reveals that Cox setup is just one particular case. This is a sound motivation for investigating alternative classes of default models as conic martingles modelling.

Frédéric Vrins (CORE and LFIN, UCLouvain) is the promoter of this project. Cheikh Mbaye (CORE, UCLouvain) works under the scope of the project cojointly financed by a FSR project and the National Bank of Belgium.

> **Greed, Majorization and Lattices of Unrooted Binary Trees**
> (October 2017-September 2019)

We aim to extend Stott-Parker and Ram's results on greed, majorization and Huffman coding to phylogenetics. Specifically, we want to show that the space of all unrooted binary trees (or phylogenies) for a finite set of taxa defines a lattice, which orders phylogenies by their imbalance. By representing phylogenies as path-length sequence collections, we wish to prove that the imbalance ordering is closely related to a majorization ordering on real-valued sequences, which in turn induces a majorization lattice over which a number of functions of path-length sequences of phylogenies (including, among others, versions of the objectives of the Huffman Coding Problem and of the Balanced Minimum Evolution Problem) may be submodular and monotone. In this way, by appropriately combining these properties with the presence (or absence) of an isomorphism between the two lattices, we will be able to either justify the polynomial-time solvability of specific optimization problems over phylogenies or reveal structural characteristics at the core of their NP-hardness.

Daniele Catanzaro (CORE, UCLouvain) is the promoter of this project. Martin Frohn (CORE, UCLouvain) works on the project.

> **The Economics of Zero-rating and Net Neutrality**
> (October 2017-September 2018)

The purpose of this project is twofold. Firstly, it aims to investigate in-depth the trade-offs surrounding the business practice of zero-rating and their effect on consumer surplus and social welfare. The mobile internet market is a two-sided market, therefore endogenizing the monthly subscription fees end user pay has important consequences for the market outcome and social welfare. Secondly, the project aims to contrast and compare zero-rating and paid prioritization. Both commercial practices violate the principle of net neutrality: he former is a form of financial discrimination, whereas the latter is discrimination in quality. They have a different impact both on consumer welfare and internet service providers' incentives to invest in infrastructure, which has potentially important policy implications.

Paul Belleflamme (CORE, UCLouvain) is the promoter of this project. Robert Somogyi (CORE, UCLouvain) works on the project.

> **Incentive for Advancing to Step 2 of the ERC Starting Grant**
(September 2017-October 2019)

The project is concerned with the analysis of flow-based market coupling, which is a market design for allocating scarce transmission capacity which was recently adopted in the Central Western European electricity market. The work focuses on comparing flow-based market coupling (FBMC) to a nodal electricity market design by using a novel methodology to characterize the best-case performance of FBMC which relies on an implicit characterization of the flow-based region, and which does not depend on arbitrary parameter settings that are typically chosen by transmission system operators in a non-transparent fashion. This opens up the path for an extensive policy analysis of FMBC and the possible gains of transitioning directly to nodal pricing in the European market coupling design..

This incentive (FSR-ERC grant) is awarded to Anthony Papavasiliou (CORE, UCLouvain). Quentin Lété (CORE, UCLouvain) will work on this project as from September 2018.

FONDATION LOUVAIN

> **Coalescens: Digital Technology Serving Humanity Coalescens**
(October 2017-September 2018)

Determining the sequence of genetic events that controls intra-cellular heterogeneity could significantly improve the understanding of tumor progression, suggest new prevention methods and stimulate the development of novel and more effective treatments. The project COALESCENS constitutes the first stage of an ambitious long-term multidisciplinary research program that aims to address this major challenge.

COALESCENS arises from the convergence of computer science, combinatorial optimization, algebraic combinatorics, phylogenetics of cancer, and is based on a pilot study aiming to investigate the combined use of integer programming and next generation sequencing techniques to predict tumor progression in a patient. Preliminary experiments carried out on a patient cohort affected by invasive ductal carcinoma of the breast have yielded encouraging results, by revealing the existence of both common and unknown sequences of genetic changes characterized by specific evolutionary traits. COALESCENS aims to significantly extend and deepen these preliminary results, by (i) characterizing the sequence of genetic events controlling progression of a specific tumor in a patient and (ii) classifying these sequences across large patient cohorts. COALESCENS will provide new insights into tumor progression and will pave the way for the development of new diagnostic tools that will be of fundamental assistance in clinical decision-making.

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

> **Color Power**
(October 2015-September 2021)

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 (CORE, UCLouvain) and Anthony Papavasiliou (CORE, UCLouvain). Céline Gérard (CORE, UCLouvain) and Yuting Mou (CORE, UCLouvain) work under the scope of this project.

> **Kronos Group Chair in Strategic Sourcing and Procurement**
(September 2017-September 2020)

The Kronos Group Chair "Strategic Sourcing and Procurement" is the fruit of a collaboration between Kronos Group and Louvain School of Management of the UCLouvain. The objective of the Chair is to promote research and education in the sourcing and procurement domain, contributing to fostering the profession to continue its transformation into a value creating and strategic profession. The Chair is unique for Belgium and also launching a unique Master's level specialization in sourcing and procurement in Belgium, integrated in Louvain School of Management. The research in the Chair aims at empirical, economic and strategic studies of procurement under transformation, in particular the innovative, ethical and environmental dimensions of the area.

Per Agrell (CORE, UCLouvain), Constantin Blome (CORE, UCLouvain) and Philippe Chevalier (CORE, UCLouvain) coordinate this project sponsored by the Kronos Group, Belgium.

❯ ## Modeling Flexibility at Sub-hourly Time Scales
(February 2016-October 2020)

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 Papavasiliou (CORE, UCLouvain).

❯ ## Using Analytics and Optimization to Enable Africa to Leapfrog to Energy
(April 2018-December 2020)

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 Papavasiliou (CORE, UCLouvain). Daniel Girardot (CORE, UCLouvain) works on this project.

MOVE-IN LOUVAIN

❯ ## Higher Order Expansions in Estimation and Testing Models with Conditional Heteroscedasticity
(September 2016-May 2019)

"MOVE-IN Louvain" Incoming post-doc Fellowships is a transnational fellowship programme developed by UCLouvain in partnership with UNamur and Université Saint-Louis with the support of the European Commission (Marie Curie actions).

Dimitra Kyriakopoulou (CORE, UCLouvain) is one of the laureate of the programme. She works under the supervision of Christian Hafner (ISBA and CORE, UCLouvain). Her research targets at:

❯ Extending the current literature of conditional heteroskedastic models, in particular so-called GARCH models (generalized autoregressive conditional heteroscedasticity), for a type of extension with in-mean specification, where the "in-mean" term can be interpreted as a risk-premium such as in the so-called capital asset pricing model (CAPM).
❯ Addressing the issue of skewness of returns in conditionally heteroskedastic models with positive risk premium.
❯ Developing analytical higher order asymptotics of the Edgeworth type that allow for more accurate estimation of the distribution of test statistics in GARCH-type models.
❯ Extending the study of conditional heteroskedastic models to the nonstationary case.

International Funding
EUROPEAN COMMISSION PROJECTS

❯ ## Social Networks and Travel Behavior
(January 2013-December 2017)

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. Pnina Plaut (Technion - Israel Institute of Technology, Haifa, Israël) is the promoter. Isabelle Thomas (CORE, UCLouvain) is a project partner.

● **Expectations and Social Influence Dynamics in Economics (ExSIDE)**
(January 2017-December 2020)

The Innovative Training Network ExSIDE combines an interdisciplinary research agenda with an an innovative European joint doctoral training program, which provides doctoral fellows with a broad range of expertise and skills needed for a thorough analysis of expectation formation processes and their role in economics. Both the research projects and the training activities combine work in behavioral economics, psychoanalysis, opinion formation, network theory, agent-based simulation and economic modelling in different areas. The academic training will be complemented by extensive transferable skills training measures, intersectoral training measures, provided by non-academic partners, and career development training. Interaction with stakeholders, policy makers and the general public will play an important role in pursuing the ExSIDE agenda and disseminating the results. The ExSIDE consortium consists of eight leading European universities and nine non-academic partners.

Vincent Vannetelbosch (CORE, UCLouvain) coordinates the program at UCLouvain. Chenghong Luo and Akyal Taalaibekova are currently enroled in this program at CORE.

PUBLIC INSTITUTIONS PROJECTS

● **Dynamic Modelling of Recovery Rates with Application to the Risk Management of Financial Products**
(January 2018-December 2018)

Being extremely simple (straight bonds) or very complex (credit default swaps) the value of derivatives products all depend on a same factor: recovery rate. The later represent the ratio of the invested amount to the face value that will be recovered by the investor in case of default of the underlying reference entity. It is obvious to see that the closer this rate is from 100%, the lower should be the risk premium. Nowadays, the modeling of this factor is performed in an admittedly naïve way: it is essentially considered as a constant, which value needs to be determined. Our goal in this project is to propose a more meaningful approach, accounting for dependency with other risk factors. Several empirical analyses have been performed so far, but none of them had the ambition to understand its impact on derivatives products. This is precisely the scope of this project. It is handled in cooperation with Paris I Panthéon-Sorbonne and the Université d'Evry (Paris).

Frédéric Vrins (CORE and LFIN, UCLouvain) is the promotor of this project cofunded by Wallonie-Bruxelles International and the Ministry of Europe and Foreign Affaires In France.

● **Huge-Scale Sparse Optimization: Theory, Algorithms and Applications**
(November 2014-August 2018)

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
(January 2016-December 2018)

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).

Belgian Funding

Belgian Science Policy (BELSPO)

PAI Projects
Combinatorial Optimization: Metaheuristics and Exact Methods (COMEX)
(January 2013-December 2017)

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 (CORE, UCLouvain) and Avinash Bhardwaj (CORE, UCLouvain) work 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)
(December 2014-September 2019)

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 (KU Leuven) and Sandra Rousseau (KU Leuven) are the promoters of this project coordinated at CORE by Paul Belleflamme and Thierry Bréchet. 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 (GRESP-HEALTH)
(July 2015-June 2018)

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 GRESP-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)
(October 2013-December 2018)

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.

Nature impact on Mental health Distribution (NAMED)
(October 2017-April 2021)

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 (Universiteit Antwerpen), Tim Nawrot (Universiteit Hasselt), Roy Remmen (Universiteit Antwerpen), Isabelle Thomas (CORE, UCLouvain) and An Van Nieuwenhuyse (Institut de Santé Publique, Bruxelles). Madeleine Guyot (CORE, UCLouvain) and Sonia Trabelsi (CORE, UCLouvain) work under the scope of this project.

Fonds de la Recherche Scientifique (FNRS)

Aspirant

❱ Mobilizing Flexible Demand in Electric Power Systems through Service Quality Differenciation
(October 2017-October 2019)

The recent large-scale integration of renewable energies in electric power systems has resulted in various challenges in power system operations, due to the unpredictable, highly variable and non-controllable fluctuation of these resources. This has resulted in a growing demand for the incorporation of flexibility in the Central Western European electricity system in order to balance renewable supply. Although storage devices can act as a source of flexibility, their cost is prohibitive for offering a definite solution to this problem. However, the only part of the electrical power system that is currently optimized is the high-voltage system. Consequently, there is a large amount of unused flexible resources connected to the low voltage system, coming from flexible residential and commercial demand, which can be exploited efficiently in order to break the current barriers that are bounding the growth of renewable energy integration. The project proposes a color-tagging system that enables consumers to set "traffic lights" on their residential plugs: (i) green color indicates cheap power that can be interrupted at all times; (ii) orange color, power that can be interrupted in emergency conditions; (iii) red color, power that cannot be interrupted. The goal of this project is, therefore, to develop a disruptive paradigm for mobilizing consumer flexibility in order to enable integration of renewable resources at a massive scale. The basic research question, which is pursued in this project, is to determine the amount of renewable resources that can be integrated in the system, given the existing level of consumer flexibility, without deteriorating consumers' quality of service. This research question is approached by developing a novel paradigm for offering electricity service to consumers, paradigm inspired by successful experience of the past decades with quality-of-service differentiation in fields such as telecommunications and information technologies.

Anthony Papavasiliou (CORE, UCLouvain) is the promoter of this project. Céline Gérard (CORE, UClouvain) works on this project.

EOS Projects

❱ Individual Welfare Analysis Based on Behavioural Economics
(January 2018-December 2021)

Economists evaluate social and economic policies based on their impact on the individual well-being of the members of society. Typically this measurement depends on the crucial assumption that individuals have well-behaved (i.e. transitive and complete) preferences. Motivated by the overwhelming empirical evidence from psychology and behavioural economics, we aim at developing the methodological tools for analysing individual welfare, while allowing for non well-behaved preferences (i.e. seemingly inconsistencies in the behaviour of agents). For doing this we will explore an intermediate approach that is in between the agnostic approach (i.e. robust conclusions without specific explanation for the inconsistencies) and the model approach (i.e. an analysis based on a specific model explaining non well-behaved preferences). For the empirical part, we will extensively use the new and largely unexplored MEqIN data set that was gathered by the PIs of this project. This data set allows to compare several methods for measuring well-being and contains detailed information on all the adults of the selected households. In the applications we will restrict our attention to four main dimensions of well-being: health, material well-being, employment status, and the family situation. In this respect we will also recontact the surveyed households to gather extra data related to our research questions and this will make the (publicly available) MEqIN data set even more attractive.

Bram de Rock (Université libre de Bruxelles) is the supervisor of the project. Johannes Johnen (CORE, UCLouvain) and François Maniquet (CORE, UCLouvain) are involved in the project at CORE.

❱ Structured Low-rand Matrix/Tensor Approximation: Numerical Optimization-based Algorithms and Applications (SeLMA)
(January 2018-December 2021)

Today's information society is centered on the collection of large amounts of data, from which countless applications aim at extracting information. They involve the manipulation of matrices and higher-order tensors, which can be viewed as large multi-way arrays containing numerical data. Key to their successful and efficient processing is the

proper exploitation of available structure, and in particular low rank. This project aims to contribute innovative structure-exploiting methods based on the paradigm of low-rank matrix/tensor approximation, with a strong mathematical and algorithmic emphasis, and to apply them to large-scale data analysis, information retrieval and modelling. In WP 1, which supports and facilitates progress in the other WPs, we develop robust and computationally efficient algorithms for optimal low-rank approximation w.r.t. a given criterion, including algorithms that estimate the rank when not specified by the user. In WP2 we use low-rank approaches to tackle the fundamental problem of computing matrix products as cheaply as possible and to perform advanced curve fitting. In WP3 we develop large-scale structure-exploiting algorithms for nonnegative matrix factorization, a powerful tool to extract information from data, and for large-scale pattern recognition, which is at the heart of machine learning. Finally in WP 4 we exploit low-rank structure in the design of globally optimal methods for system identification, model reduction and signal processing.

Ivan Markovsky (Vrije Universiteit Brussel), and Marc Van Barel (KU Leuven) are the administrative promotors of the project. Mariya Kamenova Ishteva (Vrije Universiteit Brussel), Lieven De Lathauwer (KU Leuven), Bart De Moor (KU Leuven), Panos Patrinos (KU Leuven), Pierre-Antoine Absil (INMA, UCLouvain), François Glineur (CORE, UCLouvain) and Nicolas Gillis (U Mons) collaborate to the project.

FRESH Projects

❯ Evaluating the Effectiveness of Price-based Policies in Reducing Unhealthy Food demand under Models of «Non-standard» Consumption Behaviour
(January 2017-December 2018)

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 FRESH-PDR project. Valerio Serse (CORE, UCLouvain) works under the scope of the project.

❯ High Dimensional Econometrics
(July 2013-May 2018)

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
> (October 2014-September 2018)

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 (CORE, UCLouvain) and Isabelle Thomas (CORE, UCLouvain) are the promoters of this project. Justin Delloye (CORE, UCLouvain) works under the scope of the project.

> ## Strategic Supply Chain Design and Impacts of Demand Uncertainty
> (February 2014-November 2018)

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 are incorporated into a mathematical location-inventory model, heuristics are developed, and managerial insights are provided.

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

FRIA Project

> ## Evaluating the value of Flexibility in Power System
> (October 2016-December 2018)

The goal for this research is to evaluate the profitability of flexible assets in the context of the large-scale integration of renewable energy on the electricity markets. We characterize a flexible asset as an asset that can quickly adjust the quantity of its output. Some examples of flexible assets are combined cycle gas turbine and pumped hydro storage. This increased integration of renewable energy results in two paradoxical impacts:

> On the one hand, the increase of renewable production implies that the market requires more flexibility close to real time.
> On the other hand, flexible units are currently being mothballed or retired in Europe due to financial losses that are related to high marginal costs, despite the fact that these resources are offering valuable reserve services to the system.

Therefore, in order to ensure power system security, we need to increase the profit of flexible assets. We study this need for extra remuneration of flexible assets in two ways:

> We first analyze the market design problem. The idea of this line of research is to evaluate the impact of a new remuneration strategy, referred to as scarcity pricing, on flexible generator profits.
> We additionally analyze a bidding strategy problem. Our main focus is on the continuous intraday market which is one of the short-term electricity markets that is becoming increasingly important but for which there still exists a limited amount of research. We believe that the CIM is important due to the fact that it allows valuable adjustments to renewable forecast errors, which are becoming increasingly significant in recent years due to the increasing integration of renewable resources.

Anthony Papavasiliou (CORE, UCLouvain) is the promoter of this project. Gilles Bertrand (CORE, UClouvain) works on this project.

PDR Projects

> ## Optimal Fertility, Health and Education in Market Economics
> (September 2013-June 2018)

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.

❯ Social Preferences and the Persistence of Poverty
(October 2016-September 2020)

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.

❯ The Role of Information Disclosure in Group Formation, Network Stability and Strategic Decision-making
(January 2018-December 2021)

Whenever people need to decide with whom to initiate a strategic interaction they use information on their potential partners. As partners are aware of the role this information plays, they will try to control what is made available and will anticipate how their decisions in other situations affects that information, and as a consequence their future interactions. Although, group formation and network dynamics are highly influenced by this information-sharing dilemma, there is little insight into which information people prefer to disclose and how this affects trust, group compositions and strategic decision-making. Using methods of experimental economics and theoretical modeling we here will examine these entangled dynamics within the context of a sequential prisoners dilemma (SPD) game extended with a partner selection stage. Through three experiments we will investigate what information people disclose in the partner selection stage of the game, whether these differences lead to self-selection and thus different outcomes in cooperation and trust and how, when people can have multiple partners, this disclosure affects network structure. In parallel, but intertwined with the experimental part, minimal models of this co-evolutionary dynamics will be developed and analyzed to provide insight into the broader guidelines that induce self-selection and network stability. These models will provide information concerning the importance of certain parameters in the experiments and will be refined through the experimental results. These refinements should lead to models with certain explanatory capacities, which will be validated using information on a concrete economical situation.

Tom Lenaerts (Université libre de Bruxelles), Georg Kirchsteiger (Université Saint-Louis, Bruxelles) Ana Mauleon (Université Saint-Louis, Bruxelles) and Vincent Vannetelbosch (CORE, UCLouvain) are the promotors of the project.

❯ Uncertainty, Macroeconomic Fluctuations and Asset Prices
(October 2015-September 2019)

This project studies the relationship between uncertainty, macroeconomic fluctuations, financial markets and asset prices. In particular, we are interested at answering of questions such as: how does uncertainty influences macroeconomic variables such as aggregate level of prices levels or aggregate economic activity? Does the impact of uncertainty changes in bad times? Is the relationship between macroeconomic and financial variables time dependent? What is the impact of uncertainty on asset prices? We answer these questions by building a macro-finance model. In this setting the dynamics of government bond prices, macroeconomic and finance variables are linked by no arbitrage conditions and uncertainty enters in the model in the form of parameter instability. We develop and apply Bayesian econometrics models to explore instability phenomena and to derive new measures of uncertainty. Bayesian econometrics is well known for its flexibility in modelling uncertainty. Even is the model is initially applied to the government market, it can be used to analyze the relationship between, uncertainty, macroeconomic dynamics and prices of other contracts such corporate bond, swaps or credit derivatives.

Improving our knowledge in this area is crucial for at least two reasons. From an academic perspective, it interesting to more deeply understand (1) how the relationship between macro-economic variables, financial variables and asset pricing in time of turbulence, and (2) how uncertainty can influence these variables. This is a new area of research that can improve our understanding of economic models. From an applied perspective, understanding how uncertainty influences macroeconomic conditions or asset prices or the government yield curve is crucial for policy makers, who aim at improving general economic conditions and the efficiency of financial markets.

Leonardo Iania (CORE and LFIN, UCLouvain) is the promoter of this project. Jonas Striaukas works under the scope of this project.

CDR Projects

❯ Information and (Dis)integration of Financial Markets
(January 2016-December 2018)

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 and LFIN, UCLouvain) is the promoter of this project.

❯ Uncertainty and Monetary Policy
(January 2018-December 2019)

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 and LFIN, UCLouvain) is the promoter of this project.

FÉDÉRATION WALLONIE-BRUXELLES (ARC PROJECTS)

❯ Mining and Optimization of Big Data Models
(September 2014-August 2019)

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
(October 2015-September 2020)

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. Simon Schopohl works under the scope of this project.

RÉGION BRUXELLOISE (INNOVIRIS PROJECTS)

A New Look on the Inter-Relationships within the Metropolitan Area of Brussels
(January 2015-December 2018)

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 (CORE and INMA, UCLouvain) coordinate this project. Arnaud Adam (CORE, UCLouvain), Olivier Finance (CORE, UCLouvain) and Yerali Gandica (CORE and INMA) work under the scope of the project.

Express Shipment Service Network Design: Challenges, Advances and Robustness
(January 2014-September 2018)

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.

RÉGION WALLONNE (BIDMED PROJECT)

Application of «Big Data» Digital Technologies in the Healthcare Sector
(August 2017-July 2020)

BIDMED wishes to explore the applicability and use of "Big Data" digital technologies in the healthcare sector, with a specific objective of enhancing the accessibility to proton therapy, the advanced radiotherapy modality for which the Walloon company IBA is known as the world leader. To this end, IBA will partner with the specialist of medical image management Telemis, as well as the engineering ICTEAM institute from UCL. The consortium is completed by contributions from the operational proton therapy facilities from Sweden.

BIDMED aims at improving the performances and reducing costs associated with proton therapy, at all stages of the equipment lifecycle. At the installation, "machine learning" techniques will be applied to automatize the system calibration. For the equipment maintenance, statistical analysis of the equipment monitoring data as well as predictive analytics will enable predictive interventions.

and help troubleshooting by a better identification of the root failure causes. During routine operations, the comprehensive analysis of data from multiple workflows will help implementing clinical scenarios with enhanced outcomes either for the patient (adaptive treatments) or for the equipment (rules or guidelines for improved scheduling of the activities in the rooms).

Next to these primary objectives, the project will also enable Telemis to expand their own business, through the procurement of dedicated PACS systems to be integrated with the proton therapy equipment, and by adopting the "smart maintenance" innovations into their monitoring system.

Benoît Macq (ELEN, UCLouvain), Raphaël Jungers (INMA, UCLouvain) and François Glineur (CORE and INMA, UCLouvain) coordinate this project.

PRIVATE PROJECTS

❯ Coordination of Transmission and Distribution in Electric Power Systems
(October 2016-September 2020)

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 Papavasiliou (CORE, UCLouvain). Ilyes Mezghani (CORE, UCLouvain) works under the scope of the project.

❯ Modeling Flexibility at Sub-Hourly Time Scales
(February 2016-October 2020)

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 Papavasiliou (CORE, UCLouvain).

PUBLIC PROJECTS

❯ PRESupply Research Project
(December 2016-December 2020)

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 (CORE, UCLouvain) 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 (CORE, UCLouvain) 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	PhDs	Seminars			Conferences	Research projects
					Economics	Operations Research	Econome-trics		
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
2017-2018	44	4	78	8	43	17	6	9	45
Total	**3074**	**163**	**2981**	**253**	**3332**	**1195**	**1204**	**230**	**782**