

CENTER FOR
OPERATIONS RESEARCH
AND ECONOMETRICS



IMMAQ
Institute for Multidisciplinary Research
in Quantitative Modelling and Analysis

Université catholique
de Louvain

UCL

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PRESENTATION

PREAMBLE



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

CORE follows three objectives. The first objective is the development of scientific research in the fields of economics, econometrics and operations research. 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 inter-university and international scientific exchanges and collaborations. This report gives an overview of the activities developed in the Summer 2013 - Summer 2014 period to meet these objectives. A more dynamic follow-up of the current activities can be found in the CORE-Newsletter, which is published three times a year (<http://www.uclouvain.be/en-330033.html>), on the CORE website (<http://www.uclouvain.be/en-core.html>), and on the CORE-Facebook page (<https://www.facebook.com/CORE.UCL>).

HIGHLIGHTS

Scientific life at CORE in 2013-2014 has been particularly stimulating and fruitful. Seminars, conferences, short and long term visits have followed each other during the whole year, making CORE the place of excitement it typically is. All those events are explained in details in this report. The ultimate goal of that activity is to contribute to the development of scientific knowledge, and researchers at CORE have been particularly successful this year. I would like

to highlight two wonderful achievements. First, I would like to stress that out of our six students who graduated this year and were on the job market, four had already a published paper. The quality of their research is also revealed by the impressive list of journals in which their research was published: *Journal of Futures Market*, *Journal of Public Economic Theory*, *Games and Economic Behavior* and *Journal of Economic Theory*.

That reveals the quality of our students and the dedication of their supervisors.

Second, I would like to underline the quality of a report that was published this year. It is a report on the current state of the Belgian pension system. Twelve experts were appointed at the beginning of the year to scrutinize the pension system and propose reforms to make it sustainable. Out of the twelve experts, two are CORE members, Jean Hindriks, and Erik Schokkaert, CORE's past research director and still a board member, and one, Pierre Devolder, is a member of ISBA, one of the research center of IMMAQ, the institute to which CORE belongs. The report was published at the time of the negotiation of the Belgian federal government, and it has had a huge impact on the government agreement. Not all the recommendations have been followed, unfortunately, but most of them have, and the government is about to settle a committee in charge of the implementation of those recommendations. That report illustrates that the theoretical and fundamental research that is carried out at CORE may have a great impact on life in our societies.

PEOPLE

In Section 1, we present the people working at CORE, Faculty members, administrative staff members, PhD students, and the many long term, short term and regular visitors. In 2013-2014, CORE has hosted 84 short and long-term visitors, a rapidly growing number. One of the main features of CORE since its very foundation has been its focus on developing inter-university and international scientific exchanges. CORE has continued actively this tradition of networking, both at the institutional and at the personal level. CORE offers an oportunity for short visits (for a few days or a few weeks) to researchers coming to present their work at one of the weekly research seminars, to participate in CORE workshops or conferences, or simply to work with a co-author. In addition, Research Associates and Associate Fellows are regularly present at

CORE. Each year a new cohort of post-doctoral research fellows - selected on an international and competitive basis - arrives at CORE.

We also present in the section our administrative staff. CORE could never have become the lively, stimulating and hospitable research environment it is today without its efficient and friendly staff. They create a place where the academics can concentrate on research and teaching without having to bother too much about practical issues. This is a necessary condition for CORE to remain an attractive place for visitors. Many thanks, therefore, to the administrative staff.

The last paragraph of Section 1 gives you some details about prizes and awards. As you will see, this year has been particularly fertile in terms of prizes. It is my great pleasure to underline that no less than 5 of our students have received prizes and awards for their research works.

RESEARCH

CORE's activities integrate fundamental and applied research. They are oriented towards providing frameworks for the analysis of a wide range of problems. Theoretical, statistical and computational dimensions of these frameworks are part of the research output. The problems that are analyzed arise from economic policy and the management of private and public firms. The emphasis of the research is on interactive work with a solid theoretical basis. Our works in many fields are united by mathematical modeling and reasoning.

CORE's activities integrate fundamental and applied research. They are oriented towards providing frameworks for the analysis of a wide range of problems. Theoretical, statistical and computational dimensions of these frameworks are part of the research output. The problems that are analyzed arise from economic policy and the management of private and public firms. The emphasis of the research is on interactive work with a solid theoretical basis. Our works in many fields are united by mathematical modeling and reasoning.

Section 2 describes the recent research output. In 2013-2014, 148 papers have been published in scientific journals, a sharp increase compared to the last two years. All the details about these papers and the other publications are mentioned there.

TRAINING

Training of young researchers is an important facet of CORE's activities. In Section 3, we present activities linked to that training. In 2013-2014, 6 Ph.D. students defended their dissertation at CORE. Overall, 35 students developed their research at CORE at that time.

SEMINARS AND CONFERENCES

In Section 4, we give information on seminars. In addition to the ECORES seminars presented above, weekly research seminars in the fields of econometrics, economic theory, mathematical programming, trade and economic geography, and welfare economics allowed CORE members and visitors to present their work and share ideas. There were also regular reading seminars in economics and operations research.

In Section 5, we present the conferences organized or co-organized by CORE members. One conference strikes me as illustrative of the current research directions at CORE. In March 2014, we held a workshop on dynamical methods measuring educational effectiveness. The workshop gathered researchers in econometrics, psychometrics, edometrics and statistics. The focus was on dynamical methods to analyse efficiency of educational systems. This is an additional illustration of the potential social impact of the research that is carried out at CORE.

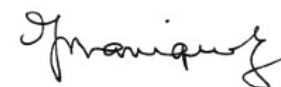
We also list in Section 6 the presentations made by CORE members in seminars and conferences outside CORE.

SUPPORT

These activities are supported by CORE's participation in a long list of research projects and joint contracts, of which we present the details in Section 7. Observe that the number of such contracts is larger than in the last two years. They are financed by different institutions (the Belgian Federal Government, the Belgian French Community (Federation Wallonie-Bruxelles), the Walloon Region (Region Wallonne), the European Commission and private partners. I would like, here, to draw your attention of the latter. Indeed, two chairs have played a particular role this year in the support obtained by CORE. First, we

have had the scientific launching of the GDF Suez Chair in energy economics and management of energy risk. Second, the Lhoist Chair in environmental economics and management has been renewed. Together with the GSK Vaccines chair, those Chairs will play an important role in the funding of scientific activities at CORE in the next few years.

Finally, it remains my great pleasure to mention the continuing and indispensable support of the Université catholique de Louvain.



François Maniquet

- Management
- The Faculty
- Administrative Staff
- Doctoral Students and Research Assistants
- Research Fellows
- Associate Fellows
- Research Associates
- Short Term Visitors
- Research Fellows and Visiting Faculty Members
for 2014-2015
- Prizes and Awards

MANAGEMENT

Officers for the period covered by this report:

President: Philippe Chevalier
 Research Director: François Maniquet
 Co-directors: Per Agrell
 Julio Davila
 Executive Director: Francisco Santana Ferra

THE FACULTY**BOARD MEMBERS**

During the academic year 2013-2014, the permanent staff of CORE consisted of *Faculty Members* of Université catholique de Louvain, UCL Mons, Université libre de Bruxelles, Université Saint-Louis, Brussels, KU Leuven, Université de Liège, Université de Namur, and Université du Luxembourg.

PER AGRELL

- Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium, part-time professor, Norwegian School of Economics (NHH), Bergen, Norway; co-director, CORE, Université catholique de Louvain, Belgium, 2012-to date.



- *Operations management (supply chain management, network regulation).*

- Ph.D. (production economics), Linköping University, Sweden, 1995.

- Researcher, International Institute for Applied Analysis (IIASA), Laxenburg, Austria, 1993-1994; post doctoral researcher, University of Georgia, Athens (GA), USA, 1996-1997; visiting associate professor in operations research, Copenhagen University, Denmark, 1997-1998; associate professor in managerial economics, Copenhagen University, Denmark, 1998-2001; part-time senior researcher, Fondazione Eni Enrico Mattei (FEEM), 2005-2011; senior researcher, Universitat Autònoma de Barcelona, Spain, 2008; president of the Louvain School of Management Research Institute, UCL, Belgium, 2010-2011.

- Current editorial activities: Editorial board member, International Journal of Production Economics.

ANTON BARTEN



- Professor emeritus, KU Leuven and Université catholique de Louvain, Belgium.
- *Econometrics, macroeconomic models.*
- Ph.D. (economische wetenschappen), Nederlandse Economische School, Rotterdam, 1966.
- Visiting professor, University of California, Berkeley (CA), USA, 1962-1963; University of Wisconsin, Madison (WI), USA, 1963; University of Pennsylvania, Philadelphia (PA), 1964; University of Chicago (IL), USA, 1969-1970.

• *Prizes & Awards* : Fellow of the Econometric Society, 1977; member of the International Statistical Institute; corresponding member of the Royal Netherlands Academy

LUC BAUWENS



- Professor emeritus, Université catholique de Louvain, Belgium.
- *Econometrics, statistics.*
- Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1983.
- Consultant at World Bank Washington (DC), USA, 1983-1984; senior researcher at Facultés universitaires catholiques de Mons, Belgium, 1984-1987; senior lecturer at Ecole des Hautes Etudes en Sciences Sociales (EHESS), Marseille, France, 1987-1991; chairman, Departement des sciences économiques, Université catholique de Louvain, Belgium, 2000-2003; research director, CORE, Université catholique de Louvain, Belgium, 2006-2009; president, CORE, Université catholique de Louvain, Belgium, 2010-2013.

• *Prizes & Awards* : Leonard J. Savage Thesis Award, 1984; Francqui Chair, Facultés universitaires Notre-Dame de la Paix, Namur, Belgium, 2005-2006; Fellow of the Society for Financial Econometrics.

• *Previous editorial activities*: Associate editor, Computational Statistics and Data Analysis (Annals of Financial Econometrics), Computational Statistics and Empirical Economics.

• *Current editorial activities*: Associate editor, *International Econometric Review*, *Journal of Applied Econometrics*, *Journal of Financial Econometrics*, and *Risk Letters*.

PAUL BELLEFLAMME



• Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; research aliante, Center for Economic Studies and Ifo Institute for Economic Research; co-holder of the Chair Lhoist Berghmans in Environmental Economics and Management.

• *Microeconomics (industrial organization, game theory).*

• Docteur en sciences économiques, Facultés universitaires Notre-Dame de la Paix, Namur, Belgium, 1997.

• Research fellow, Facultés universitaires Notre-Dame de la Paix, Namur, Belgium, 1997-1999; Lecturer in economics, Queen Mary College, University of London, United Kingdom, 1999-2002.

• *Prizes & Awards*: Prix du Fonds International WERNAERS for scientific research and knowledge diusion, 2012, Francqui Chair, Université de Liège, 2013.

• *Previous editorial activities*: Associate editor, *Information Economics and Policy*.

• *Current editorial activities*: Associate editor, *E-economics and Review of Networks Economics*.

THIERRY BRECHET



- Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; co-holder of the Chair Lhoist Berghmans in Environmental Economics and Management.

- *Environmental economics, energy economics, applied modeling*

- Docteur en sciences économiques, Université Paris 1 Panthéon-Sorbonne, France, 2000.

- Expert for the European Commission, Belgium, 1992-1994; expert for the Bureau Federal du Plan, Belgique, 1994-2000; holder of the Chair Lhoist Berghmans in Environmental Economics and Management, 2002-2011; invited professor, Université Lille 1, France, 2010-2011; visiting professor, European University of St Petersburg, Russia, 2009-2012; associate research fellow, Grantham Institute for Climate Change, Imperial College London, 2011-2012.

- *Current editorial activities:* Editorial board member, *Regards Economiques*.

PHILIPPE CHEVALIER



- Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; president, CORE, Université catholique de Louvain, Belgium, 2013-to date; president, IMMAQ, Université catholique de Louvain, Belgium, 2014-to date.

- *Operations research: stochastic models, supply chain management.*

- Ph.D. (operations research), Massachusetts Institute of Technology, Cambridge (MA), USA, 1992.

- Associate Professor, Universidad de Chile, 1992-1994.

- *Previous editorial activities:* Member of editorial board, *Manufacturing and Service Operations Management*.

CLAUDE D'ASPREMONT



- Professor emeritus, Université catholique de Louvain, Belgium.

- *Mathematical economics, social choice theory, industrial organization.*

- Ph.D. (decision sciences), Graduate School of Business, Stanford University (CA), USA, 1973.

- Visiting professor, Université d'Aix-Marseille III, France, 1984-1996; Université Louis Pasteur, Strasbourg, France, 1988-1999; Ecole Polytechnique de Paris, France, 1995; Facultés universitaires Saint-Louis, 1981-2001; visiting scholar, Graduate School of Business, Stanford (CA), USA, Summer, 1987 and Spring 1995; president, Département des sciences économiques, Université catholique de Louvain, Belgium, 1991-1994; research director, 1995-1998 and president, 2006-2010, CORE, Université catholique de Louvain, Belgium; president, IMMAQ, Université catholique de Louvain, Belgium, 2010-2011.

- *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 2014-2015.

- *Previous editorial activities:* Associate editor, *European Economic Review*, *Games and Economic Behavior*, *Journal of Economics/Zeitschrift für Nationalökonomie*, *Journal of Mathematical Economics*, and *Revue de philosophie économique*.

- *Current editorial activities:* Associate editor, *Journal of Public Economic Theory*, and *Social Choice and Welfare*.

JULIO DAVILA



- Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium; Directeur de Recherches CNRS, Paris, France; co-director, CORE, Université catholique de Louvain, Belgium, 2012-2014.

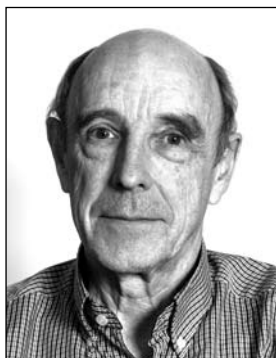
- *Economic theory, general equilibrium, theoretical macroeconomics, game theory.*

- Docteur en sciences économiques, Ecole des Hautes Etudes en Sciences Sociales, Paris, France, 1994.

- Charge de Recherches, Directeur de Recherches, CNRS, Paris, France, 1998- (on leave); assistant professor, University of Pennsylvania (PA), USA, 1999-2004; professor titular, Universidad Autonoma de Barcelona, Spain, 1994-1998; visiting professor, ECARES-Université libre de Bruxelles and Solvay Business School, Brussels, Belgium, 2005-2008; visiting professor, Universidad Carlos III de Madrid, Spain, 2006.

- *Current editorial activities:* Associate editor, *Economics Bulletin*.

PIERRE DEHEZ



- Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.

- *Game theory, general equilibrium, microeconomics.*

- Docteur en Sciences Economiques, Université catholique de Louvain and European Doctoral Program, 1980.

- Professor: European University Institute, Florence, Italy, 1983-1990 and Erasmus Universiteit Rotterdam, The Netherlands, 1991-1992; visiting professor, University of Illinois, USA, University of Namur, Belgium, University of Mannheim, Germany, University of Cergy-Pontoise, France, University of Strasbourg,

- University of Nancy, France, University of Pisa, Italy. Chairperson, Department of Economics: European University Institute, Firenze, Italy, 1985-1987 and 1989; president, Department of Economics: Université catholique de Louvain, Belgium, 1994-2000. Prorector in charge of the sector of human and social sciences, Université catholique de Louvain, Belgium, 2001-2004.

DAVID DE LA CROIX



- Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.

- *Growth theory, human capital and demography, overlapping generations.*

- Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1992.

- Research fellow, Universiteit Maastricht, The Netherlands, 1992; visiting professor, University of California, Los Angeles (CA), USA, 2000-2001.

- *Prizes & Awards:* Francqui Chair, Ghent Universiteit, Belgium, 2004; chercheur qualifié honoraire, Fonds National de la Recherche Scientifique (FNRS), Belgium; United Nations: Panel on New Challenges in Population and Development (IUSSP), 2010-2013; Francqui Research Professor, 2014-2017.

- *Past editorial activities:* Associate editor, *Journal of Economic Dynamics and Control* and *Recherches Economiques de Louvain*.

- *Current editorial activities:* Editor-in-Chief, *Journal of Demographic Economics*; associate editor, *Journal of Development Economics*, *Journal of Public Economic Theory*; editorial board member, *Biometrika*, *Fiscal Studies*.

JACQUES DREZE



- Professor emeritus, Université catholique de Louvain, Belgium.

- *Economic theory and macroeconomics.*

- Ph.D. (economics), Columbia University, New York (NY), USA, 1958.

- Visiting professor, Carnegie Institute of Technology, Pittsburgh (PA), USA, 1957{1958; Northwestern University, Evanston (IL), USA, 1962; University of Chicago(IL), USA, 1963-1968.

- *Prizes & Awards:* Fellow, 1964 and president, 1970 of the Econometric Society; Francqui Chair, Université libre de Bruxelles, Brussels, 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.

- *Previous editorial activities:* Co-editor, *Econometrica*.

LOUIS ECKHOUDT



- Professor emeritus, UCL Mons, Belgium.

- *Decision under risk and health economics.*

- Ph.D. (economics), Michigan State University, East Lansing (MI), USA, 1970.

- *Prizes & Awards:* Robert Witt Research Award, 2002 and 2004; Kulp Wright Book Award, 2007; 2008 Publication award of the Decision Analysis Society (Informs).

- *Previous editorial activities:* Associate Editor, *Revue Economique*.

- *Current editorial activities:* Associate Editor, *Geneva Risk and Insurance Review* and *Journal of Risk and Insurance*.

JEAN J. GABSZEWICZ



- Professor emeritus, Université catholique de Louvain, Belgium.

- *Economic theory.*

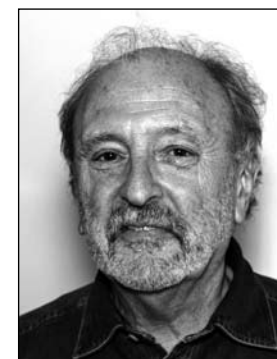
- Docteur en droit, Université catholique de Louvain, Belgium, 1961; docteur en sciences économiques, Université catholique de Louvain, Belgium, 1968.

- Visiting professor, Polish Academy of Sciences, Warzaw, Poland, 1973; University of Tel-Aviv; Israël, 1973; Université de Paris Dauphine, France, 1973; Université d'Aix-Marseille, France, 1973; Université de Paris Val de Marne, France; 1979; Université d'Aix-en-Provence, France, 1981; Université de Lyon, France, 1981; Université de Strasbourg, France, 1982; Université de Dijon, France, 1983; European University Institute, Firenze, Italy, 1984; Université Paris 1 Panthéon-Sorbonne, France, 1999-2000; Université de Paris 2 Panthéon-Assas, France, 1999-2001.

- *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.

- *Previous editorial activities:* *Journal of Economics*, *Ricerche Economiche*, *Journal of Economic Theory*, and *European Economic Review*.

VICTOR GINSBURGH



- Professor emeritus, Université libre de Bruxelles, Brussels, Belgium.

- *Economic theory, cultural economics, economics of languages.*

- Docteur en sciences économiques, Université libre de Bruxelles, Brussels, Belgium, 1972.

- Researcher, Cowles Foundation, Yale University, New Haven (CT), USA, 1975; visiting professor,

Université catholique de Louvain, Belgium, 1973, 1978 and 1985; University of Virginia, Charlottesville (VI), USA, 1979; Université Paris 1 Panthéon-Sorbonne, France, 1986-1987 and 1991-1992; Université Paris 2 Panthéon-Assas, France, 1986-2004; Université d'Aix-Marseille II, France, 1986-1989; University of Chicago (IL), USA, 1996; co-director, European Center for Advanced Research in Economics and Statistics (ECARES), Université libre de Bruxelles, Brussels, Belgium, 2002-2009.

- *Prizes & Awards:* Francqui Chair, Université de Liège, Belgium, 1992-1993; president of the International Association of Cultural Economics, 2002-2004.

- *Previous editorial activities:* *Annales d'Economie et de Statistique*, *European Economic Review*, and *Journal of Cultural Economics*.

- *Current editorial activities:* Co-editor, *Journal of Wine Economics*; associate editor, *Recherches Economiques de Louvain-Louvain Economic Review*.

PIERRE GIOT



- Professor, Université de Namur, Belgium.
- *Financial econometrics, modeling volatility and risk, market microstructure, venture capital economics.*
- Docteur en sciences économiques (nancier econometrics), Université catholique de Louvain, Belgium, 1999.
- Assistant professor, Department of quantitative economics, Universiteit Maastricht, The Netherlands, 2000-2001; visiting professor, Université catholique de Louvain, Belgium, 2000-to date and Université Paris 1 Panthéon-Sorbonne, France, 2002.

- *Prizes & Awards:* Winner of the 2005 Joseph de la Vega price and Winner of the annual prize of the French Finance Association, 2010.

FRANÇOIS GLINEUR



- Professor, Université catholique de Louvain (Ecole Polytechnique de Louvain, Pôle en ingénierie mathématique), Belgium.

- *Optimization, mathematical programming, operations research (algorithms, modeling and applications).*

- Docteur en sciences appliquées, Faculté polytechnique de Mons, Belgium, 2001.

- FNRS Postdoctoral Researcher 2001-2002 (Faculté Polytechnique de Mons, Belgium and McMaster University, Canada).

CHRISTIAN HAFNER



- Professor, Université catholique de Louvain (Louvain School of Statistics, Biostatistics and Actuarial Sciences), Belgium.

- *Econometrics and statistics.*

- Ph.D. in Economics, Humboldt-Universität zu Berlin, Germany, 1996.

- Postdoctoral fellow, CORE, Université catholique de Louvain, Belgium, 1996{1997; research associate, Humboldt Universität zu Berlin, Germany, 1997{1999; chief analyst, Electrabel, Louvain-la-Neuve, Belgium, 1999{2002; assistant professor, Erasmus Universiteit Rotterdam, The Netherlands, 2002{2005; president, Louvain School of Statistics, Biostatistics and Actuarial Science, UCL, Belgium, 2010-to date.

- *Past editorial activities:* Associate editor, *Banking and Finance Review*.

- *Current editorial activities:* Associate editor, *Annals of Financial Economics*, *Computational Statistics*, *Econometrics*, *International Econometric Review*, and *Studies in Nonlinear Dynamics and Econometrics*.

JEAN HINDRIKS



- Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium; senior fellow, Itinera Institute, Brussels, Belgium, member of the Belgian pension reform committee and member of the Belgian price scientific committee.

- *Public economics, political economy and education economics.*

- Docteur en sciences économiques, Facultés universitaires Notre-Dame de la Paix, Namur, Belgium, 1996.

- Visiting fellow, University of Essex, United Kingdom, 1997-1998; lecturer in economics, University of Exeter, United Kingdom, 1998-2000; Queen Mary College, University of London, United Kingdom, 2000-2002.

- *Previous editorial activities:* Associate editor, *European Journal of Political Economy* and *Fiscal Studies*.

- *Current editorial activities:* Associate editor, *Journal of Public Economic Theory*.

ETIENNE LOUTE



- Professor emeritus, Université Saint-Louis, Brussels, Belgium.

- *Mathematical programming: algorithmic and implementation issues, management and engineering applications of mathematical programming*

- Docteur en sciences appliquées, Université catholique de Louvain, Belgium, 1976.

- Visiting professor, Brookhaven National Laboratory, Upton (NY), USA, 1977; IIASA, Laxenburg, Austria, 1979; HEC Montreal, Canada, 1981; Université de Genève, Switzerland, 1992; Université de Savoie, France, 1992-2004; National University of Vietnam, Ho Chi Minh City, Vietnam, 1998-2002.

- *Prizes & Awards:* dean, Faculté des sciences économiques et politiques, Facultés universitaires Saint-Louis, Brussels, Belgium, 1993-1996; President of SOGESCI (2004-2006), director of Doctoral School of Management, UCL, Belgium, Brussels campus, Belgium, 2007-2011, member of INFORMS, SIAM, SOGESCI, and Mathematical Programming Society.

FRANÇOIS MANIQUET

- Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium; part-time professor, University of Warwick, United Kingdom; research director, CORE, Université catholique de Louvain, Belgium, 2011-2014.

- *Microeconomic theory, welfare economics, public economics, political economics, economics of poverty.*

- Docteur en sciences économiques, Facultés universitaires Notre-Dame de la Paix, Namur, Belgium, 1994.

- *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 at Facultés universitaires Saint-Louis, Brussels, Belgium; Francqui Prize, 2010; ERC grant laureate 2010.

- *Past editorial activities:* Editor, *Economics and Philosophy*; associate editor, *Annals of Economics and Statistics*, *Mathematical Social Sciences* and *Social Choice and Welfare*.



ANA MAULEON



- Maître de recherches, Fonds National de la Recherche Scientifique (FNRS), Belgium, and associate professor at Université Saint-Louis (Faculté des sciences économiques, sociales et politiques), Brussels, Belgium; co-director of the Center for Research in Economics (CEREC), 2008-to date, Université Saint-Louis, Brussels, Belgium.

- *Game theory, industrial organization, matching theory.*

- Ph.D. in Economics, Universidad del Pas Vasco, Bilbao, Spain, 1997.
- Lecturer, Department of Economic Analysis, Universidad del Pas Vasco, Bilbao, Spain, 1989{1997; assistant professor, Department of Economic Analysis, Universidad del Pas Vasco, Bilbao, Spain, 1997{1999; associate professor, Department of Economic Analysis, Universidad del Pas Vasco, Bilbao, Spain, 1999-2006; LABORES (URA 362, CNRS), Université catholique de Lille, France, 2001-2004.

FLORIAN MAYNERIS



- Assistant professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.

- *International trade, economic geography, urban economics.*

- Ph.D. in Economics, EHESS-Paris School of Economics, France, 2009.

- Postdoc, CORE, Université catholique de Louvain, Belgium, 2009-2011.
- *Prizes & awards* : Young economist award at the European Economic Association Congress, 2010; Louis Forest Prize for the best Ph.D. dissertation from the Chancellerie des Université de Paris, 2010.
- *Current editorial activities*: Associate editor, *Journal of Regional Science*.

MICHEL MOUGHART



- Professor emeritus, Université catholique de Louvain, Belgium.

- *Statistics, econometrics.*

- Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1973.

- International professor CIENES, Santiago, Chili, 1966-1967; visiting professor, University of Chili, Chili, 1967-1968; University College, London, United Kingdom, 1976; Université de Strasbourg, France, 1981; Indian Statistical Institute, New Delhi, India, 1982; Université d'Aix-Marseille II, France, 1982; Università di Bologna, Italy, 1984; Carnegie-Mellon University, Pittsburgh (PA), 1985; Université des Sciences Sociales de Toulouse, France 1991{1993; Université de Paris 1 Panthéon-Sorbonne, France, 1993{1994.

- *Prizes & Awards*: Elected member of the International Statistical Institute, Elected fellow of the International Society for Bayesian Analysis, ISBA, UCL, Belgium, Bernoulli Society, Société Belge de Statistique.

- *Current editorial activities*: Associate Editor, *Statistica, International Econometric Review*.

YURI NESTEROV



- Professor, Université catholique de Louvain (Ecole Polytechnique de Louvain, Pôle en ingénierie mathématique), Belgium.

- *Convex and nonlinear optimization, complexity analysis of optimization schemes, polynomial-time algorithms, fast gradient methods, approximation of combinatorial problems, equilibrium in congested transportation networks.*

- Doctor in applied mathematics, Institute of Control Sciences, Moscow, Russia, 1984.

- Research associate, Central Economic and Mathematical Institute of the Russian Academy of Science, Moscow, Russia, 1987-1992; visiting professor, Université de Genève, Switzerland, 1992-1993; invited professor, CORE, Université catholique de Louvain, Belgium, 1993-2000.

- 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.

- *Previous editorial activities:* Associate editor, Mathematical Programming.

- *Current editorial activities:* Associate editor, *Foundation of Computational Mathematics*, *Journal of Optimization Theory and Applications*, *Optimization and Engineering*, and *Optimization Methods and Software*.

ANTHONY PAPAVALIOU



- Assistant professor, Université catholique de Louvain (Ecole Polytechnique de Louvain, Pôle en ingénierie mathématique), Belgium and holder of the GDF-Suez faculty Chair in Quantitative and Energy Economics.

- *Optimization under uncertainty, energy markets, electric power systems planning and operations.*

- Ph.D. in Industrial Engineering and Operations Research, University of California at Berkeley, USA, 2011.

- Post-doctoral researcher: University of California at Berkeley, USA, 2011-2012; Research intern: Pacifi Gas and Electric, SunRun, Quantil, 2011-to date, Federal Energy Regulatory Commission, Washington DC, USA, 2009; XEROX Palo Alto Research Center, CA, USA, 2008; Energy Environment and Economic Modeling Laboratory, National Technical University of Athens Greece, 2007.

- *Current editorial activities:* Guest editor in a special issue of *IEEE Transactions on Smart Grids on Active Distribution Networks*.

MATHIEU PARENTI



- Assistant professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.

- *International trade, industrial organization.*

- Ph.D. in International Trade and Industrial Organization, Université Paris 1 Panthéon-Sorbonne, 2012.

- *Prizes & Awards:* Aguirre-Basualdo Prize for the best Ph.D. thesis in Economics and Management from the Chancellerie des Universités de Paris, 2013.

DOMINIQUE PEETERS



- Professor, Université catholique de Louvain (Faculté des Sciences, Ecole de géographie), Belgium.

- *Location theory, economic geography, regional science, mathematical programming, operations research.*

- Docteur en sciences appliquées, Université catholique de Louvain, Belgium, 1980; agrégé de l'enseignement supérieur, Université catholique de Louvain, Belgium, 1995.

- Post-doctoral fellow, McMaster University, Hamilton, Ontario, Canada, 1986; Université de Bourgogne, France, 1991; University of Tsukuba, Japan, 1996-1997; Université Louis Pasteur, Strasbourg, France, 2006.

PIERRE PESTIEAU



- Professor emeritus, Université de Liège, Belgium; Associate member, Paris School of Economics, France; CEPR, CESifo, IZA research fellow.

- *Population economics, public economics.*

- Ph.D. (economics), Yale University, New Haven (CT), USA, 1971.

- Assistant professor, Cornell University, Ithaca (NY), USA, 1971-1976; professor, Université de Liège, Belgium, 1976-2008.

- *Prizes & Awards:* Francqui Prize, 1989; AGF ASSUBEL Prize, 1995; Einaudi Chair in European Studies, Cornell University, Ithaca (NY), 1997; Prix Risque-Les Echos, 2006; Honorary Degree Uppsala University, 2011.

- *Previous editorial activities:* Co-editor, *Journal of Population Economics*.

- *Current editorial activities:* Co-editor, *Journal of Public Economics* and *Revue Française d'Économie*; associate editor, *CESifo Economic Studies*, *Economica*, *Finanz-Archiv*, and *Journal of Public Economic Theory*.

PIERRE PICARD



- Professor, Université du Luxembourg, Luxembourg.

- *Microeconomics, regional and urban economics, international economics, public economics.*

- Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1998.

- Research fellow, Facultés universitaires Notre-Dame de la Paix, Namur, Belgium, 1998-1999; Lecturer and Senior Lecturer in Economics, School of Economic Studies, University of Manchester, United Kingdom, 1999-2008.

- *Current editorial activities:* Co-editor, *Manchester School*.

ERIK SCHOKKAERT



- Professor, KU Leuven, Belgium.

- *Public economics, health economics, social choice.*

- Ph.D. (economics), KU Leuven, Belgium, 1982.

- Visiting professor, Universiteit Antwerpen, Belgium, 1985-1986, Université catholique de Louvain, Belgium, 1988-1989, London School of Economics, United Kingdom, 2006-2007, 2012-2013; research director, CORE, Université catholique de Louvain, Belgium, 2009-2011.

- *Prizes & Awards:* Francqui chair 2005-2006, Universiteit Antwerpen, Belgium.

- *Current editorial activities:* Associate editor, *Economics & Philosophy*, *Health Policy*, and *Social Choice and Welfare*.

LEOPOLD SIMAR



- Professor emeritus, Université catholique de Louvain, Brussels, Belgium.

- *Mathematical statistics, nonparametric statistics and econometrics, resampling methods, production and efficiency analysis.*

- Docteur en sciences appliquées (mathématiques appliquées), Université catholique de Louvain, Belgium, 1974.

- Visiting professor, Cornell University, Ithaca (NY), USA, 1974; IDEI, Université des Sciences Sociales, Toulouse, France, 1991-2013; Humboldt Universität, Berlin, Germany, 1993-2003; Texas University, Austin (TX), USA, 1995-2005; Rice University, Houston (TX), USA, 1996, 1998, 2009; ENSAI, Rennes, France, 1999-2001; Australian National University, Canberra, Australia, 1999; Universität of Mainz, Germany, 2002-2004; University of Pisa, Italy, 2003-2006; University of Bologna, Italy, 2010-2011; ENSAE, Paris, France, 2001-2009; Institut Français du Pétrole, Rueil, France, 1991-2013; Clemson University (SC),

USA, 2007-2012; Professore di Chiara Fama, 2006 and 2007; Italian Ministry of Research, Scuola Superiore San'Anna, Pisa, Italy; Chaire d'Excellence Pierre de Fermat, 2008-2009, Region Midi-Pyrenees, Toulouse School of Economics, France; Universität Karlsruhe (TH), Germany, 2008-2009; Universität Bonn, Germany, 2011; University of Salento, Lecce, Italy, 2010-2014; University of Queensland, Brisbane, Australia, 2011, 2013; Università degli Studi di Roma \La Sapienza», Italy, 2011-2014; Toulouse School of Economics, France, 2010-2014.

• *Prizes & Awards:* Professore di Chiara Fama, 2006 and 2007, Italian Ministry of Research Scuola Superiore San'Anna, Pisa, Italy; Chaire d'Excellence Pierre de Fermat, 2008-2009, Region Midi-Pyrenees, Toulouse School of Economics, France; 2013-2014 Messageri della Conoscenza, Italian Ministry of Research, University of Salento, Lecce, Italy; elected member of the International Statistical Institute; eean, Facultés des sciences économiques, sociales et politiques, Facultés universitaires Saint-Louis, Brussels, Belgium, 1978-1990; founder-chairman, Institut de statistique, Université catholique de Louvain, Belgium, 1992-2004; president of the Belgian Statistical Society, 1999-2002; honorary member of the Belgian Statistical Society.

• *Current editorial activities:* Associate editor, *Journal of Productivity Analysis and Operations Research*.

YVES SMEERS



• Professor emeritus, Université catholique de Louvain, Belgium.

• *Computational economics and risk management in the electricity and gas industries.*

• Ingenieur Physicien, Université de Liège, 1967, Master of Science (industrial administration), 1971, Ph.D. (operations research), Carnegie-Mellon University, Pittsburgh (PA), USA, 1972, Licencie en Sciences Economiques, Université catholique de Louvain, 1973.

• *Prizes & Awards:* INFORMS Fellow, 2012.

• *Past editorial activities:* European editor, *Energy Journal*.

FRANS SPINNEWYN

• Professor emeritus, KU Leuven, Belgium.

• *Microeconomics.*

• Ph.D. (economics), London School of Economics, United Kingdom, 1975.

• Bevoegd verklaard navorser, Nationaal Fonds voor Wetenschappelijk Onderzoek, Belgium, 1977-1979; assistant, KU Leuven, Belgium, 1979-1983; visiting professor, Cornell University, Ithaca (NY), USA, 1985.

• *Prizes & Awards:* B.A.C. Prize, 1976.



JACQUES-FRANÇOIS THISSE

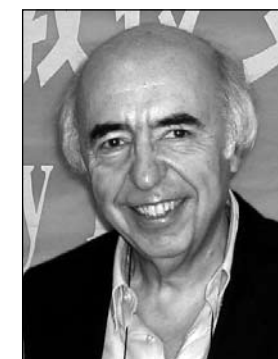
• Professor emeritus, Université catholique de Louvain, Belgium.

• *Economic theory, industrial organization, economic geography.*

• Docteur en sciences économiques, Université de Liège, Belgium, 1975.

• Visiting professor, McMaster University, Hamilton, Ontario, Canada, 1981; University of Pennsylvania, Philadelphia (PA), USA, 1985; INSEAD, Fontainebleau, France, 1987; Virginia Polytechnic Institute, Blacksburg (VA), USA, 1990; Université Paris I Panthéon-Sorbonne, France, 1991-1996; Institut National de Recherche Agronomique, Dijon, France, 2003; Kyoto University, Japan, 2006.

• *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, Université de Montreal, Canada, 2005, Université Paris 2 Panthéon-Assas, France, 2010, Ecole Normale Supérieure de Cachan, France, 2010 and Université Jean Monet, Saint-Etienne, France, 2011.



- *Previous editorial activities:* Associate editor, *Geographical Analysis*, *International Journal of Industrial Organization*, *Journal of the European Economic Association*, *Journal of Industrial Economics* and *Journal of Regional Science*.

- *Current editorial activities:* Associate editor, *International Journal of Economic Theory*, *Japanese Economic Review*, *Journal of Economic Geography*, *Journal of Economics and Management Strategy* and *Regional Science and Urban Economics*.

ISABELLE THOMAS



- Research Director, National Fund for Scientific Research (FRS-FNRS), Belgium, and professor, Université catholique de Louvain (Faculté des sciences, Ecole de géographie), Belgium; member of the board of ERSA, ASRDLE, Belgian national Committee of Geography.

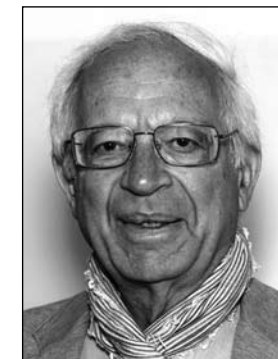
- *Economic geography, transport geography, optimal locations, cartography, quantitative analysis in geography*

- Docteur en sciences (géographiques), Université catholique de Louvain, Belgium, 1984; agrégée de l'enseignement supérieur, Université catholique de Louvain, Belgium, 2000.

- *Prizes & Awards:* Prix Aydalot in Regional Science, 1989; BMW Scientific Award, 2001; Prix de la Compagnie du Bois Sauvage 2011-2012.

- *Current editorial activities:* editorial board member, *Belgeo*, *Cybergeo*, *L'Espace Géographique*, *International Regional Science Review*, and *Revue d'Economie Regionale et Urbaine*.

HENRY TULKENS



- Professor emeritus, Université catholique de Louvain, Belgium.

- *Economic theory, public finance.*

- Visiting positions (teaching and/or research) held at: University of Chicago 1963-1964; University of California; Berkeley (CA), USA, 1964-1965; Université d'Aix-

- Marseille II, France, 1971; Université libre de Bruxelles, Brussels, Belgium, 1971-1972

- and 1973-1974; Princeton University (PA), USA, 1973 and 1983; Stanford University (CA), USA, 1973 and 1979; Hebrew University of Jerusalem, Israël, 1976 and 1981; Université Laval, Canada, 1977; Université Paris 12 (Val de Marne), France, 1978; Université de Montreal, Canada, 1985; Beijer Institute of Ecological Economics, Stockholm, Sweden, 1992 and 1993; Fondazione ENI Enrico Mattei, Milan, Italy, 1993; Ecole Nationale de la Statistique et de l'Administration Economique, Paris, France, 1995; International Monetary Fund, Washington (DC), USA, 1997 and 2004; Université de Paris 1 Panthéon-Sorbonne, France, 2003; University of the South Pacific, Suva, Fiji, 2004; National University of Singapore, Singapore, 2002, 2007 and 2008; Università Ca' Foscari Venezia, Italy, 2011 and 2013; dean, Faculté des sciences économiques, sociales et politiques, Facultés universitaires Saint-Louis, Brussels, Belgium, 1970-1974; chairman, département des sciences économiques, Université catholique de Louvain, Belgium, 1978-1981; vice-president, International Institute of Public Finance, 1994-2000; general secretary of the European Economic Association, 1998-2004.

SEBASTIEN VAN BELLEGEM



- Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.

- *Econometric theory, mathematical statistics.*

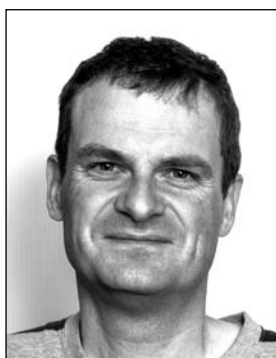
- Docteur en sciences, Université catholique de Louvain, Belgium, 2003.

- Charge de cours, Institut de statistique, Université catholique de Louvain, Belgium, 2004-2008; professeur des universités, Toulouse School of Economics, Université de Toulouse 1, 2008-2012; invited professor, Université catholique de Louvain, Belgium, 2010-2011; Ponticia Universidad de Chile, 2011.

- *Prizes & Awards:* Prix Marie-Jeanne Laurent-Duhamel, 2005.

- *Current editorial activities:* Associate editor, *Journal de la Société Française de Statistique*, *International Econometrics Review*.

VINCENT VANNETELBOSCH



- Maître de Recherches, Fonds National de la Recherche Scientifique (FNRS), Belgium and professor, Université catholique de Louvain (Faculté des sciences économiques, sociales, politiques et de communication, Ecole des sciences économiques), Belgium.

- *Game theory and industrial organization.*

- Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1996 (European Doctoral Program).

- Extramural Fellow of METEOR, Universiteit Maastricht, The Netherlands, 2003-to date; associate fellow of CEREC, Université Saint-Louis, Brussels, Belgium, 2005-to date; director of the European Doctoral Program in Quantitative Economics, 2004-to date.

MATHIEU VAN VYVE



- Associate professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium.

- *Discrete optimization, computational economics, operations research.*

- Docteur en sciences appliquées, Université catholique de Louvain, Belgium, 2003; Master in Philosophy, Université catholique de Louvain, Belgium, 1999.

- Assistant Professor, Université libre de Bruxelles, Belgium, 2004-2005; senior analyst, GdF-Suez s.a., 2005-2007; senior consultant, N-Side s.a., 2007-2009.

XAVIER WAUTHY



- Professor, Université Saint-Louis, Brussels, Belgium; visiting professor, Université catholique de Louvain, Belgium.

- *Industrial organization, microeconomic theory.*

- Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1995.

- Research fellow, Universiteit Maastricht, The Netherlands, 1996; chargé de recherches, Fonds National de la Recherche Scientifique (FNRS), Belgium, 1997-1998.

- *Current editorial activities:* editorial board member, *Recherches Economiques de Louvain-Louvain Economic Review*.

LAURENCE WOLSEY



- Professor emeritus, Université catholique de Louvain, Belgium.
- *Discrete optimization, operations research, applied mathematics.*
- Ph.D. (mathematics), Massachusetts Institute of Technology, Cambridge (MA), USA, 1969.
- Visiting researcher, Manchester Business School, United Kingdom, 1969-1971; London School of Economics, United Kingdom, 1978-1979; Cornell University, Ithaca (NY), USA, 1983; visiting professor, Ecole Polytechnique de Lausanne; Switzerland, 1986-1987; Donders professor, Department of Computer Science, University of Utrecht, The Netherlands, Spring, 1998.

• *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.

• *Past editorial activities:* Editor-in-Chief, *Mathematical Programming, Series A*, 1999-2003; Associate Editor, *Operations Research Letters*, 1985-1989; *Operations Research*, 1987-1995.

CORE FACULTY (NOT MEMBERS OF THE BOARD)

SOPHIE BEREAU



- Assistant professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium.
- *Applied econometrics, nance (exchange rates and asset prices dynamics, nancial network modeling).*
- Ph.D. in Economics, Université Paris 10 Ouest Nanterre, 2010.
- Associate researcher, KU Leuven, 2009-2011; research scholar, CRESTINSEE, 2010-2011.
- *Prizes & Awards:* Fondation Banque de France Prize for the Best Ph.D. in Monetary, Financial and Banking Economics, 2011.

CONSTANTIN BLOME



- Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium and University of Sussex, United Kingdom, and holder of the GSK Vaccines Chair in Strategic Sourcing and Procurement.
- Procurement, sourcing, supply chain management, sustainability.
- Ph.D. (management), Technische Universität Berlin, Germany, 2006.
- Assistant professor at European Business School, Wiesbaden, Germany, 2011.
- *Prizes & Awards:* Best reviewer award of Journal of Supply Chain Management, 2011; best paper award at the 21st Annual North American Research Symposium on Purchasing and Supply Chain Management of ISM, 2011; University of San Diego Harold E. Fearon Best Paper Award for the best article in Journal of Supply Chain Management, 2010; senior research fellow South China University of Technology, Guangzhou, China, 2010.
- *Previous editorial activities:* Associate editor, *Decision Sciences Journal* and *Decision Sciences Journal of Innovative Education*; editorial board member, *Journal of Operations Management*, *Journal of Supply Chain Management* and *Journal of Purchasing and Supply Management*.

ADMINISTRATIVE STAFF



**MARISTELLA
ANGOTZI**
Congress manager, ERSA



**AXELLE
DEPIREUX**
Administrative assistant



**CATHERINE
GERMAIN**
Administrative assistant



**ALAIN
GILLIS**
Librarian



**FABIENNE
HENRY**
Administrative assistant



**RICHARD
KELLY**
Executive director, ERSA



**SYLVIE
MAUROY**
Administrative assistant



**ANNE-MARIE
PESSLEUX**
Accountant



**FRANCISCO
SANTANA FERRA**
Executive director

DOCTORAL STUDENTS AND RESEARCH ASSISTANTS

Abdelrahaman Aly • Ignacio Aravena • Rytis Bagdziunas • Sinem Bas • Mikel Bedayo • Stephane Bouche • Manuela Braione • Benoît Decerf • Julien Dewez • Aditi Dimri • Cyrille Dossougoin • Mery Ferrando Gutierrez • Bartosz Filipecki • Sophie Flagothier • Valeria Forlin • Manuel Förster • Maria Ines Godoy • Claudia Hupkau Jonathan Jones • Tanguy Kegelart • Daniel Koch • Alejandro Lamas Vilches • Arnaud Latiers • Simone Martelli • Pierre-Yves Mistiaen • Tanja Mlinar • Margherita Negri • Václav Nora • Wenli Peng • Francesco Andrea Pirrone • Andrew Pua • Nicolas Scholtes • Eva-Maria Scholz • Alice Servais • Fahimeh Shamsaei • Gille Sinnaeve • Jonas Teusch • N. Baris Vardar • Simon Verelst

RESEARCH FELLOWS

Research Fellows are scholars who work at CORE for a predened time period (from one to three years).

Ignace Adant, CORE, UCL, Belgium
Humberto Brea, HEC, Liège, Belgium
Jinil Han, INRIA, Bordeaux, France
Adel Hatami Marbini, CORE, UCL, Belgium
Elena Mattana, Stockholm School of Economics, Sweden
Joniada Milla, University of Guelph, Ontario, Canada

Dirk Neumann, Forschungsinstitut zur Zukunft der Arbeit, Bonn, Germany
 Monalisa Sen, University of Illinois at Urbana Champaign, Urbana (IL), USA
 Vladimir Shikhman, Rheinisch-Westfaelische Technische Hochschule, Aachen,
 Germany
 Claudio Telha Corneja, Universidad de Chile, Santiago, Chile
 Tom Truys, KU Leuven, Belgium
 Yukai Kevin Yang, Aarhus Universit t, Denmark

ASSOCIATE FELLOWS

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

Koen Decancq, Universit it Antwerpen, Belgium
 Jean-Charles Delvenne, EPL, UCL, Belgium
 Claire Dujardin, Institut Wallon de l'Evaluation, de la Prospective et de la
 Statistique, Namur, Belgium
 Axel Gautier, Universit  de Liege, Belgium
 Jan Johannes, ISBA, UCL, Belgium
 Stephane Lambrecht, Universit  de Valenciennes et du Hainaut-Cambresis,
 Valenciennes, France
 Pascal Mossay, University of Reading, United Kingdom
 Mikael Petitjean, LSM, UCL, Belgium
 Joe Tharakan, Universit  de Liege, Belgium
 Dirk Van de Gaer, Universit it Gent, Belgium
 Wouter Vergote, Universit  Saint-Louis, Brussels, Belgium

RESEARCH ASSOCIATES

Research Associates are scholars who visit CORE on a regular yearly basis.

Francis Bloch, Ecole Polytechnique, Paris, France
 Philippe Deschamps, Universite de Fribourg, Switzerland
 Johanna Goertz, University of Guelph, Canada
 Jean-Jacques Herings, Universit it Maastricht, The Netherlands
 Marie-Louise Leroux, Universit  du Quebec, Montreal, Canada

Dunia Lopez Pintado, Universidad Pablo de Olavide, Seville, Spain
 Juan Moreno Ternero, Universidad Pablo de Olavide, Seville, Spain
 Dimitri Paoloni, Universita degli Studi di Sassari, Italy
 Guillaume Roels, University of California at Los Angeles (CA), USA
 Ernesto San Martin, Ponticia Universidad Catolica de Chile, Santiago, Chile
 Jose J. Sempere Moneris, Universidad de Valencia, Spain
 Shin-Huei Wang, National Tsing Hua University, Hsinchu City, Taiwan

SHORT TERM VISITORS

In addition to the longer stays of the visiting faculty and research fellows, CORE benefited from the visit of a number of scholars whose stays ranged from a few days to a few months. Among them

Agostinho Agra, Universidade de Aveiro, Portugal
 Anil Bera, University of Illinois at Urbana Champaign, Urbana (IL), USA
 Mette Helene Bjorndal, Norwegian School of Economics, Bergen, Norway
 Kirill Borissov, European University St Petersburg, Russia
 Margarida Carvalho, Universidade do Porto, Portugal
 Alejandro Carrasco, Ponticia Universidad Catolica de Chile, Santiago, Chile
 Yoosoon Chang, Indiana University, Bloomington (IN), USA
 Yuriy Dorn, Moscow Institute of Physics and Technology, Russia
 Jean-Yves Duclos, Universit  de Laval, Canada
 Till Duppe, Universit  du Quebec, Montreal, Canada
 Bashkar Dutta, University of Warwick, United Kingdom
 Jianqing Fan, Princeton University (NJ), USA
 Christiane Fiege, Universit t at T ubingen, Germany
 Fran oise Forges, Universit  Paris-Dauphine, France
 Zhengyan Gao, University of Iowa, Iowa City (IA), USA
 Veronique Gille, Paris School of Economics, France
 Lyudmyla Grygoryeva, Universit  de Franche Comte, Besan on, France
 Pierre Hansen, HEC, Montreal, Canada
 Natalia Hritonenko, Prairie View A&M University (TX), USA
 Joshua Ignatius, Universiti Sains Malaysia, Pulau, Pinang, Malaysia
 Alexei Iskakov, Institute of Control Science, Moscow, Russia

Mikhail Iskakov, Institute of Control Science, Moscow, Russia
 Jean-Joachim Ruckmann, Universit et i Bergen, Norway
 Sergey Kokovin, Novosibirsk State University, Russia
 Helene Le Cadre, Mines Paris Tech, France
 Sebastian Martin Rivas, Universidad de Malaga, Spain
 Enrico Minelli, Universitat di Brescia, Italy
 Massimo Morelli, Columbia University, New York (NY), USA
 Shigeo Morita, Osaka University, Japan
 John Morrow, London School of Economics, United Kingdom
 Christophe Muller, GREQAM, Aix-Marseille School of Economics, Marseille, France
 Ion Necoara, Universitatea Politehnica din Bucuresti, Romania
 Yukihiro Nishimura, Osaka University, Japan
 Giorgia Oggioni, Universita degli Studi di Bergamo, Italy
 Juan-Pablo Ortega, Universit  de Franche Comte, Besancon, France
 Maurice Queyranne, University of British Columbia, Vancouver, Canada
 Danny Ralph, Judge Business School, Cambridge, United Kingdom
 Jeroen Rombouts, ESSEC Business School, Cergy-Pontoise, France
 Ernesto San Martin, Ponticia Universidad Catolica de Chile, Santiago, Chile
 Margarita Samartin, Universidad Carlos III de Madrid, Spain
 Daniel Santin Gonzalez, Universidad Complutense de Madrid, Spain
 Alex Siderov, Higher School of Economics, St Petersburg, Russia
 Rolf Steyer, Friedrich-Schiller-Universit t Jena, Germany
 Srinavas Talluli, Michigan State University, East Lansing, (MI), USA,
 Ornella Tarolla, Universita degli Studi di Roma \La Sapienza», Italy
 Filipp Ushchev, Higher School of Economics, St Petersburg, Russia
 Yelena Vardanyan, KTH Royal Institute of Technology, Stockholm, Sweden
 Yuri Yatsenko, Houston Baptist University, Houston (TX), USA
 Martin Wagner, Technische Universit t Dortmund, Germany

RESEARCH FELLOWS AND VISITING FACULTY
MEMBERS FOR 2014-2015

The following scholars will be in residence for all or part of the next academic year:
 Ignace Adant, Ecole Polytechnique, Palaiseau, France
 Gustavo Angulo, Georgia Institute of Technology, Atlanta (GA), USA
 Koen Decancq, Universit it Antwerpen, Belgium
 Arnaud Dufays, CREST, Paris, France
 Silvia Galli, Universit t Sankt Gallen, Switzerland
 Zhengyuan Gao, University of Iowa, Iowa City (IA), USA and Southwestern University of Finance and Economics, Chengdu, China
 Veronique Gille, Paris School of Economics, France
 Guyong Gu, Nanjing University, China
 Jinil Han, INRIA, Bordeaux, France
 Adel Hatami-Marbini, CORE, UCL, Belgium
 Elena Mattana, Stockholm School of Economics, Stockholm, Sweden
 Joniada Milla, University of Guelph, Ontario, Canada
 Dirk Neumann, CORE, UCL, Belgium
 Yukihiro Nishimura, Osaka University, Japan
 Eve Ramaekers, Institut Wallon de l'Evaluation, de la Prospective et de la Statistique (IWEPS), Namur, Belgium
 Sebastian Martin Rivas, Universidad de Malaga, Spain
 Monalisa Sen, University of Illinois at Urbana Champaign, Urbana, (IL), USA
 Vladimir Shikhman, CORE, UCL, Belgium
 Sebastian Urban Stich, ETH Z rich, Switzerland
 Claudio Telha Corneja, Universidad de Chile, Santiago, Chile
 Yukai Kevin Yang, CORE, UCL, Belgium

PRIZES AND AWARDS

- In 2013, Constantin Blome received the best reviewer award from the *Journal of Operations Management*.
- In January 2014, Jacques Dreze received the title of Doctor Honoris Causa from Sciences Po, Paris, France.
- Claude d'Aspremont was elected «President-Elect» of the Society for Social Choice and Welfare, 2014-2015.
- Olivier Devolder, former Ph.D. student at CORE, was conferred the ICTEAM Thesis Award 2014 for his thesis «Exactness, inexactness and stochasticity in first-order methods for large-scale convex optimization» completed in March 2013 under the supervision of François Glineur and Yurii Nesterov.
- Nicolas Gillis (former Ph.D. student at CORE) received the Householder Award for his thesis on «Nonnegative matrix factorization: complexity, algorithms and applications» completed in February 2011 under the supervision of François Glineur. This award is conferred for the best thesis in the area of linear algebra (in a broad sense) defended within the last three years.
- Tanja Mlinar won the Elmaghraby Best Student Paper Award at the 5th International Conference of Information Systems Logistics and Supply Chain 2014 (ILS2014) for her paper co-authored with Philippe Chevalier, «Dynamic admission control for multiple customer classes with stochastic demand and strict due dates».
- In June 2014, Yurii Nesterov received the SIAM Outstanding Paper Prize for his paper «Efficiency of Coordinate Descent Methods on Huge-Scale Optimization Problems».
- In 2014, Mikael Petitjean was awarded «Highly Commended Paper winner» of the *Journal of Financial Regulation and Compliance* for his paper «Bank failures and regulation: a critical review».

- During the period covered by this report, Guillaume Roels has obtained the following recognitions: Honorable mention, 2013 Behavioral Operations Section Best Working Paper Award Competition; First prize, 2013 Service Science Cluster Best Paper Award Competition; 2013 Manufacturing & Service Operations Meritorious Award; 2013 Management Science Distinguished Award and 2014 Eric and «E» Juline Faculty Excellence in Research Award.
- In April 2014, Eva-Maria Scholz has been awarded the 1st place in «The Augustin Cournot Days Best Paper Awards» for her paper «Licensing to vertically related markets».
- Shin-Huei Wang was awarded «The young scholar creativity award» in May 2014. This award is supported by the outstanding scholar foundation of Chinese and Taiwanese Nobel Prize Winners and for young scholar under 40 years old. The award is attributed based on the publications of the candidate and a research project. Cindy Wang proposed a real time financial crisis detecting mechanism.

COMPLETED PH.D. DISSERTATIONS

Six doctoral students successfully defended their Doctoral Dissertation at CORE:

- Nguyen Thang Dao. *Essays on economic growth and development* Economics School of Louvain, UCL, Belgium, September 5, 2013, under the supervision of Julio Davila.

This thesis contributes four essays to the theoretical literature of Economic Growth and Development covering issues of environment, optimal taxation, demography, gender inequality, endogenous technological progress, and comparative development in variations of overlapping generations modelling. The first essay addresses tax and transfer policies to conduct a Diamond (1965) overlapping generations economy with environmental externalities to the social optimum through Pareto-improving path. The second essay studies the role of geographical and environmental conditions as well as a mechanism under which a society can be locked in a stagnation characterized by a small population, zero-education, and low level of technology. The third essay studies the comparative development across societies by considering the differences in geographical advantage for agricultural production between societies. This essay shows that the geographical advantage for agriculture helps a society to be more prosperous in the agricultural regime, but delays its timings of industrialization and demographic transition. The last essay develops a unified growth model and proposes a new mechanism linking technology, gender inequality, and fertility to explain some stylized facts during the development process. It sheds a light that the evolution from Malthusian stagnation, through the demographic transition, to modern sustained growth along with the improvement in gender equality in education (income), and an increasing female labor supply are inevitable outcomes of the development process.

Current position: Mercator Research Institute on Global Commons and Climate Change, Berlin, Germany

- Besik Samkharadze. Essays on modeling international stock market volatility spillovers using multivariate GARCH models Economics School of Louvain, UCL, Belgium, September 25, 2013, under the supervision of Luc Bauwens.

This thesis contributes four essays to the economic literature on the multivariate modeling of the variance-covariance dynamics in the financial time series data, covering the issues of dynamic hedging, international volatility spillovers and financial integration, where applying the Multivariate GARCH models leads to the efficient resolution of a number of ongoing empirical issues. The first essay addresses the portfolio hedging problem for a range of commodities and proposes an alternative way of accounting the asymmetric effect in the volatility by including the asymmetric term in a multivariate GARCH model. By in- and out-of-sample forecast we show that hedging using the asymmetric model outperforms other alternatives. The second essay aims to investigate the cross-border effect of the monetary policy rate announcements on the comovements of the world's major stock markets. The news component of the announcements is extracted from the interest rate futures data. Both the effect of the magnitude and sign of the news are considered. It is demonstrated how these effects may alter the asset allocation decisions. The third essay contributes to the better understanding of the financial integration and volatility, i.e. the risk, transmission across European stock markets and provides comprehensive evidence by using a fully flexible multivariate model. The results are of high practical importance, since the high degree of integration implies higher vulnerability of a country to external risks. On the other, they have considerable implications for financial market participants who are involved in hedging and/or portfolio diversification.

Current position: ABN AMRO Bank N.V., Amsterdam, The Netherlands

- Tanja Mlinar. *Stochastic models for shared production resources in supply chains* LSM Doctoral School, UCL, Belgium, March 10, 2014, under the supervision of Philippe Chevalier.

Expectations of customers regarding variety, customization, fast and reliable due dates of products have been increasing over time. Meeting this demand is a constant challenge for companies given their limited resources. Finding the balance between customers' requirements from one side and companies operations from the other has shown to be an arduous task; variabilities in either demands or operations could have

significant negative consequences on companies' performances. These variabilities could cause the planning problems, creating production delays, long and unreliable due date lead times and straining relationships with customers. As a consequence, more and more companies are interested in finding mechanisms allowing them to produce more efficiently in an environment that is increasingly subject to variability. In the thesis we provide a new perspective on how to implement capacity allocation strategies in order to achieve the desired profits and high due-date adherence. Here we show how to model: (i) capacity sharing with lead time decisions, and (ii) capacity allocation with admission control decisions.

In the first part of the thesis, we study a capacity sharing strategy allowing manufacturing operations for heterogeneous products to be pooled. The literature on the design of service systems revealed that, in a stochastic environment, pooling naturally leads to economies of scale, but heterogeneity can create variability. We investigate this trade-off in the case of a manufacturer assigning due dates to customers in order to guarantee a high service level. We develop a simulation and analytical study based on queuing theory in order to gain insights into the impact of pooling on the due date performance. With this work we show that heterogeneity does not necessarily lead to deterioration of performance, as previously reported in studies of service environments. We show that in case of increased product variety and utilization rate, the heterogeneity can be exploited in our advantage. Next, we demonstrate how companies can attain high due date performance by making collaborative decisions to pool their resources within supply chains. In particular, we find that capacity sharing leads to better overall performance than producing separately even for very high heterogeneity. However, the decision regarding the due-date setting and scheduling policy to implement can have a significant impact on the individual performance. Finally, our study reveals that the benefits of pooling in terms of the expected sojourn time obtained by a simple analytical treatment serve as a good prediction of the benefits of pooling on the due date performance in a wide range of situations.

In the second part of the thesis, we propose a new capacity allocation scheme with admission control decisions for a company that processes orders from multiple demand streams. Given that the capacity may be insufficient to cater for all demands while meeting their promised due dates, the company has to decide whether to accept or reject incoming orders in order to maximize its profit. We formulate this problem as a multi-dimensional Markov Decision Process to gain insights into the optimal policy. The description and calculation of the optimal policy can be highly complex. Thus we provide a family of approximate formulations to reduce the dimension of the state space via aggregation. We compute bounds on the profit associated with the optimal order acceptance policy to measure the efficiency of the approximate formulations

for large instances. We then demonstrate that the structure of the optimal policy is threshold based for almost every state of the system in case of stochastic order sizes. We propose threshold based policies in order to further reduce the complexity of the formulations. Our results show the superiority of the proposed formulations over known methods widely used in the literature. In particular, our policies provide near-optimal solutions quickly and stand out for their robust performance with respect to changes in operational conditions and with respect to differences between the actual and estimated demands.

Current position: Assistant Professor, ESC Rennes School of Business, France

• Margherita Negri. *Essays in political economics* Economics School of Louvain, UCL, Belgium, June 3, 2014, under the supervision of François Maniquet.

The thesis addresses three questions related to the main goals of elections, preference aggregation and politicians' accountability. In the first chapter, we explore the effect of adopting a closed or open list proportional representation system on the representation of minorities in Parliaments. The two systems differ in the possibility for the electorate to express preferential votes for candidates within party-lists. We show that minorities are proportionally represented only under open list, if voters can vote for a limited number of candidates. In all other cases, minorities are poorly represented, or not represented at all. The second chapter provides an explanation for sub-optimal policy making decisions by incumbents. We show that the possibility to stand for re-election can induce them to address less relevant issues, when more relevant ones are too difficult to solve. As failing to solve an issue constitutes a bad signal about their quality, politicians prefer to address easier ones, even if they are less important for the electorate. The goal of the third chapter is to axiomatically characterize a measure of ethnic voting, defined as the extent to which voting decisions are affected by ethnic motivations. The main property we impose on the measure is neutrality with respect to size of ethnic groups and total support of parties. We identify the class of size neutral measures of ethnic voting and investigate monotonicity axioms that are compatible with this property.

Current position: Lecturer, School of Economics and Finance, University of St Andrews, United Kingdom

• Manuel Förster. *Essays on dynamic social influence* Economics School of Louvain, UCL, Belgium and Université Paris 1 Panthéon-Sorbonne, France (EDEEM student), June 10, 2014, under the supervision of Michel Grabisch, Agnieszka Rusinowska and Vincent Vannetelbosch.

This Ph.D. dissertation develops theories of dynamic social influence. In a dynamic framework, individuals interact repeatedly with their social environment and exchange beliefs and opinions on various economic, political and social issues. In Chapter 2, we study influence processes modeled by ordered weighted averaging operators. These operators are anonymous: they only depend on how many agents share a belief. We find a necessary and sufficient condition for convergence to consensus and characterize outcomes where the society ends up polarized. Furthermore, we apply our results to fuzzy linguistic quantifiers. In Chapter 3, we introduce the possibility of manipulation into the model by DeGroot (1974). We show that manipulation can modify the trust structure and lead to a connected society. Manipulation fosters opinion leadership, but the manipulated agent may even gain influence on the long-run beliefs. Finally, we investigate the tension between information aggregation and spread of misinformation. In Chapter 4, we introduce conflicting interests into a model of non-Bayesian belief dynamics. Agents meet with their neighbors in the social network and exchange information strategically. With conflicting interests, the belief dynamics typically fails to converge: each agent's belief converges to some interval and keeps fluctuating on it forever.

Current position: Post doctoral fellow, Center for Research in Economics, Université Saint Louis, Brussels, Belgium

• Vladyslav Nora. *Essays on coordination, conflict and networks* Economics School of Louvain, UCL, Belgium, August 1, 2014, under the supervision of Julio Davila.

This thesis comprises three independent papers, one on game theory and the other two on microeconomic theory. Also the papers tackle different questions, there is a common thread to all of them. When is coordination achievable by rational agents and what are the costs of coordination problems? In the first chapter we address the issue from the game-theoretic perspective of equilibrium selection. In the second chapter we study the implications of the existence of coordination problems among consumers for the revenue maximizing pricing schemes and welfare. In the last chapter we study

when agents are likely sustain conflicts and how the incentives for conflict resolution are determined by a network of interactions.

Current position: Assistant Professor, Nazarbayev University, Republic of Kazakhstan.

PH.D. DISSERTATIONS IN PROGRESS

- Abdelrahman Aly
 - Topic: Implementation of optimization methods libraries working over encryption methods for decentralized computation
 - Supervisor: Mathieu Van Vyve
 - Started: 2011
 - Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCL, Belgium
- Rytis Bagdziunas
 - Topic: Functional data estimation in the presence of endogeneity
 - Supervisor: Sebastien Van Bellegem
 - Started: 2008
 - Doctoral School: Economics School of Louvain, UCL, Belgium
- Sinem Bas
 - Topic: Essays on inequality and poverty measurement
 - Supervisors: Alain Chateauneuf and François Maniquet
 - Started: 2012
 - Doctoral School: Economics School of Louvain, Université catholique de Louvain, Belgium and Université Paris 1 Panthéon-Sorbonne, France (EDEEM student)

- Mikel Bedayo
 - Topic: Essays on social and economic networks
 - Supervisor: Vincent Vannetelbosch
 - Started: 2010
 - Doctoral School: Economics School of Louvain, UCL, Belgium (EDP student)
- Stephane Bouche
 - Topic: Essays on growth and sustainable development: discounting, habits and externalities
 - Supervisor: Julio Davila
 - Started: 2009
 - Doctoral School: Economics School of Louvain, UCL, Belgium (EDP student)
- Manuela Braione
 - Topic: Essays on dynamic models for realized covariance matrices
 - Supervisors: Christian Hafner and Luc Bauwens
 - Started: 2013
 - Doctoral School: Economics School of Louvain, UCL, Belgium
- Benoît Decerf
 - Topic: Social choice and welfare economics
 - Supervisor: François Maniquet and Frank Riedel
 - Started: 2011
 - Doctoral School: Economics School of Louvain, Université catholique de Louvain, Belgium and Universität Bielefeld, Germany (EDEEM student)
- Julien Dewez
 - Topic: Exact nonnegative matrix factorization: algorithms, bounds and applications to optimization
 - Started: 2013
 - Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCL, Belgium

- Aditi Dimri
 - Topic: Poverty measurement and anti-poverty policy design
 - Supervisor: François Maniquet and François Bourguignon
 - Started: 2012
 - Doctoral School: Economics School of Louvain, Université catholique de Louvain, Belgium and Université Paris 1 Panthéon-Sorbonne, France (EDEEM student)
- Cyrille Dossougoin
 - Topic: A spatial econometric approach to financial network modeling
 - Supervisor: Sophie Beraud
 - Started: 2013
 - Doctoral School: LSM Doctoral School, UCL, Belgium
- Mery Ferrando
 - Topic: Well-being and intrahousehold inequality
 - Supervisor: François Maniquet
 - Started: 2012
 - Doctoral School: Economics School of Louvain, UCL, Belgium (EDP student)
- Bartosz Filipecki
 - Topic: Improving models and algorithms for mixed-integer nonlinear optimization in power industry
 - Supervisor: Mathieu Van Vyve
 - Started: 2014
 - Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCL, Belgium
- Claudia Hupkau
 - Topic: Essays on the economics of poverty
 - Supervisor: Andrew Clark and François Maniquet
 - Started: 2010
 - Doctoral School: Economics School of Louvain, UCL, Belgium

- Jonathan Jones
 - Topic: Spatial challenges in urban modeling
 - Supervisors: Dominique Peeters and Isabelle Thomas
 - Started: 2010
 - Doctoral School: School of Geography, UCL, Belgium
- Tanguy Kegelart
 - Topic: Modeling substitutability in supply chain applications at various decision levels
 - Supervisor: Mathieu Van Vyve
 - Started: 2012
 - Doctoral School: LSM Doctoral School, UCL, Belgium
- Alejandro Lamas
 - Topic: Horizontal and vertical relationships in supply chains
 - Supervisor: Philippe Chevalier
 - Started: 2009
 - Doctoral School: LSM Doctoral School, UCL, Belgium
- Arnaud Latiers
 - Topic: Dynamic management of demand in electricity network
 - Supervisor: François Glineur
 - Started: 2012
 - Doctoral School: Graduate School in Systems, Optimization, Control and Networks, UCL, Belgium
- Simone Martelli
 - Topic: On the drivers of greenhouse gas emissions and policies for climate change mitigation
 - Supervisor: Thierry Brechet
 - Started: 2013
 - Doctoral School: Economics School of Louvain, UCL, Belgium

- Pierre-Yves Mistiaen
 - Topic: An exact express shipment service network design algorithm and its analysis with simplified models
 - Supervisor: Mathieu Van Vyve
 - Started: 2013
 - Doctoral School: LSM Doctoral School, UCL, Belgium
- Wenli Peng
 - Topic: Global study chain modeling
 - Supervisor: Philippe Chevalier
 - Started: 2012
 - Doctoral School: Doctoral School of Management, UCL, Belgium
- Francesco Andrea Pirrone
 - Topic: Game theory, monetary economics, macroeconomics
 - Supervisor: Julio Davila
 - Started: 2013
 - Doctoral School: Economics School of Louvain, UCL, Belgium (EDP student)
- Andrew Pua
 - Topic: Responses to the incidental parameter problem
 - Supervisor: Sebastien Van Belleghem
 - Started: 2012
 - Doctoral School: Economics School of Louvain, Université catholique de Louvain, Belgium, and Universiteit van Amsterdam, The Netherlands (EDEEM student)
- Nicolas Scholtes
 - Topic: Agent-based models and network theory applied to interbank markets
 - Supervisors: Sophie Bereau and Jean-Yves Gnabo
 - Started: 2013
 - Doctoral School: Doctoral School of Management, UCL, Belgium

- Eva-Maria Scholz
 - Topic: Incentives to innovate, asymmetric market structure and information
 - Supervisor: Paul Belleflamme
 - Started: 2013
 - Doctoral School: Economics School of Louvain, UCL, Belgium (EDP student)
- Alice Servais
 - Topic: An interbank market in a DSGE model
 - Supervisors: Sebastien Van Belleghem and Frank Smets
 - Started: 2012
 - Doctoral School: Economics School of Louvain, UCL, Belgium and Katholieke Universiteit Leuven, Belgium
- Fahimeh Shamsaei
 - Topic: An improved formulation for dynamic productivity lot sizing problems
 - Supervisor: Mathieu Van Vyve
 - Started: 2010
 - Doctoral School: LSM Doctoral School, UCL, Belgium
- Gilles Sinnaeve
 - Topic: Improved patient to bed allocation to stimulate the bed utilization rate
 - Supervisor: Philippe Chevalier
 - Started: 2013
 - Doctoral School: LSM Doctoral School, UCL, Belgium
- Jonas Teusch
 - Topic: Beyond incentive regulation
 - Supervisors: Per Agrell and Axel Gautier
 - Started: 2013
 - Doctoral School: HEC-Ecole de Gestion de l'Université de Liege, Belgium

- N. Baris Vardar
 - Topic: Optimal transition to clean production technologies
 - Supervisors: Thierry Brechet and Antoine d'Autume
 - Started: 2012
 - Doctoral School: Doctoral School: Economics School of Louvain, UCL, Belgium and Université Paris 1 Panthéon-Sorbonne, France (EDEEM student)

EDEEM

EDEEM is a doctoral program in economics. It gathers 7 leading European institutions coordinated by Universität Bielefeld, Germany. The partners universities are Universiteit van Amsterdam (The Netherlands), the Universität Bielefeld (Germany), Universidade Nova de Lisboa (Portugal), Université catholique de Louvain (Belgium), Université Paris 1 Panthéon-Sorbonne (France), Ecole des Hautes Etudes en Sciences Sociales, Paris (France) and Università Ca'Foscari Venezia (Italy).

The EDEEM Programme welcomes around 25 students each year. The programme is organized in three years. Focus is made on research work, publication and presentation, with dedicated Jamborees and Summer Schools being an essential part of the training.

All PhD students are jointly supervised by two advisers through a co-tutelle agreement between two universities in the consortium. The student must spend at least two semesters in each of the two degree-granting universities. After having successfully completed the program, the student is awarded a double degree from the two hosting institutions.

Three students were at CORE in the scope of this program during academic year 2013-2014: Sinem Bas, Aditi Dimri, Manuel Förster, Andrew Pua and N. Baris Vardar.

As part of the European Doctorate in Economics - Erasmus Mundus (EDEEM) consortium, the Universität Bielefeld hosted the 2014 EDEEM Jamboree on July 2014. The event is one of the activities for doctoral students participating in the EDEEM program. The idea of the Jamboree is to give students the opportunity to present their work within the EDEEM network and to encourage

discussion. Another activity in the Jamboree was a job market placement training session. Furthermore the annual monitoring of EDEEM doctoral students took place during the Jamboree.

JULY 9, 2014

SESSION 1: GAME THEORY

Chair: Frank Riedel, Universität Bielefeld, Germany

- Lorenzo Bastianello, Università Ca'Foscari Venezia, Italy and Université Paris 1 Panthéon-Sorbonne, France
A target-based rationale for cooperative bargaining solutions
- Lan Sun, Université Paris 1 Panthéon Sorbonne, France and Universität Bielefeld, Germany
Irreversible investment games with ambiguity
- Benoît Decerf, Université catholique de Louvain, Belgium and Universität Bielefeld, Germany
Disambiguation of Ellsberg equilibria in 2 2 normal form games

SESSION 2: INVESTMENT AND FINANCE

Chair: Sander van der Hoog, Universität Bielefeld, Germany

- Michiel van der Leur, Universiteit van Amsterdam, The Netherlands and Università Ca'Foscari Venezia, Italy
Information and efficiency in thin markets over random networks
- Hsin-Mien Wang, Universität Bielefeld, Germany and Universiteit van Amsterdam, The Netherlands
An R&D race with accumulation of public knowledge stock
- Igor Khorenzhenko, Université Paris 1 Panthéon-Sorbonne, France and Universität Bielefeld, Germany
Individual incentives to innovate in heterogeneous environment
- Yuanyuan Li, Universität Bielefeld, Germany and Université Paris 1 Panthéon-Sorbonne, France
Market transparency and the risk-taking of banking sectors

JULY 10, 2014

SESSION 3: POVERTY AND DISCRIMINATION

Chair: Gerard Willmann, Universität Bielefeld, Germany

- Sheng Bi, Université Paris 1 Panthéon Sorbonne, France and Universität Bielefeld, Germany
Social culture and employment discrimination
- Aditi Dimri, Université catholique de Louvain, Belgium and Université Paris 1 Panthéon Sorbonne, France
Welfare-consistent poverty measurement
- Sinem Bas, Université catholique de Louvain, Belgium and Université Paris 1 Panthéon Sorbonne, France
Poverty measurement with heterogeneous preferences
- Elisa Rizzo, Université Paris 1 Panthéon Sorbonne, France and Université catholique de Louvain, Belgium
Private versus public education: how different education systems affect crime

SESSION 4: ENERGY AND HOUSING MARKETS

Chair: Alfred Greiner, Universität Bielefeld, Germany

- Moutaz Altaghlibi, Université Paris 1 Panthéon Sorbonne, France and Universiteit Amsterdam, The Netherlands
Climate policy and carbon leakage with firm heterogeneity in a Melitz like model
- N. Baris Vardar, Université Paris 1 Panthéon Sorbonne, France and Université catholique de Louvain, Belgium
Optimal energy transition and taxation of non-renewable resources
- Bertrand Achou, Université Paris 1 Panthéon Sorbonne, France and Università Ca' Foscari Venezia, Italy
Home production and disability in retirement: a life-cycle perspective

SESSION 5: ECONOMETRICS AND FINANCE

Chair: Frederik Herzberg, Universität Bielefeld, Germany

- Andrew Adrian Pua, Universiteit van Amsterdam, The Netherlands and Université catholique de Louvain, Belgium
The role of sparsity in panel models
- Marco Petrov, Universidade Nova de Lisboa, Portugal and Université Paris 1 Panthéon Sorbonne, France
Equilibrium bid-ask spread of European derivatives in dry markets
- Fanirisoa Hasinavonizaka, Université Paris 1 Panthéon Sorbonne, France and Università Ca' Foscari Venezia, Italy
Network approach for portfolio theory and risk diversification

SESSION 6: MACROECONOMICS

Chair: Christiane Clemens, Universität Bielefeld, Germany

- Zainab Iftikhar, Universität Bielefeld, Germany and Université catholique de Louvain, Belgium
Brain drain and firms' replacement costs
- Lalaina Rakotonindrainy, Universität Bielefeld, Germany and Université Paris 1 Panthéon Sorbonne, France
Transfer mechanism in an OLG model
- Thu Hien Dao, Universität Bielefeld, Germany and Université catholique de Louvain, Belgium
The mobility of capital and labor

JULY 11, 2014

SESSION 7: BANKING AND FINANCE

Chair: Bernard Eckwert, Universität Bielefeld, Germany

- Julien Pinter, Université Paris 1, France and Universiteit van Amsterdam, The Netherlands
Central bank financial strength and inflation: where does it matter?

- Dai Hung Ly, Universität Bielefeld, Germany and Université Paris 1 Panthéon Sorbonne, France

Financial integration in open endogenous growth model

- Anna Petronevich, Université Paris 1 Panthéon Sorbonne, France and Università Ca' Foscari Venezia, Italy

Dating business cycle turning points for the Eurozone area

- Juanxi Wang, Universiteit van Amsterdam, The Netherlands, and Universität Bielefeld, Germany

Incentive and performance in financial market - a study of heterogeneous types of fund managers

Invited Speaker: Walter Trockel, Universität Bielefeld, Germany

Shapley-Shubik market games revisited

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 seven universities: Université catholique de Louvain (Belgium), Paris School of Economics (France), Rheinische Friedrich-Wilhelms-Universität Bonn (Germany), European University Institute, Firenze (Italy), Universitat Pompeu Fabra, Barcelona (Spain), London School of Economics (United Kingdom) and Tel Aviv University (Israel) as an exchange partner.

This is done within the framework of the existing degree requirements of these institutions. Its aim is to promote the exchange of doctoral students between these institutions in order for their research training to benefit from the institutions' strengths in the various areas of quantitative economics.

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

The program focuses on economic theory, mathematical economics, decision and game theory, econometric theory and methodology, empirical econometrics and applied mathematical economics through the coordinated curriculum based on the activities at Barcelona, Bonn, Florence, London, Louvain, Paris and Tel-Aviv. It creates the opportunity for students to specialize in almost any major area of quantitative economics, and, at the same time, it allows students to integrate different aspects of economics. Moreover, the EDP offers a unique access to the traditions and current research of these seven institutions.

The program started in 1977. Eleven students obtained their certificate during the academic year 2013-2014. Forty-one students are currently enrolled. Seven are currently staying at CORE: Mikel Bedayo, Stephane Bouche, Mery Ferrando, Margherita Negri, Francesco Andrea Pirrone and Eva-Maria Scholz.

As part of the European Doctoral Program in Quantitative Economics (EDP), CORE organized the EDP Jamboree 2013. It took place in Brussels (Université Saint-Louis) on November 21-22. Around 50 students attended it.

NOVEMBER 21, 2013

KEYNOTE LECTURE

- Wouter Vergote, Université Saint-Louis, Brussels and CORE, UCL, Belgium

Network formation between rivals

SESSION 1

Chair: Vincent Vannetelbosch, CORE, UCL, Belgium

- David Schönherr, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany

Lending in social networks

- Sarah Auster, European University Institute, Firenze, Italy

Ambiguity and asymmetric information

SESSION A1: PUBLIC ECONOMIC THEORY

Chair: Laurent Lamy, Ecole des Hautes Etudes en Sciences Sociales, Paris, France

- Markus Riegler, London School of Economics, United Kingdom
Multi-worker firms and size adjustment costs
- Enrico Mallucci, London School of Economics, United Kingdom
Rigid government expenditures, fiscal space and sovereign default
- Andrei Victor Potlogea, Universitat Pompeu Fabra, Barcelona, Spain
Globalization and the smart city

SESSION B1: EMPIRICAL LABOUR ECONOMICS

Chair: Bertrand Hamaide, Université Saint-Louis, Brussels, Belgium

- Guo Xu, London School of Economics, United Kingdom
The value of reputation: evidence from outsourcing
- Giulia Zane, London School of Economics, United Kingdom
Absenteeism: evidence from Indian firms
- Pietro Dallari, Universitat Pompeu Fabra, Barcelona, Spain
The effects of government spending cuts on labour markets. Evidence for Europe

SESSION A2: EMPIRICAL PUBLIC ECONOMICS

Chair: Gernot Müller, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany

- Yannick Dupraz, Ecole des Hautes Etudes en Sciences Sociales, Paris, France
British and French colonial education in Africa: a discontinuity analysis at the border between French and English speaking Cameroon preliminary
- Florian Blum, London School of Economics, United Kingdom
Food for thought: examining trade-offs in nutrition choices
- Martin Acht, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Altruism in disguise? Why donors channel aid through NGOs and multilateral institutions

SESSION B2: FINANCIAL ECONOMICS

Chair: Vincent Vannetelbosch, CORE, UCL, Belgium

- Maia Gejadze, LSM, UCL, Belgium
Internal syndication of venture capital investments
- Stephan Luck, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany
Private and public supply of liquidity: bank runs and roll-over risk
- Fabian Winkler, London School of Economics, United Kingdom
Learning in the stock market and credit frictions

SESSION 2

Chair: Xavier Wauthy, Université Saint-Louis, Brussels and CORE, UCL, Belgium

- Felipe Valencia C., Universitat Pompeu Fabra, Barcelona, Spain
The persistence of (subnational) fortune
- Andrea Ariu, IRES, UCL, Belgium
Crisis-proof services: why trade in services did not suffer during the 2008-2009 crisis

KEYNOTE LECTURE

- Forian Mayneris, CORE and IRES, UCL, Belgium
High-end variety exporters defying distance: micro-facts and macroeconomic implications

NOVEMBER 22, 2013**KEYNOTE LECTURE**

- Paul Belleflamme, CORE, UCL, Belgium
Dynamic protection of innovations through patents and trade secrets

SESSION 3

Chair: Fabrizio Germano, Universitat Pompeu Fabra, Barcelona, Spain

- Dominique Chariot, Université Saint-Louis, Brussels, Belgium
Trust and reciprocity

- Manuel Förster, CORE, UCL, Belgium

Trust and manipulation in social networks

SESSION A3: MICROECONOMICS

Chair: Paul Belleflamme, CORE, UCL, Belgium

- Eva-Maria Scholz, CORE, UCL, Belgium

Licensing to vertically related markets

- Oliver Pardo, London School of Economics, United Kingdom

On the evolution of cooperation through coordinations on neutral traits

- Roberto Claudio Sormani, London School of Economics, United Kingdom

Bringing spoilsports to the party. Cooperation in teams under incentives to participate

SESSION B3: MACROECONOMICS

Chair: Jean-François Fagnart, Université Saint-Louis, Brussels, Belgium

- Stéphane Bouche, CORE, UCL, Belgium

Habits in consumption, pollution accumulation and intergenerational inequalities

- Mendiratta Vibhuti, Ecole des Hautes Etudes en Sciences Sociales, Paris, France

Long-term effects of household electrification in rural India

- Ourens Guzman, IRES, UCL, Belgium

Can the method of reflections help predict future growth?

SESSION A4: PUBLIC ECONOMICS

Chair: Ana Mauleon, Université Saint-Louis, Brussels, Belgium and CORE, UCL, Belgium

- Amar Shanghavi, London School of Economics, United Kingdom

An urban legend? Power rationing, fertility and its effects on mothers

- Aysegul Kayaoglu, IRES, UCL, Belgium

Socio-economic impact of conflict: state of emergency ruling in Turkey

- Ilse Lindenlaub, European University Institute, Firenze, Italy

Sorting multidimensional types: theory and application

SESSION B4: FINANCIAL AND MONETARY ECONOMICS

Chair: Gilles Grandjean, Université Saint-Louis, Brussels, Belgium

- Anna Grodecka, Rheinische Friedrich-Wilhelms Universität Bonn, Germany

House prices, credit and monetary policy in the US and in the UK

- Gregory Claeys, European University Institute, Firenze, Italy

Bond auctions and investors' liquidity risk

- Daniel Osorio-Rodriguez, London School of Economics, United Kingdom

Dollar debt and optimal monetary policy: the role of the exchange rate in completing markets

DOCTORAL WORKSHOPS

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

DW'14 - DOCTORAL WORKSHOP IN ECONOMICS, UNIVERSITÉ SAINT LOUIS, BRUSSELS, BELGIUM

JANUARY 29, 2014

PLENARY SESSION: SOCIAL NETWORKS AND ECONOMETRICS

- Mikel Bedayo, CORE, UCL, Belgium

A network analysis of firms' credit markets

- Manuel Förster, CORE, UCL, Belgium

Trust and manipulation in social networks

- Rytis Bagdziunas, CORE, UCL, Belgium

Galerkin estimation in functional linear instrumental regression models

PARALLEL SESSION: INTERNATIONAL TRADE

- Nicolas Gonne, Université de Namur, Belgium
Monopolistic competition, heterogeneous firms and the Modigliani-Miller theorem
- Sotiris Blanas, IRES, UCL, Belgium
Oshoring, labour market institutions and the elasticity of demand for different age-skill groups of workers
- Joël Machado, IRES, UCL, Belgium
Global competition for attracting talents and the world economy

PARALLEL SESSION: MACRO AND DEVELOPMENT

- Stephane Bouche, CORE, UCL, Belgium
Discounting, consumption externalities and growth
- Giulia Camilotti, Université de Namur, Belgium
The dynamics of female genital cutting: Evidence from Senegal
- Michal Burzynski, IRES, UCL, Belgium
The welfare impact of global migration in the OECD countries

PLENARY SESSION: LABOR ECONOMICS

- Koen Declercq, KU Leuven, Belgium
Participation and efficiency in higher education with ex post screening
- Sofia Pessoa e Costa, IRES, UCL, Belgium
Bounding the impact of a training programme on wages in the presence of sample selection

MAY 27, 2014**PARALLEL SESSION: INTERNATIONAL ECONOMICS 1**

- Christian Viegelaehn, IRES, UCL, Belgium
Trade protection and input switching: evidence from Indian importers
- Sotiris Blanas, IRES, UCL, Belgium
Foreign allies with and without intra-firm trade: evidence from sub-Saharan Africa

PARALLEL SESSION: MACROECONOMICS 1

- Pierre Pecher, IRES, UCL, Belgium
The impact of the number of included ethnic groups on economic growth in weakly-institutionalized power-sharing economies
- Alice Servais, CORE, UCL, and CES, KU Leuven, Belgium
Financial frictions on the interbank market

PARALLEL SESSION: DEVELOPMENT ECONOMICS 1

- François Libois, Université de Namur, Belgium
Fertility, household size and poverty in Nepal
- Ombeline De Bock, Université de Namur, Belgium
Are assets-poor individuals excluded from risk-sharing mechanisms? Evidence from rural Rwanda

PARALLEL SESSION: INTERNATIONAL ECONOMICS 2

- Michal Burzynski, IRES, UCL, Belgium
Trading goods or human capital: the winners and losers of liberalization
- Tommaso Sonno, IRES, UCL, Belgium
Firm-level productivity and exporting: diagnosing the role of financial constraints

PARALLEL SESSION: ENVIRONMENTAL ECONOMICS 2

- Giulia-Lavinia Specchia, IRES, UCL, Belgium
Does it pay to be eco-friendly?
- Hamzeh Arabzadeh Jamali, IRES, UCL, Belgium
Non-industrialization trap of resource rich countries. A model of Dutch disease and search & match labor friction

PARALLEL SESSION: MICROECONOMICS

- Andrea Pirrone, CORE, UCL, Belgium
Common knowledge in correlated equilibria and global games

- Margherita Negri, CORE, UCL, Belgium

Minority representation in proportional representation systems

- Abhimanyu Arora, Université de Namur, Belgium

Intra-household decision-making

PARALLEL SESSION: BEHAVIOURAL ECONOMICS

- Elena Serfilippi, Université de Namur, Belgium

Discontinuity of preferences and insurance demand

- Qi Zhang, ECON, UCL, Belgium

Networks of manufacturers and retailers

- Elias Carroni, Université de Namur, Belgium

Behavior based price discrimination with horizontal and vertical differentiation

PARALLEL SESSION: DEVELOPMENT ECONOMICS 2

- Astrid Similon, Université de Namur, Belgium

With or without venture philanthropy? Nonprofit competition for funding under asymmetric information

- Anne Michels, Université de Namur, Belgium

Unequal bequests in egalitarian communities with migration: solving a paradox of the Bolivian Altiplano

- Diana Gutierrez, ECON, UCL, Belgium and Université Paris 1 Panthéon-Sorbonne, France

Spatial determinants of land prices in developing countries: the case of Bogota

PARALLEL SESSION: LABOUR ECONOMICS 1

- Corrina Ghirelli, Université Gent, Belgium

The importance of early working experience on workers' subsequent careers

- Alexandre Ounnas, IRES, UCL, Belgium

Mismatch unemployment in a two sectors model

PARALLEL SESSION: MACROECONOMICS 2

- Marco Delogu, IRES, UCL, Belgium

Infrastructure, human capital and development: the role of informality and brain drain

- Stephane Bouche, CORE, UCL, Belgium

Discounting, consumption externalities and growth

PARALLEL SESSION: LABOUR ECONOMICS 2

- Pierre-Alexandre Modart, ECON, UCL, Belgium

Efficient estimation of value added indicators

- Vanessa Lutgen, IRES, UCL, Belgium

Dynamic regional equilibrium unemployment theory

- Olivier Broli, IRES, UCL, Belgium

Personal services and job quality of low-skilled workers: does the mission of the organization matter? The case of quasi-market of services-vouchers in Belgium

PARALLEL SESSION: DEVELOPMENT ECONOMICS 3

- Benoît Decerf, CORE, UCL, Belgium

Income poverty measures with relative poverty lines

- Jeremie Gross, Université de Namur, Belgium

An analysis of the impact of a community-based food security intervention on nutritional status of rural populations in Northern Burkina Faso

- Wouter Gelade, Université de Namur, Belgium

Can we measure expectations? An experiment in eliciting expectations in Burkina Faso

VAR MODELS: TIME-VARYING PARAMETERS AND IDENTIFICATION WITH SIGN RESTRICTIONS

Christiane Baumeister, Senior Analyst in the International Studies and Modeling Division of the International Economic Analysis Department at the Bank of Canada, taught a course of 18 hours on the following topics:

MARCH 19, 2014

- Introduction to VAR models: estimation and identification
 - Introduction to VAR models: Bayesian estimation via Gibbs sampling
 - Introduction to VAR models: identification
 - Matlab applications

MARCH 20, 2014

- New approaches to identification of VAR models with sign restrictions
 - Identification of VAR models with sign restrictions: traditional and new approaches
 - Sign restrictions, structural vector autoregressions, and useful prior information
 - Matlab applications

MARCH 21, 2014

- Time-varying VAR models with stochastic volatility
 - State-space models and the Kalman filter
 - Stochastic volatility models
 - Matlab applications

MARKOV SWITCHING AND TIME-VARYING PARAMETER MODELS IN FINANCE

Allan Timmermann, holder of the Atkinson/Epstein Chair at the Rady School of Management at University of California, San Diego, taught a course at the National Bank of Brussels, Belgium, on the following topics:

MARCH 26, 2014

- Introduction to regime switching models and their estimation
 - Properties of regime switching processes
 - Econometrics of Regime switching models

MARCH 27, 2014

- Regime switching in asset pricing models: theory and applications
 - Regime switching in asset pricing models
 - Applications to portfolio and risk analysis

MARCH 28, 2014

- Time-varying parameter models with applications to mutual funds
 - Time-varying parameter models
 - Tracking time-varying skills for mutual funds

CORE SEMINARS
WORKSHOPS AND
READING GROUPS

4

WEEKLY CORE SEMINARS

- Econometrics Seminar
- Economic Theory Seminar
- Mathematical Programming Seminar
- ECORES, joint CORE-ECARES-CES Seminar
- Trade & Economic Geography Seminar
- Welfare Economics Seminar

READING GROUPS
SEMINARS AND WORKSHOPS

- Reading Group in Econometrics
- Reading Seminar in Operations Research

WEEKLY CORE SEMINARS

ECONOMETRICS SEMINAR

- September 17, 2013. Grzegorz Halaj, European Central Bank, Frankfurt, Germany
Modeling emergence of the interbank networks
(Joint with Mathematical Programming Seminar)
- September 23, 2013. Alexei Onatski, Cambridge University, United Kingdom
Signal detection in high dimension
(Joint CORE-ISBA Seminar within the framework of the ARC project on stochastic modeling of dependence)
- October 14, 2013. Diao Noureldin, University of Oxford, United Kingdom
Volatility prediction using a high-frequency-based component model
(Joint CORE-ISBA Seminar within the framework of the ARC project on stochastic modeling of dependence)
- October 21, 2013. Eric Gautier, ENSAE-CREST, Paris, France
Uniform condense sets in high dimensional linear models with heteroscedasticity by linear programming
- October 28, 2013. Chris Brooks, University of Reading, United Kingdom
Optimal weighting of recursive forecast errors
(Joint with LSM Finance Seminar)
- November 18, 2013. Nicolas Pistoiesi, Toulouse School of Economics, France
Post schooling human capital investments and the life cycle variance of earnings
(Joint with Economic Theory Seminar)
- November 25, 2013. Torbjørn Hægeland, Statistics Norway, Government of Norway, Oslo, Norway
Access to treatment and educational inequalities in cancer survival

- December 9, 2013. Cem Ertur, Université d'Orleans, France
Interaction matrix selection in spatial econometric models: application to the Schumpeterian growth model with worldwide interactions
(Joint with LSM Finance Seminar and Trade & Economic Geography Seminar)
- December 16, 2013. Roman Liesenfeld, Christian-Albrechts-Universität zu Kiel, Germany
Analysis of discrete dependent variable models with spatial correlation
(Joint CORE-ISBA Seminar within the framework of the ARC project on stochastic modeling of dependence)
- January 21, 2014. Ryan Webb, New York University (NY), USA
Rationalizing context-dependent preferences: divisive normalization and neurobiological constraints on decision-making
- February 10, 2014. Shin-Huei Wang, National Tsing Hua University, Taiwan
Prediction of multivariate long memory processes subject to structural breaks
- February 11, 2014. Adriana Cornea, University of Exeter, United Kingdom
The explicit formula for the Hodrick-Prescott filter
- February 11, 2014. Samuele Centorrino, Toulouse School of Economics, France
On the implementation of nonparametric instrumental regressions with data driven choice of the regularization parameter
- February 11, 2014. Ostap Okhrin, Humboldt-Universität zu Berlin, Germany
Efficient iterative maximum likelihood estimation of high-parameterized time series models
- February 18, 2014. Zhengyuan Gao, University of Iowa (IO), USA and Southwestern University of Finance and Economics, Chengdu, China
Minimum distance estimation in simultaneous equation models
- February 18, 2014. Matteo Luciani, Université libre de Bruxelles, Brussels, Belgium
Dynamic factor models, cointegration, and error correction mechanisms

- February 18, 2014. Arnaud Dufays, ENSAE, Malako, France
On the conjugacy of o-line and online sequential Monte Carlo samplers
- February 24, 2014. Yukai Kevin Yang, CORE, UCL, Belgium
State-space models on Stiefel manifold: specification and estimation
- March 17, 2014. Thanasis Stengos, University of Guelph, United Kingdom
Structural threshold regression
- March 20, 2014. Christiane Baumeister, Bank of Canada, Ottawa, Canada
Sign restrictions, structural vector autoregressions, and useful prior information
(Joint with LSM Finance Seminar)
- March 24, 2014. Roberto Casarin, Universita Ca' Foscari di Venezia, Italy
Bayesian nonparametrics calibration and combination of predictive distributions
- March 27, 2014. Allan Timmermann, University of California at San Diego (CA), USA
Modelling bond return predictability
- May 5, 2014. Andreas Pick, Erasmus Universiteit Rotterdam, The Netherlands
Optimal forecasts from Markov switching models and the effect of uncertain break dates
- May 12, 2014. Anna Simoni, Université de Cergy Pontoise, France
Semi-parametric Bayesian partially identified models based on support function
(Joint CORE-ISBA Seminar within the framework of the ARC project on stochastic modeling of dependence)
- May 19, 2014. Cliord Lam, London School of Economics, United Kingdom
Estimation of spatial weight matrices in large spatial lag/error panels
(Joint CORE-ISBA Seminar within the framework of the ARC project on stochastic modeling of dependence)

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(Joint CORE-ISBA Seminar within the framework of the ARC project on stochastic modeling of dependence)

- June 16, 2014. Yoosoon Chang, Indiana University, Bloomington (IN), USA
Time series analysis of cross-sectional distributions
- June 16, 2014. Anil Bera, University of Illinois at Urbana-Champaign, Urbana (IL), USA
Contrasts between time series and spatial models

ECONOMIC THEORY SEMINAR

- September 23, 2013. Wolfgang Kuhle, Max Planck Institute for Research on Collective Goods, Bonn, Germany
Information aggregation through stock prices and the cost of capital
- October 14, 2013. Rajiv Sethi, Columbia University, New York (NY), USA
Perspectives, opinions, and information flows
- October 21, 2013. Elena Mattana, CORE, UCL, Belgium
Student aid, academic achievement, and labor market behavior: grants or loans?
- November 18, 2013. Nicolas Pistoiesi, Toulouse School of Economics, France
Post schooling human capital investments and the life cycle variance of earnings
(joint with Econometrics Seminar)
- November 25, 2013. Juan Sebastian Pereyra Barreiro, Université libre de Bruxelles, Brussels, Belgium
Strategic uncertainty and unraveling in matching markets
- December 2, 2013. Yurii Nesterov, CORE, UCL, Belgium
Algorithmic models of market equilibrium. Part 1 (Theory)
(Joint with Mathematical Programming Seminar)
- December 3, 2013. Vladimir Shikhman, CORE, UCL, Belgium
Algorithmic models of market equilibrium. Part 2 (Applications)
(Joint with Mathematical Programming Seminar)

- December 9, 2013. Nicolas Schutz, Universität Mannheim, Germany
Cross-border price effects of mergers and acquisitions - A quantitative framework for competition policy
(Joint with Trade & Economic Geography Seminar)
- December 16, 2013. Martyna Kobus, Polish Academy of Sciences, Warszawa, Poland
Piracy as an ethical decision
- January 27, 2014. Petra Thiemann, University of California at Berkeley (CA), USA
Social planning with spillovers: the persistent effects of short-term peer groups
- January 28, 2014. Martin Obradovits, Universität Wien, Austria
Austrian-style gasoline price regulation: how it may backfire
- January 30, 2014. Cristopher Rauh, Universitat Autònoma de Barcelona, Spain
The political economy of early and college education - Can voting bend the great Gatsby curve?
- January 30, 2014. Stefano Bolatto, Università degli Studi di Torino, Italy
Trade across countries and manufacturing sectors with heterogeneous trade elasticities
- January 31, 2014. Antonin Mace, Ecole Polytechnique, Paris, France
Voting with evaluations: when should we sum? What should we sum?
- January 31, 2014. Jian Shen, The Ohio State University, Columbus (OH), USA
Ordered search, product differentiation, and price competition
- February 10, 2014. Jean-Yves Duclos, Université de Laval, Canada
Is global social welfare increasing? A critical-level inquiry
- February 17, 2014. Raphael Levy, Universität Mannheim, Germany
Two-sided reputation in certification markets

- February 24, 2014. Fran136coise Forges, Université Paris-Dauphine, France
Bayesian repeated games and reputation
- March 3, 2014. Daniel Santin Gonzalez, Universidad Complutense Madrid, Spain
Comparing school ownership performance using a pseudo-panel database: a Malmquist-type index approach
- March 17, 2014. Yiannis Vailakis, University of Glasgow, Scotland
Reputation debt and the role of interest rates
- March 24, 2014. Julio Davila, CORE, UCL, Belgium
Public domain
- March 31, 2014. Konrad Stahl, Universität Mannheim, Germany
Innovation, competition, and trust: theory, and evidence from procurement in German automotive manufacturing
- May 5, 2014. Salvador Barbera, Universitat Autònoma de Barcelona, Spain
Sequential voting and agenda manipulation
- May 12, 2014. Ron Smith, Birkbeck College, London, United Kingdom
On identification of Bayesian DSGE models
- May 19 2014. Michael Hoy, University of Guelph, Ontario, Canada
The value of technology improvements in games with externalities: a fresh look at osetting behavior
- May 26, 2014. Etienne Wasmer, SciencesPo, Paris, France
Fiscal multipliers and policy in a model of goods, labor and credit market frictions
- June 2, 2014. Miguel Leon-Ledesma, University of Kent, Canterbury, United Kingdom
Appropriate technology and balanced growth
- June 16, 2014. Fernando Vega-Redondo, Università Bocconi, Milano, Italy
Bargaining and arbitrage in endogenous trading networks

MATHEMATICAL PROGRAMMING SEMINAR

- September 17, 2013. Grzegorz Halaj, European Central Bank, Frankfurt, Germany
Modeling emergence of the interbank networks
(Joint with Econometrics Seminar)
- September 24, 2013. Vyacheslav Kungurtsev, KU Leuven, Belgium
Exact second derivatives SQJ methods
- October 31, 2013. Diethard Klatte, Universität Zürich, Austria
Strong and metric regularity of generalized equations in nonlinear optimization
- November 5, 2013. Sri Talluri, Michigan State University, East Lansing (MI), USA
Assessing the efficiency of risk mitigation strategies in supply chains
- November 12, 2013. Claudio Gentile, Istituto di Analisi dei Sistemi ed Informatica \Antonio Ruberti», Roma, Italy
Developments in the solution of unit commitment problems
- December 2, 2013. Yurii Nesterov, CORE, UCL, Belgium
Algorithmic models of market equilibrium. Part 1 (Theory)
(Joint with Economic Theory Seminar)
- December 3, 2013. Vladimir Shikhman, CORE, UCL, Belgium
Algorithmic models of market equilibrium. Part 2 (Applications)
(Joint with Economic Theory Seminar)
- December 10, 2013. Denis Cornaz, Université Paris Dauphine, France
König's edge-colouring theorem for all graphs
- December 17, 2013. Jacek Gondzio, University of Edinburgh, Scotland
Inexact search directions and matrix-free methods for large-scale optimization
- January 14, 2014. Maurice Queyranne, Sauder School of Business, Vancouver, Canada
Modeling convex subsets of points

- January 21, 2014. Ettore F. Bompard, Politecnico di Torino, Italy
Market-based control in emerging distribution system operation
- January 31, 2014. Roberto Roberti, Università degli Studi di Bologna, Italy
The fixed charge transportation problem: an exact algorithm based on a new integer programming formulation
- February 4, 2014. Boris Vexler, Technische Universität München, Germany
Sparse control problems in measure spaces: regularity and FEM discretization
- February 11, 2014. Joao Pedro Pedroso, Universidade do Porto, Portugal
Equilibria on a game with discrete variables
- March 18, 2014. Alkis Vazacopoulos, Industrial Algorithms LLC, Harrington Park (NJ), USA
Industrial owsheet optimization and estimation (IFOE) using IMPL
- March 25, 2014. Agostinho Agra, Universidade de Aveiro, Portugal
A robust vehicle routing problem with time windows
- April 29, 2014. Mathieu Van Vyve, CORE, UCL, Belgium
Efficient approximation algorithms for the economic lot-sizing in continuous time
- May 6, 2014. Jan-Joachim Ruckham, Universit t i Bergen, Norway
Max-type objective functions: a smoothing procedure and strongly stable stationary points
- June 3, 2014. Rico Zenklusen, Eidgen ssische Technische Hochschule Z rich, Switzerland
Multi-budgeted matchings via the ham sandwich theorem

ECORES, JOINT CORE-ECARES-CES SEMINAR

- October 7, 2013. Frederic Vermeulen, CES, KU Leuven, Belgium
Sharing rule identification for general collective consumption models
Discussant: Franois Maniquet, CORE, UCL, Belgium

- November 4, 2013. Anthony Papavasiliou, CORE, UCL, Belgium
Self-commitment of combined cycle units under electricity price uncertainty
Discussant: Estelle Cantillon, ECARES, ULB, Belgium
- December 2, 2013. Paola Conconi, ECARES, ULB, Belgium
Guns and votes
Discussant: Frans Spinnewyn, CES, KU Leuven, Belgium
- March 10, 2014. Mathieu Parenti, CORE, UCL, Belgium
Toward a 'general' model of monopolistic competition
- April 28, 2014. Matteo Luciani, ECARES, ULB, Belgium
The emergence of systemically important insurers

TRADE & ECONOMIC GEOGRAPHY SEMINAR

- September 17, 2013. Ina Simonovska, University of California at Davis (CA), USA
Different trade models, different trade elasticities
(Joint with Macro Lunch Seminar)
- October 1, 2013. Volodymyr Vakhitov, Kyiv School of Economics, Kiev, Ukraine
Effect of negative clusters' on the productivity of manufacturing firms : evidence of Ukrainian firm-level data
(Joint with Macro Lunch Seminar)
- November 5, 2013. John Morrow, London School of Economics, United Kingdom
Productivity as if space mattered: an application to factor markets across China
- November 7, 2013. Miren Lafourcade, Universit  Paris Sud and Paris School of Economics, France
The carbon footprint of suburbanization: evidence from French household data
(Joint with IRES Research Seminar)

- December 9, 2013. Cem Ertur, Université d'Orleans, France
Interaction matrix selection in spatial econometric models: application to the Schumpeterian growth model with worldwide interactions
(Joint with LSM Finance Seminar and Econometrics Seminar)
- December 9, 2013. Nicolas Schutz, Universität Mannheim, Germany
Cross-border price effects of mergers and acquisitions - A quantitative framework for competition policy
(Joint with Economic Theory Seminar)
- March 11, 2014. Yoichi Sugita, Stockholm School of Economics, Sweden
Assortative matching of exporters and importers
- April 3, 2014. Gianmarco Ottaviano, London School of Economics, United Kingdom
The buyer margins of firms' exports
(Joint with IRES Research Seminar)
- May 6, 2014. Jean-Charles Delvenne, CORE and INMA, UCL, Belgium
Trade integration and trade imbalances in the European Union: a network perspective

WELFARE ECONOMICS SEMINAR

- October 14, 2013. Marion Leturcq, CORE, UCL, Belgium
On the nature of commodities in collective households models
- October 21, 2013. Vladyslav Nora, CORE, UCL, Belgium
Contracting on networks
- October 28, 2013. Margherita Negri, CORE, UCL, Belgium
Minority representation in proportional representation systems
- November 18, 2013. Benoît Decerf, CORE, UCL, Belgium and Universität Bielefeld, Germany
Aggregate poverty measures with relative poverty lines

- December 9, 2013. Giacomo Valletta, Universiteit Maastricht, The Netherlands
A welfare evaluation of the tax reform act of 1986
- January 20, 2014. Dirk Neumann, CORE, UCL, Belgium
Who are the worst-off in Germany?
- February 17, 2014. Manuel Förster, CORE, UCL, Belgium
Strategic communication in social networks
- February 24, 2014. Shigeo Morita, Osaka University, Japan
Optimal labor and capital income taxation without commitment
- March 31, 2014. Kristof Bosmans, Universiteit Maastricht, The Netherlands and KU Leuven, Belgium
Laissez faire versus Pareto
- May 5, 2014. Vladyslav Nora, CORE, UCL, Belgium
Conflicts in networks
- May 26, 2014. Tom Truyts, KU Leuven, Belgium
On symbols and cooperation

READING GROUPS, SEMINARS AND WORKSHOPS

READING GROUP IN ECONOMETRICS

- October 8, 2013. Manuela Braione, CORE, UCL, Belgium
Presentation of the paper *Forecasting using principal components from a large number of predictors* by J. Stock & M. Watson, *Journal of the American Statistical Association*, 97(460), 1167-1179, 2002.
- October 22, 2013. Nicolas Scholtes, CORE, UCL, Belgium
Presentation of the paper *Determining the number of factors in approximate factor models* by J. Bai & S. Ng, *Econometrica*, 70(1), 191-221, 2002.

- November 19, 2013. Daniel Koch, CORE, UCL, Belgium
Presentation of the paper *The generalized dynamic factor: identification, estimation* by M. Forni, M. Hallin, M. Lippi and L. Reichlin, *The Review of Economics and Statistics*, 82(4), 540-554, 2000.
- December 17, 2013. Yukai Kevin Yang, CORE, UCL, Belgium
Presentation of the paper *Testing hypotheses about the number of factors in large factor models* by A. Onatski, *Econometrica*, 77(5), 1447-1479, 2010.
- January 18, 2014. Pierre Alexandre Modart and Qi Zhang, ECON, UCL, Belgium
Presentation of the paper *Exogeneity* by R. Engle, D. Hendry and J.-F. Richard, *Econometrica*, 51(2), 277-304, 1983.
- February 25, 2014. Andrew Pua, CORE, UCL, Belgium and Universiteit van Amsterdam, The Netherlands
Presentation of the paper *On the identifiability of parameters in Thurstone's multiple factor analysis* by O. Reiersol, *Psychometrika*, 15(2), 121-149, 1950.
- March 11, 2014. Rytis Bagdziunas, CORE, UCL, Belgium
Presentation of the paper *On a characterization of probability distributions by the joint distribution of some of their linear forms* by I. Kotiarski, *Sankhya: The Indian Journal of Statistics, Series A*, 33(1), 73-80, 1971.
- April 29, 2014. Cyrille Dossougoin, CORE, UCL, Belgium
Presentation of the paper *The random coefficients logit model is identified* by J.T. Fox, K. Kim, S.P. Ryan and P. Bajari, *Journal of Econometrics*, 166(2), 204-212, 2012.
- May 13, 2014. Joniada Milla, CORE, UCL, Belgium
Presentation of the paper *Identification of endogenous social effects: the reflection problem* by Ch. Manski, *Review of Economic Studies*, 60(3), 531-542, 1993.

READING SEMINAR IN OPERATIONS RESEARCH

- February 25, 2014. Gilles Sinnaeve, CORE, UCL, Belgium
Evaluating the design of a family practice healthcare clinic using discrete event simulation
- March 11, 2014. Matias Schuster Puga, LSM, UCL, Belgium
A conic integer programming approach to stochastic joint location-inventory problems
- March 25, 2014. Pierre Mistiaen, CORE, UCL, Belgium
Comparison of bundle classical column generation
- April 8, 2014. Abdelharaman Aly, CORE, UCL, Belgium
Solving linear programs using multiparty computation
- April 22, 2014. Mehdi Madani, LSM, UCL, Belgium
Modeling price-based decisions in advanced electricity markets
- May 6, 2014. Ignacio Aravena, CORE, UCL, Belgium
An improved column generation algorithm for minimum sum of squares clustering
- May 20, 2014. Tanguy Kegelart, CORE, UCL, Belgium
Positioning and pricing a product line
- June 3, 2014. Jose Miguel Quesada Perez, LSM, UCL, Belgium
An integrated approach for airline flight selection and timing, fleet assignment, and aircraft routing

From September 30 till October 2, 2013, Professor Jianqing Fan (Princeton University) delivered the CORE lecture series on the topic «High-Dimensional Econometrics». The six lectures were attended by 35 Ph.D. students, postdoctoral fellows, and faculty members from CORE and elsewhere (France, Netherlands, Germany. . .). In addition to the lectures, three sessions were organized to enable participants to present their own research on topics related to «big data». These sessions, and the lectures, generated very lively interactions among the participants.

SEPTEMBER 30, 2013

- Jianqing Fan, Princeton University (NJ), USA

Lecture 1: Salient features of big data and unified solutions

This talk summarizes some of the salient features in the analysis of Big Data. Several high-dimensional econometric problems will be outlined, with emphasis on financial econometrics. Big Data pose new computation challenges and holds great promises for understanding heterogeneity of population such as personalized medicine or services. High-dimensionality introduces spurious correlations, incidental endogeneity, noise accumulations, and measurement errors. These unique features are very distinguished and statistical procedures should be designed with these issues in mind. As an example, we introduce a method, called a sparsest solution in high-condense set, as a generally applicable method to high-dimensional statistical inference and over some sampling properties. This solution is natural, as the information of parameters contained in data is summarized by high-condent sets and the sparsest solution is a way to deal with the noise accumulation issue. We will also introduce penalized likelihood methods for high-dimensional econometrics.

- Jianqing Fan, Princeton University (NJ), USA

Lecture 2: Large covariance estimation

This lecture first gives an overview on the estimation of large volatility matrix and its inverse covariance matrix. We then outline the methods for large volatility matrix estimation based on factor models with known factors, which exhibits the conditional sparsity structure. Large covariance estimation with Latent Factors will also be introduced.

- Andrew Pua, Universiteit van Amsterdam, The Netherlands and CORE, UCL, Belgium

The role of sparsity: panel data models

- Eran Raviv, Erasmus Universiteit Rotterdam, The Netherlands

Forecasting day-ahead electricity prices: utilizing hourly prices

- Yves Dominicy, Université libre de Bruxelles, Brussels, Belgium

A multivariate hill estimator

OCTOBER 1, 2013

- Jianqing Fan, Princeton University (NJ), USA

Lecture 3: Sparse portfolio allocation

We introduce the large portfolio selection using gross-exposure constraints. We show that with gross-exposure constraint the empirically selected optimal portfolios based on estimated covariance matrices have similar performance to the theoretical optimal ones and there is no error accumulation effect from estimation of vast covariance matrices. This gives theoretical justification to the empirical results in Jagannathan and Ma (2003). We also show that the no-short-sale portfolio can be improved by allowing some short positions. The applications to portfolio selection, tracking, and improvements are also addressed. The utility of our new approach is illustrated by simulation and empirical studies on the 100 Fama-French industrial portfolios and the 600 stocks randomly selected from Russell 3000.

- Jianqing Fan, Princeton University (NJ), USA

Lecture 4: False discoveries in mutual fund performance

Multiple hypothesis testing is fundamental in high dimensional econometric inference, with wide applications in scientific fields. In evaluating mutual fund performance, test statistics are often correlated due to herding effect or unobserved latent factors. When test statistics are correlated, false discovery control becomes very challenging under arbitrarily dependent. In Fan, Gu and Han (2012), a new method based on principal factor approximations, which successfully subtracts the common dependence and weakens significantly the correlation structure, to

deal with an arbitrary dependence structure. We derive the theoretical distribution for false discovery proportion (FDP) in large scale multiple testing when a common threshold is used and provide a consistent FDP. This result has interesting applications in controlling FDR and FDP. Applications to mutual performance will be thoroughly studied.

- Daniel Koch, CORE, UCL, Belgium

High-dimensional portfolio optimization by wavelet thresholding

- Juan-Pablo Ortega, Université de Franche-Comte, Besançon, France

Construction, management, and performance of sparse Markowitz portfolios

OCTOBER 2, 2013

- Jianqing Fan, Princeton University (NJ), USA

Lecture 5: Validating CAPM using large pools of assets

We consider testing the mean-variance efficiency in the context of a high-dimensional multi-factor model, with the number of assets much larger than the time-series dimension. Most of the existing tests are based on a quadratic form of estimated alphas. Under high dimensionality, however, they all suffer from low powers because the accumulation of a large amount of estimation errors overrides the signals of the true nonzero alphas. To resolve this issue, we propose a new test that deals with high-dimensional hypothesis testing problems, called «power enhancement». A screening statistic is introduced to screen out most of the estimation errors and consistently select stocks with significant alphas. We develop a feasible standardized Wald statistic using a consistent estimator of the high-dimensional weight matrix based on thresholding. In addition, by attaching the screening statistic to the traditional quadratic-form tests, our proposed test significantly enhances the power of the Wald-type tests under most of the alternatives, while keeping a correct asymptotic size. Finally, the proposed methods are applied to the securities in the S&P 500 index as an empirical application. The empirical study shows that market inefficiency is primarily caused by a small portion of mispriced stocks, instead of aggregated alphas. Moreover, most of the significant alphas are due to extra returns (underpriced).

- Jianqing Fan, Princeton University (NJ), USA

Lecture 6: Endogeneity in ultra high dimensional models

Most papers on high-dimensional statistics are based on the assumption that none of the regressors are correlated with the regression error, namely, they are exogenous. Yet, endogeneity arises easily in high-dimensional regression due to a large pool of regressors and this causes the inconsistency of the penalized least-squared methods. A necessary condition for model selection of a very general class of penalized regression methods is given, which allows us to prove formally the inconsistency claim. To cope with the possible endogeneity, we construct a novel penalized generalized method of moments (PGMM) criterion function and offer a new optimization algorithm. The PGMM is not a smooth function. To establish its asymptotic properties, we first study the model selection consistency and an oracle property for a general class of penalized regression methods. These results are then used to show that the PGMM possesses an oracle property even in presence of endogenous predictors, the solution is also near global minimum under the over-identification assumption. Finally, we also show how the semi-parametric efficiency of estimation can be achieved via a two-step approach.

- Lyudmila Grygor'yeva, Université de Franche-Comte, Besançon, France

Estimation and empirical performance of non-scaler DCC models

- Jianbin Wu, KU Leuven, Belgium

Spare generalized DCC GARCH

MEETINGS

6

CORE MEETINGS

- PoRESP Conference: Poverty and the Family
- 24th (EC)² EuroConference Series in Quantitative Economics and Econometrics
- 19th Coalition Theory Network Workshop
- Dynamical Methods Measuring Educational Effectiveness
- 5th Euro-African Conference in Finance and Economics (CEAFE 2014)
- Bayesian Modelling and Identification
- GDF Suez Chair Workshop

PARTICIPATION OF CORE MEMBERS TO MEETINGS' ORGANIZATION

CORE MEETINGS

PORESP CONFERENCE: POVERTY AND THE FAMILY

Poverty economics, and poverty measurement in particular, assumes that the well-being is evenly shared within households. This is consistent with the typical modelling of families as individual decision makers. In the last two decades, however, evidence has made it clear that families are composed of different decision makers having possibly conflicting interests. This is why collective household models have been proposed and estimated. They offer explanations of why resources are likely to be unequally distributed within the household. Therefore, they shed a new light on the measurement of poverty.

The conference gathered researchers active in developing or using collective household models, with an emphasis on the application of those models to the study of poor households. This conference was held at Hôtel Le Meridien in Brussels and co-organized by Bram de Rock, Université Libre de Bruxelles, Belgium, Marion Leturcq, CORE, UCL, Belgium, François Maniquet, CORE, UCL, Belgium and William Pariente, IRES, UCL, Belgium.

DECEMBER 5, 2013

SESSION 1

Chair: François Maniquet, CORE, UCL, Belgium

- Arthur Lewbel, Boston College, Chestnut Hill (MA), USA

Identifying sharing rules in collective households models: an overview

Discussant: Olivier Donni, ThEMA, Université de Cergy-Pontoise, France

- Olivier Bargain, Aix-Marseille School of Economics, France

Child labor and parental well-being: power, altruism and norms

Discussant: Dirk Neumann, CORE, UCL, Belgium

- Valerie Lechêne, University College, London, United Kingdom

Efficient responses to targeted cash transfers

Discussant: Mery Ferrando, CORE, UCL, Belgium

SESSION 2

Chair: Eve Ramaekers, Institut Wallon de l'Evaluation, de la Prospective et de la Statistique (IWEPS), Namur, Belgium

- Jean-Marie Baland, Université de Namur, Belgium
The economic consequences of mutual help in extended families
Discussant: Aditi Dimri, CORE, UCL, Belgium and Université Paris 1 Panthéon Sorbonne, France
- Krishna Pendakur, Simon Fraser University, Burnaby (BC), USA
Identification of random resource shares in collective households with an application to credit in Malawi
Discussant: William Pariente, IRES, UCL, Belgium
- Denni Tommasi, Université libre de Bruxelles, Brussels, Belgium
To school or not to school: a collective model of parents' decisions on their children's education
Discussant: Erwin Ooghe, KU Leuven, Belgium

DECEMBER 6, 2013

SESSION 3

Chair: Michel Lubrano, GReQAM, Aix-Marseille, France

- Claude d'Aspremont, CORE, UCL, Belgium
Household behavior as an extended Lindahl mechanism
Discussant: Tom Potoms, Université libre de Bruxelles, Brussels, Belgium
- Thomas Demuynck, Universiteit Maastricht, The Netherlands
Noncooperative household consumption with caring
Discussant: Rodolphe Dos Santos Ferreira, Université de Strasbourg, France
- Frederic Vermeulen, KU Leuven, Belgium
Sharing rule identification for general collective consumption models
Discussant: Erik Schokkaert, KU Leuven, Belgium

SESSION 4

Chair: Bram De Rock, Université libre de Bruxelles, Brussels, Belgium

- Roberta Ziparo, Paris School of Economics, France
Communication and public good provision in the household: a theory and some evidence from Cameroon
Discussant: Bart Capeau, KU Leuven, Belgium
- Jeremy Lise, University College London, United Kingdom
Household sharing and commitment: evidence from panel data on individual expenditures and time use
Discussant: Koen Decancq, Universiteit Antwerpen, Belgium
- Marion Leturcq, CORE, UCL, Belgium
On the nature of commodities in collective household models
Discussant: Laurens Cherchye, KU Leuven at Kortrijk, Belgium

24TH (EC)² EUROCONFERENCE SERIES IN QUANTITATIVE ECONOMICS AND ECONOMETRICS : THE ECONOMETRICS ANALYSIS OF MIXED FREQUENCY DATA

EC² is a series of annual international conferences on research in quantitative economics and econometrics, launched in 1990. The acronym (EC)² stands for European Conferences of the Econom[etr]ics Community. Its main aim is to maintain and extend an adequate forum for both senior and junior European researchers in quantitative economics and econometrics to discuss the progress and results of their research. In 2013, the conference took place in the University of Cyprus. Luc Bauwens, CORE, UCL, Belgium, coordinated the EC² activities since 2001.

DECEMBER 13, 2013

Invited Speaker

Chair: Eric Ghysels, University of North Carolina, Chapel Hill (NC), USA

- Manfred Deistler, Technische Universität Wien, Austria
VAR models and mixed frequency data

SESSION 1

Chair: Domenico Giannone, Université libre de Bruxelles, Brussels, Belgium

- Peter Zadrozny, Bureau of Labor Statistics, Government of the United States, Washington (DC), USA

Extended Yule-Walker identification of a VARMA model using single- or mixed-frequency data

- Claudia Foroni, Norges Bank, Oslo, Norway, Pierre Guerin, Bank of Canada, Ottawa, Canada, and Massimiliano Marcellino, European University Institute, Firenze, Italy

Markov-switching mixed frequency VAR models

- Yasutomo Murasawa, Osaka Prefecture University, Osaka, Japan

The Beveridge-Nelson decomposition of mixed-frequency series: an application to simultaneous measurement of classical and deviation cycles

POSTER SESSION 1**SESSION 2**

Chair: Bas J.M. Werker, Universiteit van Tilburg, The Netherlands

- Marcelle Chauvet, University of California, Riverside (CA), USA, Thomas Götz and Alain Hecq, Universiteit Maastricht, The Netherlands

Realized volatility and business cycle fluctuations: a mixed-frequency VAR approach

- Georgiana Denisa Banulescu, Bertrand Candelon, Christophe Hurlin, Université d'Orleans, France, and Sebastien Laurent, GREQAM, Aix-Marseille, France

Do we need intra-daily data to forecast daily volatility?

- Elena Andreou, University of Cyprus, Nicosia, Cyprus

The effect of different weighting schemes of high frequency volatility estimators in predictive regressions

SESSION 3

Chair: Rossen Valkanov, University of California, San Diego (CA), USA

- Simona Boffelli and Giovanni Urga, Università di Bergamo, Italy

High and low frequency correlations in European government bond spreads and their macroeconomic drivers

- Christian Conrad, Karin Loch, and Daniel Rittler, Universität Heidelberg, Germany

On the macroeconomic determinants of long-term volatilities and correlations in U.S. stock and crude oil markets

- Bent Jesper Christensen, Aarhus Universitet, Denmark, Olaf Posch, Universität Hamburg, Germany, and Michel van der Wel, Erasmus Universiteit Rotterdam, The Netherlands

Estimating dynamic equilibrium models using mixed frequency macro and financial data

INVITED SPEAKER

Chair: Elena Andreou, University of Cyprus, Nicosia, Cyprus

- Michael P. Clements, University of Reading, United Kingdom

Forecast uncertainty: surveys and models

DECEMBER 14, 2013**INVITED SPEAKER**

Chair: Manfred Deistler, Technische Universität Wien, Austria

- Domenico Giannone, Université libre de Bruxelles, Brussels, Belgium

Nowcasting with structural models

SESSION 4

Chair: Ioannis Kasparis, University of Cyprus, Nicosia, Cyprus

- Joerg Breitung, Suma Elengikal and Christoph Røling, Universität Bonn, Germany

Forecasting inflation rates using daily data: a nonparametric MIDAS approach

- Eric Ghysels, University of North Carolina, Chapel Hill (NC) and J. Isaac Miller, University of Missouri, Columbia (MO), USA

Testing for cointegration with temporally aggregated and mixed-frequency time series

- Benediktas Bilinskas, Virmantas Kvedaras and Vaidotas Zemlys, Vilniaus Universitetas, Vilnius, Lithuania

Testing the functional constraints on parameters in cointegrated MIDAS regressions

POSTER SESSION 2

SESSION 5

Chair: Michael Clements, University of Reading, United Kingdom

- Lynda Khalaf, Carleton University, Ottawa, Canada, Maral Kichian, Bank of Canada, Ottawa, Canada, Charles Saunders, and Marcel Voia, Carleton University, Ottawa, Canada

Dynamic panels with MIDAS covariates: estimation and fit

- Michael Binder and Melanie Krause, Universität Frankfurt, Germany

Mixed frequency panel vector autoregressions and the inequality vs. growth nexus

- Elena Andreou, University of Cyprus, Nicosia, Cyprus, Patrick Gagliardini, Università della Svizzera Italiana, Lugano, Switzerland, Eric Ghysels, University of North Carolina, Chapel Hill (NC), USA and Mirco Rubin, Università della Svizzera Italiana, Lugano, Switzerland

Mixed-frequency large-scale factor models

SESSION 6

Chair: Andros Kourtellos, University of Cyprus, Nicosia, Cyprus

- Nikolaus Hautsch, Humboldt-Universität zu Berlin, Germany, Lada Kyj, Barclays Inc., New York (NY), USA, and Peter Malec, Humboldt-Universität zu Berlin, Germany

Do high-frequency data improve high-dimensional portfolio allocations?

- Eric Renault, University of North Carolina, Chapel Hill (NC), USA, Cisl Sarisoy and Bas Werker, Universiteit Tilburg, The Netherlands

Efficient estimation of integrated volatility and related processes

INVITED SPEAKER

Chair: Massimiliano Marcellino, European University Institute, Firenze, Italy

- Rossen Valkanov, University of California at San Diego (CA), USA

Why invest in emerging economies: the role of conditional asymmetry

19TH COALITION THEORY NETWORK WORKSHOP

The 19th Coalition Theory Network Workshop was organized jointly by CORE, UCL and CEREC, Université Saint-Louis and was held at the Université Saint-Louis, Brussels, Belgium.

JANUARY 30, 2014

PLENARY SESSION 1

- Francis Bloch, Université Paris 1, France

Rumors and social networks

- Matthew O. Jackson, Stanford University (CA), USA

Networks of military alliances, wars, and international trade

SESSION A1: CONFLICTS IN NETWORKS 1

- Marcin Dziubinski, Uniwersytet Warszawski, Warsaw, Poland

How to defend a network?

- Sergei Izmailov, New Economic School, Moscow, Russia

Peace or death

- Kenan Huremovic, European University Institute, Firenze, Italy

Rent seeking and power hierarchies: a noncooperative model of network formation with antagonistic links

SESSION A2: STRATEGY-PROOFNESS AND BARGAINING

- Albin Erlanson, Lunds Universitet, Lund, Sweden

Strategy-proof package assignment

- Stefan Ambec, Toulouse School of Economics, France

Welfare division in the commons

- Niall Hughes, University of Warwick, United Kingdom

Legislative bargaining with accountability

SESSION B1: EXPERIMENTS

- Friederike Mengel, University of Essex, United Kingdom and Universiteit Maastricht, The Netherlands

An experiment on belief formation in networks

- Stephanie Rosenkranz, Universiteit Utrecht, The Netherlands

Individual search and social networks

- Marco Mantovani, Université Saint-Louis, Brussels, Belgium

Whom are you talking with? Group play and communication

SESSION B2: INFLUENCE IN NETWORKS

- Manuel Förster, CORE, UCL, Belgium and Université Paris 1, France

Trust and manipulation in social networks

- Berno Büchel, Universität Hamburg, Germany

Opinion dynamics and wisdom under conformity

- Jan-Peter Siedlarek, Universität Mannheim, Germany

Opinion leaders in influence networks and the integration of immigrant communities

SESSION C1: ALLOCATIONS, UNCERTAINTY AND FORWARD-LOOKING

- Jean-François Caulier, Université Paris 1, France

An allocation rule for dynamic random network formation processes

- Noem Navarro, Universidad Del Pais Vasco, Bilbao, Spain

Forward-looking pairwise stability in networks with externalities across components

- Peter Csoka, Budapesti Corvinus Egyetem, Budapest, Hungary

Risk allocation under liquidity constraints

SESSION C2: PRICING, TRADING AND BARGAINING IN NETWORKS

- Soa Priazhkina, Indiana University, Bloomington (IN), USA

Formation of bargaining networks via link sharing

- Vladyslav Nora, CORE, UCL, Belgium

Pricing and coordination in networks

- Bastian Westbrock, Universiteit Utrecht, The Netherlands

A theory of trade in a global production network

JANUARY 31, 2014

PLENARY SESSION 2

- Andrea Galeotti, University of Essex, United Kingdom

Trading in networks: theory and experiment

- Jean-Jacques Herings, Universiteit Maastricht, The Netherlands

Stability of networks under limited farsightedness

SESSION D1: ALTRUISM AND CONFORMISM IN NETWORKS

- Yann Bramoulle, GREQAM, Aix-Marseille, France

Altruism in networks

- Luca P. Merlino, Université libre de Bruxelles, Brussels, Belgium

Public goods in endogenous networks

- Vincent Boucher, Université de Laval, Canada

The chicken or the egg? A simple model of conformism and self-selection in social networks

SESSION D2: MATCHING

- Szilvia Papai, Concordia University, Montreal, Canada

Reasonably and securely stable matching

- Juan Sebastian Pereyra Barreiro, Université libre de Bruxelles, Brussels, Belgium

Strategic uncertainty and unraveling in matching

- Elizabeth Baldwin, Oxford University, United Kingdom

Tropical geometry to analyse demand

SESSION E1: INFORMATION IN NETWORKS

- Christian Ghiglino, Essex University, United Kingdom

Information aggregation and optimal structure of the executive

- Tim Hellmann, Universität Bielefeld, Germany

The dynamics of continuous cultural traits in social networks

- Frederic Deroian, GREQAM, Aix-Marseille, France

Optimal network policy

SESSION E2: NETWORKS AND MATCHING

- Ahmet Alkan, Sabanc Üniversitesi, Istanbul, Turkey
Pairing games and markets
- Umut Mert Dur, North Carolina State University, Raleigh (NC), USA
School choice with neighbors
- Dotan Persitz, Tel Aviv University, Israël
Social clubs and social networks

SESSION F1: CONFLICT IN NETWORKS 2

- Britta Hoyer, Universität Paderborn, Germany
Network disruption and the common enemy effect
- Sudipta Sarangi, Louisiana State University, Baton Rouge (LA), USA
Network formation when agents seek confirmation of information

SESSION F2: GAMES IN NETWORKS

- Daniil Musatov, New Economic School, Moscow, Russia
Gale-Nikaido and Milgrom-Shannon: Nash equilibria in locational models
- Tomas Rodriguez Barraquer, Universitat Autònoma de Barcelona, Spain
From sets of equilibria to structures of interaction underlying binary games of strategic complements

DYNAMICAL METHODS MEASURING EDUCATIONAL EFFECTIVENESS

The econometrics group at CORE organized a second local interdisciplinary workshop on education. The meeting focused on dynamic models that are (or should be) used in the efficiency analysis of an educational system. The meeting gathered 30 participants from universities and other public institutions in Belgium and Europe. The discussion was lively and crossed the borders of econometrics, psychometrics, edometrics, and statistics, focusing on modelling issues and substantive questions.

The workshop was organized at CORE by Ernesto San Martin, CORE, UCL, Belgium and Pontica Universidad Católica de Chile, Santiago, Chile and Sebastien Van Belleghem, CORE, UCL, Belgium.

MARCH 3, 2014

- Ernesto San Martin, CORE, UCL, Belgium and Pontica Universidad Católica de Chile, Santiago, Chile
Dynamical effects in multilevel models: methodology and applications to value-added persistence
- Bieke De Fraine, KU Leuven, Belgium
The effects of kindergarten retention on primary school outcomes: combining propensity score matching and growth modelling
- Christiane Fiege, Universität Tübingen, Germany and Rolf Steyer, Friedrich-Schiller-Universität Jena, Germany
Fair comparisons in German comparative performance tests ('Vergleichsarbeiten'): an application of the theory of causal effects
- Dominique Peeters, CORE, UCL, Belgium
Two problems related to school planning
- Lara Lebedinski, IRES, UCL, Belgium
Equal access to education: an evaluation of the Roma teaching assistant programme in Serbia
- Daniel Santin Gonzalez, Universidad Complutense de Madrid, Spain
Comparing school ownership performance using a pseudo-panel database: a Malmquist-type index approach

5TH EURO-AFRICAN CONFERENCE IN FINANCE AND ECONOMICS (CEAFE 2014)

Every two years, a conference is co-organised by African and European universities to encourage researchers from both continents to present their work, and to promote the exchange of ideas, in all disciplines that are related to the domain of Economics and Finance. On April 24-26, 2014 the Conference took place in Agadir, Morocco. It was organized by the National School of Applied Sciences in Agadir, Ibn Zohr University (Morocco) in collaboration with the Laboratory of Industrial and Computer Engineering, ENSA Agadir (Morocco), Université Paris 1 Panthéon-Sorbonne (France), ESSAI, Carthage

University, Tunis (Tunisia), School of Business of the American University in Cairo (Egypt), CORE, UCL (Belgium) and GREQAM Aix-Marseille (France).

PLENARY TALKS

- Rabah Amir, University of Iowa (IA), USA
Network externalities and industry viability
- Alain Jacques Chateaufneuf, Université Paris 1, France
Partage de risques et allocations Pareto optimales
- Abdessamad Issami, CDG Capital, Casablanca, Morocco
Moroccan financial market

About 80 papers were also presented on Poster Sessions

BAYESIAN MODELLING AND IDENTIFICATION

What is the status of parameter identification in Bayesian modelling? In the current literature there exists a debate on the status of identification in Bayesian modelling: One school of thought, inaugurated by Lindley (1971), argues that identification is not a problem for Bayesian inference because it is always possible to compute the posterior distribution of the parameters of interest, even under their unidentifiability. This tradition emphasizes that identification is a concept related to the likelihood and, therefore, is an issue for frequentists only. However, other schools of thought emphasize not only that identification needs to be considered in model construction, but also that it is possible to define a Bayesian concept and accordingly to show that the learning-by-observing process is fully characterized by the identified parameters.

These two traditions were discussed in this workshop, which was held at CORE, UCL, Belgium on May 12, 2014.

- Anna Simoni, Université de Cergy-Pontoise, France
Semi-parametric Bayesian partially identified models based on support function
- Rudolf Schenk, ISBA, UCL, Belgium
Adaptive Bayesian estimation in Gaussian sequence space models

- Benjamin Holcblat, Norwegian Business School, Oslo, Norway
A classical moment-based approach with Bayesian properties: econometric theory and empirical evidence from asset pricing
- Ernesto San Martin, CORE, UCL, Belgium and Pontica Universidad Catolica de Chile, Santiago, Chile
What is really updated in a nonidentified Bayesian model? On the role of identification in Bayesian model construction
- Stephen Walker, University of Texas, Austin (TX), USA
On the Bayesian mixture model and identifiability
- Ron P. Smith, Birkbeck College, London, United Kingdom
On identification of Bayesian DSGE models

GDF SUEZ CHAIR WORKSHOP

In the context of the inauguration of the GDF Suez Chair for Energy Economics and Energy Risk Management, a workshop was held on June 3rd, 2014, at CORE, on Capacity Investment in Electric Power Generation in a Regime of Large-Scale Renewable Energy and Demand Response Integration. The workshop was followed by the Chair inauguration.

WORKSHOP

SESSION A: REGULATORY VIEW

- Matti Supponen, European Commission (DG Energy), Brussels, Belgium
How the market can provide generation investment signals, a European perspective
- Richard O'Neill, Federal Energy Regulatory Commission, Washington (DC), USA
Towards better, more efficient market design
- Alain Marien, Chief Counselor, CREG, Brussels, Belgium
An intraday market as part of the answer to the flexibility challenge

SESSION B: INDUSTRY VIEW

- Andreas Ehrenmann, GDF Suez, Brussels, Belgium

Financial market incompleteness and implications on capacity investment

- Thomas Veyrenc, Reseau de Transport d'Electricite, Paris, France

The perspective of RTE on capacity investment

SESSION C: ACADEMIC VIEW

- Shmuel Oren, University of California, Berkeley (CA), USA

A business model for load control aggregation to ramp up renewables capacity

- Yves Smeers, CORE, UCL, Belgium

The EU climate and energy policy: modeling impact assessment

- Mette Bjørndal, Norwegian School of Economics, Bergen, Norway

Incentive regulation, benchmarking and the regulated rate of return

INAUGURATION

- Anthony Papavasiliou, CORE, UCL, Belgium

Presentation of Chair objectives

- Shmuel Oren, University of California, Berkeley (CA), USA

Operational challenges to a renewable energy future

- Tadgh O'Briain, DG Energy, European Commission, Brussels, Belgium

Converging approaches to generation and system adequacy and security of supply in electricity

- Jacqueline Boucher, GDF Suez, Brussels, Belgium

Closing remarks

PARTICIPATION OF CORE MEMBERS TO MEETINGS' ORGANIZATION

- **Equality of Opportunities versus Outcomes: Facts and Values**, Université Antwerpen, Belgium, September 2013
CORE organizer: Koen Decancq

- **Dynamics on and of complex networks**, World Trade Center, Barcelona, Spain, September 2013

CORE organizer: Jean-Charles Delvenne

- **Applicable Semiparametrics**, Center for Applied Statistics and Economics, Humboldt-Universität zu Berlin, Germany, October 2013

CORE member of the program committee: Christian Hafner

- **Nederlandse Economen Dag**, Amsterdam, The Netherlands, October 2013

CORE member of the committee of recommendation: Jean-Jacques Herings

- **International Workshop on Natural Resources, Environment, Urban Economics, International Trade and Industrial Organization**,

St Petersburg, Russia, October 2013

CORE member of the scientific committee: Thierry Brechet

- **UECE Lisbon Meetings 2013: Game Theory and Applications**,

Universidade Tecnica de Lisboa, Portugal, November 2013

CORE member of the program committee: Ana Mauleon

- **18th Combinatorial Optimization Workshop**, Aussois, France,

January 2014

CORE organizer: Laurence A. Wolsey

- **12th International Conference on Data Envelopment Analysis**,

Kuala Lumpur, Malaysia, April 2014

CORE invited session chair: Adel Hatami-Marbini

- **11th International Conference on the European Energy Market (EEM14)**,

Krakow, Poland, May 2014

CORE member of the scientific committee: Per Agrell

- **Demographic Economics Conference**, University of Iowa,

Iowa City (IA), USA, May 2014

CORE organizer: David de la Croix

- **2014 Belgian Financial Research Forum 2014**, UCL, Belgium, May 2014

CORE organizer: Mikael Petitjean

- **Seminaire de Restitution Projets 2010**, Ministere de l'Ecologie, du Developpement Durable et de l'Energie, Paris, France

CORE Session chair: Henry Tulkens

- **Complex Networks & Dynamics ICCSA 2014**, Université de Normandie, Le Havre, France, June 2014

CORE organizer: Jean-Charles Delvenne

- **15th Annual Conference of the Association for Public Economic Theory (PET14)**, University of Washington, Seattle, USA, July 2014

CORE members of the program committee: Ana Mauleon and Vincent Vannetelbosch

- **14th SAET Conference on Current Trends in Economics**, Waseda University, Tokyo, Japan, August 2014

CORE session organizers: Julio Davila and Jean-Jacques Herings

CORE MEMBERS INVITED AT CONFERENCES,
SCIENTIFIC STAYS AND SEMINARS



PER AGRELL

- *Measuring and modeling productivity in education: state-of-the-art and research frontiers*
 - 11th International Conference on Data Envelopment Analysis (DEA2013), Samsum, Turkey, June 2013
- *Centralized resource reduction and target setting under DEA control*
 - 11th International Conference on Data Envelopment Analysis (DEA2013), Samsum, Turkey, June 2013
- *International benchmarking of electricity transmission system operations: European practice*
 - FSR Workshop «Benchmarking Tools for the Regulation of Transmission Networks», Vlerick School of Management, Brussels, September 2013
 - Norges Energidagar 2013, Norges vassdrags- og energidirektorat, Oslo, Norway, October 2013
 - International Conference on the European Energy Market (EEM14), Krakow, Poland, May 2014
- *From incentive regulation to Yardstick competition*
 - Bundesnetzagentur Conference on Incentive Regulation, Bonn, Germany, May 2014
 - *Six years of efficiency benchmarking: a review*
 - Bundesnetzagentur Conference on Incentive Regulation, Bonn, Germany, May 2014
- *Frontier analysis of supply chain management: a game-theoretic perspective*
 - North American Productivity Workshop (NAPW2014), Ottawa, Canada, June 2014

ALBDELRAHAMAN ALY

- *Securely solving standard network flow problems with secure multiparty computation*
 - Workshop on \Applied Multiparty Computation», Redmond (WA), USA, March 2014
 - 20th Belgian Mathematical Programming Workshop, La-Roche-en-Ardennes, Belgium, April 2014

LUC BAUWENS

- *Ph.D. course in Bayesian Econometrics*
 - BI Norwegian Business School, Oslo, Norway, September 2013
 - Universität Konstanz, Germany, November 2013
- *Marginal likelihood for Markov-switching and change-point GARCH models*
 - BI Norwegian Business School, Oslo, Norway, September 2013
 - International Workshop on \Frontiers in Time Series Analysis with Applications to Economics and Finance», Università degli Studi di Salerno, Italy, September 2013
 - International Workshop on \Regime-Switching Models in Finance: Statistics and Optimization», Fraunhofer Institute for Industrial Mathematics and Technische Universität Kaiserslautern, Germany, November 2013
- *Modeling the dependence of conditional correlations on volatility*
 - 7th International Workshop \Methods in International Finance», Université de Namur, Belgium, September 2013
- *The contribution of structural break models to forecasting macroeconomic series*
 - Universität Konstanz, Germany, November 2013
- *Dynamic conditional correlation models for realized covariance matrices*
 - Universitéit Maastricht, The Netherlands, November 2013

- *Estimation and empirical performance of non-scalar DCC models*
 - KU Leuven, Belgium, February 2014
 - International Conference on Econometrics for Macroeconomics and Finance, Hitotsubashi University, Tokyo, Japan, March 2014
 - 7th Annual SoFiE (Society for Financial Econometrics) Conference, Toronto, Canada, June 2014
- *A forecasting comparison of long term component models for realized covariance matrices*
 - Conference on \Time Series, Econometrics and Finance», Université de Besançon, France, May 2014
 - Workshop on \Empirical Methods in Macroeconomic Policy Analysis», Universitatea Din Bucuresti, Romania, June 2014

MIKEL BEDAYO

- *Bargaining and delay in trading networks*
 - 8th Annual Meeting of the Association of Southern European Economic Theorists (ASSET), Bilbao, Spain, November 2013
- *A network analysis of rms' credit markets*
 - Stats in Paris { Statistics and Econometrics of Networks, ENSAE, Paris, France, November 2013
 - CIREQ Conference, Concordia University, Montreal, Canada, May 2014
 - Belgian Financial Research Forum, Louvain-la-Neuve, Belgium, May 2014
 - Financial Complex Systems Seminar, Louvain-la-Neuve, Belgium, June 2014
 - European Economics and Finance Society, Thessaloniki, Greece, June 2014

PAUL BELLEFLAMME

- *Crowdfunding: some microeconomic perspectives*
 - Clinics European Financial Law. \Tapping into the Crowd: Legal Boundaries to Crowdfunding», Brussels, Belgium, November 2013

- *Dynamic protection of innovations through patents and trade secrets*
 - Mines ParisTech, France, December 2013
 - Universidade do Porto, Portugal, February 2014
 - Bureau d'Economie Theorique et Appliquee (BETA), Nancy, France, March 2014
 - Annual Conference of the Leibniz Science Campus «MaCCI Mannheim Centre for Competition and Innovation», Mannheim, Germany, March 2014
 - Laboratoire d'Economie QUantitative Integration Politiques Publiques Econometrie (EQUIPPE), Lille, France, May 2014
- *Industrial organization in the digital economy, doctoral course*
 - Universidade do Porto, Portugal, February 2014

SOPHIE BERAU

- *An agent-based modeling of the exchange rate disconnect puzzle*
 - IRES, UCL, Belgium, October 2013
- *The relationship between CDS spreads and bond yields revisited: an informationbased test of causality*
 - Journee d'Econometrie, Université Paris Ouest, Nanterre, France, December 2013
- *Ph.D. Conference in Macroeconomics and Financial Econometrics*
 - Université Paris Ouest, Nanterre, France, March 2014

CONSTANTIN BLOME

- *Supply chain nance and the role of organizational readiness*
 - POMS 25th Annual Conference 2014, Atlanta (GA), May 2014
- *Group buying platforms: leveraging the crowd eect in the virtual world*
 - POMS 25th Annual Conference 2014, Atlanta (GA), May 2014

- *May the force be with you! Supplier exploitation, power, and ethics*
 - POMS 25th Annual Conference 2014, Atlanta (GA), May 2014
- *Implementing sustainability in multi-tier supply chains: extending agency theory*
 - Euroma Conference 2014, Palermo, Italy, June 2014.

STEPHANE BOUCHE

- *Discounting, consumption externalities and growth*
 - Summer Workshop in Economic Growth, Universita degli Studi di Napoli «Parthenope», Italy, July 2014

MANUELA BRAIONE

- *Constructing value-at-risk forecasts with a BEKK framework*
 - Journee d'Econometrie. Developpements Recents, Université Paris-Ouest, Nanterre, France, December 2013

PHILIPPE CHEVALIER

- *Leveraging online social networks: a supply chain perspective*
- *Supply Chain Corporate Forum, UCL, Lowain-la-Neuwe, Belgium, May 2014*
- *Group buying platforms: leveraging the online crowd effect*
 - POMS 25th Annual Conference, Atlanta (GA), USA, May 2014
 - StochMod 2014, Universität Mannheim, Germany, June-July 2014
- *Managing the unreliable buyer*
 - Manufacturing & Service Operations Management (MSOM) 2014 Conference, University of Seattle, Washington (DC), USA, June 2014

CLAUDE D'ASPREMONT

- *A multi-principal common-agent approach to oligopolistic and monopolistic competition*
 - Higher School of Economics, St Petersburg, Russia, September 2013
- *Lectures on «Social choice and welfare analysis of intergenerational equity»*
 - Higher School of Economics, St Petersburg, Russia, September 2013
- *Bayesian beliefs and mechanism design*
 - Pareto Lecture, ASSET Annual Meeting, Bilbao, Spain, November 2013
 - Doctoral Seminar in Economics and Finance, Université du Luxembourg, Luxembourg, March 2014
- *Household behavior with varying degrees of autonomy: a revealed preference approach*
 - 13^{èmes} Journées Louis-Andre Gerard-Varet, Aix-Marseille, France, June 2014
- *Oligopolistic vs. monopolistic competition in general equilibrium*
 - SummerWorkshop in Economic Theory (SWET) in honor of the 65th birthday of Bernard Cornet, Paris, France, June 2014

JULIO DAVILA

- *Public Domain*
 - University of Kent, United Kingdom, May 2014
 - Xiamen University, China, June 2014
 - 14th SAET Conference on Current Trends in Economics, Waseda University, Tokyo, Japan, August 2014

KOEN DEGANCK

- *Beyond GDP: measuring social progress in Europe*
 - Workshop «Equality of Opportunities versus Outcomes: Facts and Values», Université Antwerpen, Belgium, September 2013

- CapabItaly International Conference, Università degli Studi RomaTre, Italy, April 2014
- Workshop on Well-Being and Policy, University of Stirling, United Kingdom, June 2014
- *Major trends in poverty and inequality in the European Union: what do we know, what are the main policy challenges and how can we improve measurement?*
 - Conference «Improving Poverty Reduction in Europe», Brussels, Belgium, November 2013
- *Beyond GDP*
 - EquiRisk Meeting and Workshop, Fondation Maison des Sciences de l'Homme, Paris, France, December 2013
- *Inclusive and multidimensional methodologies for measuring well-being: an empirical comparison*
 - Well-Being and Public Policy Workshop I, Duke University, Durham (NC), USA, February 2014
 - Well-Being and Public Policy Workshop II, Princeton University (PA), USA, February 2014
- *Who are the worst off in Germany?*
 - Université Antwerpen, Belgium, February 2014
- *Multidimensional poverty measurement with individual preferences*
 - Universidad ICESI, Cali, Columbia, October 2013
 - University of Essex, United Kingdom, February 2014
 - World Bank, Washington (DC), USA, March 2014
 - McMaster University, Canada, March 2014
 - Università degli Studi Di Verona, Italy, May 2014
 - Université de Geneve, Switzerland, May 2014

- *Russian multidimensional data on poverty using 4 dimensions*
 - 3rd HDRO Conference on Measuring Human Progress, New York (NY), USA, March 2014

BENOÎT DECERF

- *Income poverty measures with relative poverty lines*
 - NOEG 2014 «Economics of Inequality», Universität Wien, Austria, May 2014
 - 12th Meeting of the Society for Social Choice and Welfare, Boston College, Chesnut Hill (MA), USA, June 2014
- *Disambiguation of Ellsberg equilibria in 2 2 normal form games*
 - Workshop on Ambiguity and Robustness in Games, Universität Bielefeld, Germany, June 2014

PIERRE DEHEZ

- *The Shapley value as a guide to FRAND agreements*
 - 8th Annual Conference on the European Policy of Intellectual Property (EPIP), Telecom ParisTech, France, September 2013
- *Introduction to cooperative games, doctoral course*
 - Università di Pisa, Italy, November-December 2013
- *Introduction aux jeux coopératifs, cours doctoral*
 - Université de Lorraine, Nancy, France, Janvier 2014

DAVID DE LA CROIX

- *The longevity of famous people from Hammurabi to Einstein*
 - University of Southern Denmark, Odense, Denmark, October 2013
- *Dinks, dewks and co. marriage, fertility and childlessness in the US*
 - Universität München, Germany, December 2013
 - Uppsala Universitet, Sweden, March 2014

- Université d'Ottawa, Canada, May 2014
 - SED 2014 (Society for Economic Dynamics), University of Toronto, Canada, June 2014
- *Inequality and education politics*
 - Winter School on Inequality and Social Welfare Theory, Canazei, Italy, January 2014
- *Dans le contexte international, la natalité répond-elle aux incitants économiques? Arguments et implications politiques*
 - 39^{ème} Congrès de l'Association des Economistes Québécois (ASDEQ), Université d'Ottawa, Canada, May 2014
- *Religion, fertility and growth in South-East Asia*
 - Overlapping Generations Days 2014 - Methods in Demographic Economics, Paris School of Economics, France, May 2014
 - Barcelona GSE Summer Forum, Graduate School of Economics, Barcelona, Spain, June 2014
- *Apprenticeship and technological progress in Malthusian world*
 - Venice Summer Institute, Italy, July 2014

JEAN-CHARLES DELVENNE

- *Towards a thermodynamics of control: entropy, energy and Kalman ltering*
 - Conference on Decision and Control, Firenze, Italy, December 2013
- *Bottlenecks, burstiness and fat tails regulate mixing times of diffusion over temporal networks*
 - University of Oxford, United Kingdom, January 2014
- *Local and global dynamics of complex systems*
 - 4th International Conference on Complex Systems and Applications, Le Havre, France, June 2014

• *Lifetime of transient dynamics on networks*

- 21st International Symposium on Mathematical Theory of Network and Systems (MTNS 2014), Groningen, The Netherlands, July 2014

• *Tight bounds on sparse perturbations of Markov chains*

- 21st International Symposium on Mathematical Theory of Network and Systems (MTNS 2014), Groningen, The Netherlands, July 2014

JULIEN DEWEZ

• *Geometric lower bound on the extension complexity of polytopes*

- 28th Annual Conference of the Belgian Operations Research Society (ORBEL 28), Université de Mons, Belgique, January 2014

- 20th Belgian Mathematical Programming Workshop, La-Roche-en-Ardenne, Belgium, April 2014

JACQUES DRÈZE

• *Fiscal integration and growth stimulation in Europe*

- Macroeconomics in Perspective Workshop, UCL, Belgium, January 2014

- Debat de Midi, Banque Nationale de Belgique, Brussels, Belgium, April 2014

• *Existence and multiplicity of temporary equilibria under nominal price rigidities*

- Summer Workshop in Economic Theory (SWET) in honor of the 65th birthday of Bernard Cornet, Paris, France, June 2014

• *Subjective expected utility with state-dependent but action/observation independent preferences*

- Foundations of Utility and Risk (FUR), Erasmus Universiteit Rotterdam, The Netherlands, July 2014

AXEL GAUTIER

• *Reforming the postal universal service*

- EARIE 2013, 40th Annual Conference (European Association of Research in Industrial Economics), August-September 2013

• *La collecte des déchets en Wallonie: organisation et performances*

- Seminaire de la Chaire Partenariats Public Prive (PPP), Paris, France, April 2014

FRANÇOIS GLINEUR

• *Structured convex infinite-dimensional optimization with double smoothing and chebfun*

- SIAM Conference on Optimization, San Diego (CA), USA, May 2014.

• *Lower and upper bounds on the extension complexity of polytopes*

- Recent Advances in Linear Optimization (RALO 2014), Ecole des Ponts ParisTech, France, July-August 2014

• *Plus rapide, plus efficace, moins cher: comment tout améliorer avec l'optimisation mathématique*

- Conference «Dedra-math-isons», EPL, UCL, Belgium, April 2014

JOHANNA GOERTZ

• *Inefficient committees: small elections with three alternatives*

- University of Saskatchewan, Saskatoon, Canada, October 2013

- Canadian Public Economics Group Meeting, Edmonton, Canada, November 2013

CHRISTIAN HAFNER

• *A new approach to multivariate volatility modeling*

- International Workshop «Frontiers in Time Series Analysis with Applications to Economics and Finance», Università degli Studi di Salerno, Italy, September 2013

- *Alternative assets and financial crises*
 - 7th Annual Methods in International Finance Network Workshop, Université de Namur, Belgium, September 2013
- *A simple model for now-casting volatility series*
 - Workshop on Dynamic Econometric Models, University of St Andrews, Fife, United Kingdom, October 2013
 - Conference on Nonparametric and Semiparametric Methods, Trinity College, University of Cambridge, United Kingdom, February 2014
 - Universität zu Köln, Germany, May 2014
- *A new approach to high-dimensional volatility modeling*
 - International Symposium on Financial Engineering and Risk Management 2014 (FERM 2014), Beijing, China, June 2014
 - NSVCM 2014, Non- and Semiparametric Volatility and Correlation Models, Universität Paderborn, Germany, July 2014

ADEL HATAMI-MARBINI

- *Allocating xed resources and setting targets using a common-weights DEA approach*
 - Norwegian School of Economics, Bergen, Norway, September 2013
- *Non-parametric supply-chain performance measurements: a critical analysis*
 - 11th Workshop on Logistics and Supply Chain Management, Université Saint-Louis, Brussels, Belgium, November 2013
- *Data envelopment analysis and its application*
 - Shahid Madani University, Tabriz, Iran, April 2014
- *An integrated strategic DEA-based structure for supplier selection in supply-chain management*
 - 12th International Conference on Data Envelopment Analysis, Kuala Lumpur, Malaysia, April 2014

JEAN-JACQUES HERINGS

- *Voting in collective stopping games*
 - Universität Hamburg, Germany, October 2013
 - University of Turku, Finland, November 2013
 - University of Glasgow, United Kingdom, January 2014
- *Stability of networks under limited farsightedness*
 - Workshop in Game Theory and Network Economics, Belfast, Northern-Ireland, May 2014
 - Workshop on Rational Expectations Equilibrium in honor of Roy Radner, Vienna, Austria, June 2014
 - 9th Tinbergen Institute Conference: 70 Years Theory of Games and Economic Behavior, Tinbergen Institute, Amsterdam, The Netherlands, June 2014
- *Subgame perfect equilibria in majoritarian bargaining*
 - Workshop on Dynamic Interactions, Centre d'Economie de la Sorbonne, Paris, France, June 2014
- *Bargaining under monotonicity constraints*
 - 23th European Workshop on General Equilibrium Theory, EWGET 2014, Université Paris 1 Panthéon-Sorbonne, France, June 2014
 - SAET Conference, Waseda University, Tokyo, Japan, August 2014

JONATHAN JONES

- *Does size matter? Policy Evaluation, LUTI models and the scale effect*
 - 18th European Colloquium of Theoretical and Quantitative Geography, Dourdan, France, September 2013

TANGUY KEGELAERT

- *A conic optimization approach for SKU rationalization*
 - 28th Annual Conference of the Belgian Operational Research Society, (ORBEL 28), Université de Mons, Belgium, January 2014

- PhD Day, Université libre de Bruxelles, Belgium, April 2014
- 20th Conference of the International Federation of Operational Research Societies (IFORS 2014), Centre de Convencions Internacional de Barcelona, Spain, July 2014

ALEJANDRO LAMAS

- *A lot sizing problem under competition*
- POMS 25th Annual Conference 2014, Atlanta, GA, USA

ARNAUD LATIERS

- *Toward semi-autonomous decentralized primary control from demand response*
- International Conference on Innovation for Secure and Efficient Transmission Grids, CIGRE, Brussels, Belgium, March 2014

MARIE-LOUISE LEROUX

- *Public and private hospitals, congestion and redistribution*
- Université de Sherbrooke, Canada, January 2014
- *Fair retirement under risk lifetime*
- Conference du Groupe en Economie Politique, Mont Tremblant, Canada, March 2014

DUNIA LOPEZ-PINTADO

- *Public goods and directed random networks*
- Training School: Complex Networks and Dynamics, UNED, Madrid, Spain, February 2014
- Aix-Marseille School of Economics, France, April 2014
- Universidad de Vigo, Spain, June 2014
- Workshop on Dynamic Interactions, Centre d'Economie de la Sorbonne, Paris, France, June 2014

FRANÇOIS MANIQUET

- *Multidimensional poverty measurement: Shouldn't we take preferences into account*
- University of Glasgow, United Kingdom, February 2014
- *The contribution of fairness principles to optimal taxation theory*
- Cologne Taxation Theory Conference, Universität zu Köln, Germany, June 2014
- *Fairness and well-being measurement*
- Conference in Honor of William Thomson, University of Rochester (NY), USA, June 2014
- 12th Meeting of the Society for Social Choice and Welfare, Boston College, Chestnut Hill (MA), USA, June 2014

SIMONE MARTELLI

- *Evidence on revealed preferences from voluntary commitment and voting behaviour in Italy*
- Citizens' support for GHG emission reduction programs, European Commission - DG JRC, Ispra, Italy, June 2014
- *Revealed preferences for climate change mitigation: evidence from voluntary commitment and voting behavior in Italy*
- 11th Workshop on Social Economy for Young Economists; Università di Bologna, Italy, June 2014

ANA MAULEON

- *Stable networks and limited farsightedness*
- UECE Lisbon Meetings 2013: Game Theory and Applications, Universidade Tecnica de Lisboa, Portugal, November 2013
- *Stability of networks under limited farsightedness*
- Workshop on Matching and Network Formation, Aix-Marseille School of Economics, France, May 2014

- 2nd Bordeaux Workshop on Economic Theory, Design and Games, GREThA, Université de Bordeaux, France, May 2014
- Workshop on Dynamic Interactions, Centre d'Economie de la Sorbonne, Université Paris 1 Panthéon Sorbonne, Paris, June 2014
- 25th Stony Brook Summer Institute on Game Theory: The International Conference, SUNY, Stony Brook University (NY), USA, July 2014

FLORIAN MAYNERIS

- *High-end variety exporters defying distance*
 - Howard University, Washington (DC), USA, October 2013
 - Mapcompete Workshop, Sciences-Po, Paris, France, February 2014
 - Université de Nice, France, March 2014
 - Workshop on Global Economic Challenges, Milano, Italy, June 2014
- *The cleansing effect of minimum wage*
 - IRES, UCL, Belgium, May 2014
 - LSE International Economics Workshop, London, United Kingdom, June 2014
 - 3rd IEB Urban Economics Workshop, Barcelona, Spain, June 2014
 - Oxford International Trade Seminar, United Kingdom, June 2014
 - Paris International Trade Seminar, France, July 2014
 - 14th Doctoral Meetings in International Trade and International Finance, Eidgenössische Technische Hochschule Zürich, Austria, July 2014

PIERRE-YVES MISTIAEN

- *An express shipment service Network design problem and its resolution by branch and price*
 - 16th CEMS Workshop on Logistics and Supply Chain Management, Louvain-la-Neuve, Belgium, June 2014

TANJA MLINAR

- *Dynamic admission control for multiple customer classes with stochastic demands and strict due dates*
 - POMS Annual Conference 2014, Atlanta (GA), May 2014

JUAN MORENO-TERNERO

- *Fair allocation of disputed properties*
 - Univerdidad de Alicante, Spain, October 2013
 - Universidad Carlos III de Madrid, Spain, October 2013
 - Queen Mary, University of London, United Kingdom, October 2013
 - Workshop «Game Theory: Economics and Mathematics», Odense, Denmark, November 2013
 - Universidad del Pais Vasco, Bilbao, Spain, January 2014
- *Assigning agents to a line*
 - 10th Meeting of the Spanish Network for Social Choice, Malaga, Spain, November 2013
- *Normative foundations for equity-sensitive population health evaluation functions*
 - University of Glasgow, United Kingdom, January 2014
 - Universidad Publica de Navarra, Pamplona, Spain, January 2014
 - Conference on Axioms, Results and Methods in Normative Economics, Granada, Spain, May 2014
- *The implications of equal value of life and prioritarianism for the evaluation of population health*
 - Conference on Rational Choice and Philosophy, Nashville (TN), USA, May 2014
 - 12th International Meeting of the Society for Social Choice and Welfare, Boston (MA), USA, July 2014

MARGHERITA NEGRI

- *Minority representation in proportional representation systems*
 - Workshop on Positive Theory and Comparative Politics, London School of Economics, United Kingdom, September 2013
 - XXXVIII Simposi de la asociacion Española de Economía (SAEe 2013), Santander, Spain, December 2013
 - Royal Economic Society Postgraduate Presentation Meeting and Job Market, University College London, United Kingdom, January 2014
 - ADRES Doctoral Conference in Economics 2014, Université Paris Dauphine, France, February 2014
 - 12th Meeting of the Society for Social Choice and Welfare, Boston (MA), USA, June 2014

YURII NESTEROV

- *Universal gradient methods*
 - 10th Brazilian Workshop on Continuous Optimization, University of Florianopolis, Brasil, March 2014
- *Convergent subgradient methods*
 - Georgia Tech, Atlanta (GA), USA, April 2014
 - SIAM Conference on Optimization (OP14), San Diego (CA), USA, May 2014
- *Huge-scale optimization problems*
 - University of Cambridge, United Kingdom, May 2014
- *Detecting optimal Lagrange multipliers*
 - London Workshop on Optimization, King's College, London, United Kingdom, June 2014

DIRK NEUMANN

- *Benefiting from a European scal union? Redistribution vs. stabilization*
 - 25th EALE Conference (European Association of Labour Economics), Università degli Studi di Torino, Italy, September 2013
 - 4th SEEK Conference «Public Finance and Income Distribution in Europe», Centre for European Economic Research, Mannheim, Germany, May 2014
 - 70th Annual Congress of the International Institute of Public Finance «Redesigning the Welfare State of Aging Societies», Università della Svizzera Italiana, Lugano, Switzerland, August 2014
- *Does the choice of well-being measure matter for the identification of the worst off in Germany*
 - KU Leuven, Belgium, April 2014
- *An unemployment insurance scheme for the Euro area*
 - 11th Euroframe Conference «What Future for Taxation in the EU», Paris, France, June 2014
- *Does the choice of well-being measure matter empirically? An illustration with German data*
 - 12th Meeting of the Society for Social Choice and Welfare, Boston (MA), USA, June 2014
 - Franco-Swedish Programme in Philosophy and Economics Workshop «Inequality», Paris, June 2014

DIMITRI PAOLINI

- *Tax treaties and the allocation of taxing rights with developing countries*
 - 16th INFER Annual Conference, Università degli Studi «G. d'Annunzio» Chieti-Pescara, Italy, May 2014

ANTHONY PAPAVALIIOU

- *Self-commitment of combined cycle units under electricity price uncertainty*
 - Université de Liège, Belgium, September 2013
 - Conference of the International Federation of Operational Research Societies, Barcelona, July 2014
- *Applying high performance computing to multi-area stochastic unit commitment*
 - IBM Thomas J. Watson Research Center, Yorktown Heights (NY), USA, October 2013
 - INFORMS 2013, Minneapolis (MN), USA, October 2013
- *A stochastic programming framework for the large-scale integration of renewable energy in power systems*
 - Eidgenössische Technische Hochschule Zürich (ETH), Switzerland, December 2013

MATHIEU PARENTI

- *Toward a theory of monopolistic competition*
 - Université de Lille, France, January 2014
 - Université Paris-Dauphine, France, March 2014
 - IRES, UCL, Belgium, March 2014
 - Einaudi Institute for Economics and Finance, Roma, Italy, March 2014
 - Université Saint Louis, Brussels, Belgium, April 2014
 - Université du Québec a Montreal, Canada, April 2014
 - Institut National de la Recherche Agronomique, Renne, France, May 2014
 - 17th World Congress of the International Economic Association, Dead Sea, Jordan, June 2014
- *Knocking on tax haven's door: multinational firms and transfer pricing*
 - Higher School of Economics' International Workshop, St Petersburg, Russia, June 2014

• *Public domain*

- 14th SAET Conference on Current Trends in Economics, Waseda University, Tokyo, Japan, August 2014

DOMINIQUE PEETERS

- *Two problems related to school planning*
 - 18th European Colloquium of Theoretical and Quantitative Geography, Dourdan, France, September 2013
- *Microeconomic foundations of CA and ABM models used in geography*
 - IP MGM Intensive Program Erasmus \Master in Geographical Modelling\, Besançon, France, February 2014
- *How neighborhood forms impact urban development*
 - 54th ERSAC Congress «Regional Development & Globalisation: Best Practices», St Petersburg, Russia, August 2014

WENLI PENG

- *Managing the unreliable buyer*
 - INFORMS 2013, Minneapolis (MN), USA, October 2013
 - POMS 25th Annual Conference 2014, Atlanta (GA), May 2014

PIERRE PESTIEAU

- *Long term care and uncertain altruism*
 - Australian National University, Melbourne, September 2013
 - La Trobe University, Melbourne, October 2013
- *The policy implications of increasing longevity*
 - Australian National University, Melbourne, October 2013
- *Harsh occupation, longevity and social security*
 - Public Economics Conference, Exeter, United Kingdom, September 2013

- *Pauvreté et longévité*
 - 20^{ème} Congrès des Economistes Belges de Langue Française. Le Modèle Social Belge: Quel Avenir, Charleroi, Belgium, November 2013
- *Long term care policy. What can we learn from SHARE?*
 - International SHARE Meeting, Liège, November 2013
- *The combined effect of aging and PAYGO pensions on capital accumulation and welfare*
 - Breughel-Netspar Conference «Pensions in Europe. Sustainability of Pension Systems and their Interaction with Economic Growth», Brussels, Belgium, December 2013
 - 13^{èmes} Journées Louis-André Gérard-Varet, Aix-Marseille Université, France, June 2014
- *Dependance et famille*
 - Journée SCOR sur la Dépendance, Paris, France, January 2014
- *Pensions in Belgium. Sustainability of pensions systems and their interaction with economic growth*
 - BELDEBT Meeting, Brussels, Belgium, February 2014
- *L'économie de la dépendance*
 - Congrès Annuel de la Société Francophone de Gérontologie, Liège, Belgium, May 2014
- *Reforme de l'Etat providence: un nouveau rôle pour le patrimoine des menages? (Table ronde)*
 - Prix Benjamin Dellesert, Banque de France, Paris, France, May 2014
- *The welfare state in Europe: performance and challenges*
 - 2nd European Latin American Economic Forum, ECLAC and OECD, Paris, France, May 2014
- *The economics of long-term care. An overview*
 - Spanish Health Economics Meeting, Pamplona, Spain, May 2014

- *Means-tested LTC and family transfers*
 - TIGER Workshop on LTC insurance, Toulouse, June 2014

MIKAEL PETITJEAN

- *Intraday liquidity, realized volatility, and price ranges*
 - University of Surrey, United Kingdom, June 2014

PIERRE PICARD

- *Trade, economic geography and the choice of product quality*
 - Università di Bologna, Italy, October 2013
- *Sustainable migration policies*
 - Université de Lille 1, France, October 2013
 - Universiteit Antwerpen, Belgium, February 2014
- *Commodity taxation and regulatory competition*
 - University of California Irvine (CA), USA, November 2013
 - Université de Strasbourg, France, November 2013
 - Singapore Management University, Singapore, January 2014
- *Social interactions, social capital and urban structure*
 - 60th Annual North American Meetings of the Regional Science Association International, Atlanta (GA), USA, November 2013

GUILLAUME ROELS

- *Social comparisons: the role of reference points and reference groups*
 - INFORMS 2013, Minneapolis (MN), USA, October 2013
- *The economics of joint production in services*
 - INFORMS 2013, Minneapolis (MN), USA, October 2013

- *Beyond GDP*
 - CEREC Seminar, Brussels, Belgium, May 2014
- *Can health inequalities ever be just?*
 - Workshop «Equality of Opportunities or of Outcomes», Universiteit Antwerpen, Belgium, September 2013
- *Why all serious evaluation studies should incorporate distributional weights*
 - Workshop «Distributional Issues in Economic Evaluation», KU Leuven, Belgium, October 2013
 - Workshop «Denying Outcomes and their Metric in the Evaluation of Health-Care Interventions», iCEPS, Montpellier, France, December 2013
- *Equity in the Belgian health system*
 - 20^{ème} Congrès des Economistes Belges de Langue Française. Le Modèle Social Belge: Quel Avenir, Charleroi, Belgium, November 2013
- *Inequality, income and well-being*
 - Winter School on Inequality and Social Welfare Theory, Canazei, Italy, January 2014
- *Purchasing for solidarity, quality and efficiency. Can we get it all?*
 - Conference 50 years RIZIV/INAMI, Brussels, Belgium, March 2014
- *Personalized medicine: social and economic challenges*
 - Workshop on Personalized Medicine, London School of Economics, United Kingdom, May 2014
- *Equivalent incomes: measuring the well-being burden of disease*
 - Brocher Summer Academy on «Ethical Issues in the measurement of the Global Burden of Disease», Geneva, Switzerland, June 2014

NICOLAS SCHOLTES

- *The Smets-Wouters DSGE model*
 - FiXS Reading Group, UCL, Belgium, October 2014
- *A value-at-risk approach to evaluating financial returns distributions*
 - 12^{ème} Journée d'Econométrie, Université de Paris Ouest, Nanterre, France, December 2013
 - CeSAM Seminar, LSM, UCL, Belgium, December 2013
- *Dynamic interbank trust networks*
 - FiXS Internal Seminar, CORE, UCL, Belgium, May 2014

EVA-MARIA SCHOLZ

- *Licensing to vertical related markets*
 - Augustin Cournot Doctoral Days, Université de Strasbourg, France, April 2014
 - Oligo Workshop, Università di Roma La Sapienza, Italy, June 2014
 - Industrial Organization: Theory, Empirics and Experiments, Università del Salento, Italy, June 2014
 - Workshop on Innovations, Patents and Licensing, Stony Brook Center for Game Theory, New York (NY), USA, July 2014
- *Licensing downstream technology when upstream firms are capacity constrained*
 - Workshop on Innovations, Patents and Licensing, Stony Brook Center for Game Theory, New York (NY), USA, July 2014

JOSE JORGE SEMPERE-MONERRIS

- *Licensing policies in North-South technology transfers*
 - XXVIII Jornadas de Economía Industrial, Segovia, Spain, September 2013
- *Rail access charges and internal competition in the high speed trains*
 - Kuhmo-Nectar Conference of the International Transportation Economics Association (ITEA), Université de Toulouse 1, France, June 2014

VLADIMIR SHIKHMAN

- *Algorithmic models of market equilibrium*
 - Center of Excellence: Optimization in Engineering (OPTEC); KU Leuven, Belgium, October 2013
 - Universität Zürich, Switzerland, November 2013
 - 2nd International Conference on Variational Analysis and Optimization, Santiago de Chile, Chile, January 2014
 - Karlsruhe Institute of Technology, Germany, February 2014
 - Technische Universität München, Germany, May 2014
 - Universitétet i Bergen, Norway, June 2014
 - Workshop on Nonlinear Analysis and Optimization, Technion-Israel Institute of Technology, Haifa, Israel, June 2014
 - 2nd Joint International Meeting of the Israel Mathematical Union and the American Mathematical Society, Tel Aviv University, Israel, June 2014
 - 12th EUROPT Workshop on Advances in Continuous Optimization, Université de Perpignan, France, July 2014
 - 68th European Meeting of the Econometric Society, Toulouse School of Economics, France, August 2014

LEOPOLD SIMAR

- *To smooth or not to smooth: the case of discrete variables in nonparametric regression*
 - Workshop on Applicable Semiparametrics, Humboldt-Universität zu Berlin, Germany, October 2013
- *When bias kills the variance: central limit theorems for DEA/FDH efficiency scores*
 - CEPA (Centre for Efficiency and Productivity Analysis) Workshop on Productivity and Econometrics, University of Queensland, Brisbane, Australia, November 2013

- *Introduction to nonparametric and bootstrap methods in statistics*
 - Università del Salento, Lecce, Italy, January-April 2014
- *Nonparametric statistics and bootstrap applications in management engineering*
 - Università di Roma La Sapienza, Roma, Italy, March 2014
- *Methods of statistical bootstrap*
 - 1-Day Workshop on Bootcamp on Bootstrap: Introduction to Bootstrap Methods, University of Queensland, Brisbane, Australia, July 2014
- *Econometric approaches to nonparametric frontier models: where we are and where we go?*
 - 2014 Asia-Pac Productivity Conference, University of Queensland, Brisbane Australia, July 2014

GILLES SINNAEVE

- *Using computer simulation to test a short stay unit*
 - 28th Annual Conference of the Belgian Operational Research Society (ORBEL 28), Université de Mons, Belgium, January 2014
- *Faisabilité de l'introduction d'une unite de semaine*
 - GISEH 2014, Conference Francophone «Gestion et Ingenierie des Systemes Hospitaliers», Université de Liège, Belgium, July 2014

YVES SMEERS

- *Investment, mothballing, market design and complementarity problems*
 - PGM0's Days, Programme Gaspard Monge pour l'Optimisation en Recherche Operationnelle, Fondation Mathématique Jacques Hadamard, Paris, France, October 2013
 - INFORMS Annual Meeting 2013, Minneapolis (MA), USA, October 2013

- *European climate and energy policy and unintended consequences*
 - Workshop «Government Intervention in the Micro Economy», The King Abdullah Petroleum Studies and Research Center (KAPSARC), Saudi Arabia, March 2014
- *European climate and energy policy and computable economic modeling*
 - Enerday - 9th Conference on Energy Economics and Technology «A European Energy Market?», Technische Universität Dresden, Germany, April 2014
- *A stochastic two settlement equilibrium model for electricity markets with wind generation*
 - TIGER Forum 2014: Energy Industry at a Crossroads: Preparing the Low Carbon Future, Toulouse School of Economics, France, June 2014
- *High wind generation and impact on conventional generators*
 - 20th Conference of the International Federation of Operational Research Societies (IFORS 2014), Barcelona, Spain, July 2014
- *Reservation of transmission capacity*
 - Intermittent Renewables, Balancing Power and Electricity Market Design, Norwegian School of Economics, Helleveien, Norway, August 2014

JOE THARAKAN

- *Intermediaries, transport costs and interlinked transactions*
 - Rheinisch-Westfälische Technische Hochschule, Aachen, Germany, January 2014
 - Université Saint-Louis, Brussels, Belgium, March 2014
 - Université Bordeaux IV, France, April 2014

ISABELLE THOMAS

- *Comparing fractal estimation methods for urban and periurban realities in Brussels: a methodological approach*
 - 18th European Colloquium of Theoretical and Quantitative Geography, Dourdan, France, September 2013
- *Fietsen in België*
 - Kinderfonds, Baudewijn Stichting, Fiestenhelm, Antwerpen, Belgium, October 2013
- *Are LUTI models results geographically robust?*
 - Moebius final Conference, Luxembourg, Luxembourg, October 2013
- *Modeles de localisation: methodes et solutions*
 - Université du Luxembourg, Luxembourg, November and December 2013
- *Limites urbaines: essais fractals et non fractals sur Bruxelles*
 - Université de Dijon, France, February 2014
- *Suburbanisation what? where?*
 - CITYLAB Summer School, Antwerpen, Belgium, June 2014
- *Habiter à Louvain-la-Neuve: une réflexion critique*
 - Louvain-la-Neuve, Belgium, July 2014
- *Comparaison de methodes d'analyse fractales pour étudier l'organisation spatiale des tissus urbains*
 - 51^{ème} Colloque de l'Association de Science Régionale de Langue Française, Université Paris-Est, Marne-la-Vallee, France, July 2014
- *Comparing methods for estimating the fractal nature of built up surfaces in Brussels*
 - 54th ERSAs Congress «Regional Development & Globalisation: Best Practices», St Petersburg, Russia, August 2014

TOM TRUYTS

- *On symbols and cooperation*
 - CEREC Workshop in Economics, Université Saint-Louis, Brussels, Belgium, May 2014
- *Auctions with prestige motives*
 - 25th Summer Festival on Game Theory, Stony Brook (NY), USA, July 2014

HENRY TULKENS

- Le changement climatique au carrefour entre climatologie, économie, théorie des jeux et diplomatie
 - Cours-Conferences, College Belgique de l'Academie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, Brussels, Belgium, October 2013
- *Economic and game theoretical analysis of international environmental agreements with special emphasis on climate change*
 - Doctoral course, Ph.D. program Science and Management of Climate Change at the Department of Economics, Universita Ca'Foscari Venezia, Venice, Italy, April 2014
- *TU and NTU implementations of coalitional stability in integrated assessment models: taking stock*
 - Fondazione ENI Enrico Mattei, Venezia, Venice, Italy, May 2014

SEBASTIEN VAN BELLEGEM

- *Functional linear regression*
 - First Latin-America ELSO Conference, Sao Paulo, Brazil, December 2014

DIRK VAN DE GAER

- *History dependent growth incidence: a characterization and an application to the economic crisis in Italy*
 - KU Leuven, Belgium, February 2014
 - Université de Namur, Belgium, March 2014
 - National University of Ireland, Maynooth, Co. Kildare, Ireland, May 2014

VINCENT VANNETELBOSCH

- *Trust and manipulation in social networks*
 - UECE Lisbon Meetings 2013: Game Theory and Applications, Universidade Tecnica de Lisboa, Portugal, November 2013
- *Allocating value among farsighted players in network formation*
 - CEREC-HUBWorkshop, Université Saint-Louis, Brussels, Belgium, February 2014
 - 2nd BordeauxWorkshop on Economic Theory, Design and Games, GREThA, Université de Bordeaux, France, May 2014
 - Workshop on Dynamic Interactions, Centre d'Economie de la Sorbonne, Université Paris 1 Panthéon-Sorbonne, France, June 2014
- *Bargaining and delay in trading networks*
 - 25th Summer Festival on Game Theory, Stony Brook (NY), USA, July 2014

MATHIEU VAN VYVE

- *On-line algorithms for two applications in OR*
 - Universität Erlangen, Germany, July 2014
- *Efficient algorithms for lot-sizing in continuous time*
 - 20th Conference of the International Federation of Operational Research Societies (IFORS 2014), Barcelona, Spain, July 2014

N. BARIS VARDAR

- *Imperfect resource substitution and optimal transition to clean technologies*
 - 7th Belgian Environmental Economics Day (BEED), Hasselt University, Belgium, December 2013
 - 23^{èmes} Rencontres de l'Environnement, Journée Thématique de la FAERE sur la «Transition Energetique», Le Havre, France, March 2014
 - International Conference on Sustainable Resource Use and Economics Dynamics (SURED 2014), Ascona, Switzerland, June 2014
 - 5th World Congress of Environmental and Resource Economists (WCERE 2014), Istanbul, Turkey, June 2014
- *Optimal energy transition and taxation of non-renewable resources*
 - 3rd Canadian PhD and Early Career Workshop in Environmental Economics & Policy, University of Ottawa, Canada, May 2014

WOUTER VERGOTE

- *Forming coalitions through R&D networks in oligopoly*
 - Université de Liège, Belgium, January 2014
 - Universiteit Antwerpen, Belgium, June 2014
 - 25th Summer Festival on Game Theory, Stony Brook (NY), USA, July 2014

LAURENCE WOLSEY

- *Continuous knapsacks with divisible capacities*
 - Grötschel Meeting, Universität zu Köln, Germany, September 2013
- *Cutting planes and extended formulations for single and multi-vehicle inventory routing problems*
 - Georgia Tech, Atlanta (GA), USA, February 2014
 - Diamant Workshop, Arnhem, The Netherlands

- *On the facets of continuous Knapsack constraints*
 - Georgia Tech, Atlanta (GA), USA, February 2014
- *Lot-sizing and mixed integer programming*
 - 5th Porto Meeting on Mathematics for Industry, Porto, Portugal, April 2014
- *Unit commitment and mixed integer programming*
 - 5th Porto Meeting on Mathematics for Industry, Porto, Portugal, April 2014
- *Vehicle routing and MIP*
 - 5th Porto Meeting on Mathematics for Industry, Porto, Portugal, April 2014
- *An efficient technique for solving the scheduling of appliances in smart-homes*
 - 5th 2014 American Control Conference (ACC 2014), Portland (OR), USA, June 2014

RESEARCH PROJECTS
UNDER CONTRACTS

GDF-SUEZ CHAIR: ENERGY ECONOMICS AND MANAGEMENT OF ENERGY RISK

The purpose of this grant is to support research on the management of risk in energy markets. Potential topics of research include methodical approaches to short-term scheduling (stochastic/robust/reliability constrained unit commitment), generation expansion planning, modeling risk aversion, optimal operation of combined cycle units, optimal positioning in gas forward markets, as well as optimal topology control and investment planning in transmission networks.

GdF-Suez funds the Chair. Research is done at CORE and in ISBA (as partners within IMMAQ). Vincent Blondel (EPL, UCL), Philippe Chevalier (CORE, UCL), Pierre Devolder (ISBA, UCL) and Anthony Papavasiliou (CORE, UCL) are in charge of the implementation. Jinil Han (CORE, UCL) works under the scope of this project.

GSK BIOLOGICALS CHAIR IN STRATEGIC SOURCING AND PROCUREMENT

The chair covers research, applied research, teaching and outreach in the field dedicated to sourcing and procurement. Furthermore, the chair aims to establish an internationally visible center for researchers in the field.

Per Agrell (CORE, UCL), Constantin Blome (CORE, UCL) and Philippe Chevalier (CORE, UCL) coordinate this project sponsored by GSK Vaccine, Belgium.

LHOIST BERGHMANS «ENVIRONMENTAL ECONOMICS AND MANAGEMENT»

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

- evaluation of costs for industry of applying alternative technologies;
- evaluation of the benefits for the community of applying these technologies;
- evaluation of the global impact of industrial activities on the environment and

on the improvement of living conditions through the use of their products. An interdisciplinary approach to these problems is needed in order to integrate the environmental, economic, technological and institutional factors into

a coherent process and to quantify the effects of new environmental policy instruments on the competitiveness of industries and countries and on the overall wealth of these countries. Improving decision-making tools, both on an enterprise and community scale, is the main theme of this research. In addition to the research, the Chair is responsible for the following courses:

- a course on «Environment and global economy» mainly aimed at students of economics;
- a course on «Environment and enterprise» mainly for civil engineering and management students;
- a seminar on «Management of environmental issues».

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

Paul Belleflamme (CORE, UCL) and Thierry Brechet (CORE, UCL) coordinate this project sponsored by Lhoist Berghmans, Belgium.

A SPATIAL ECONOMETRICS APPROACH OF FINANCIAL COMPLEXITY

The research project aims to develop econometric models that are relevant to explore financial complex phenomena in general and properly account for the implications of individual interconnections in the understanding of risk dynamics in the financial markets in particular. While a vast literature has intended to shed light on contagion and spillovers in financial market, the recent financial crisis has revealed that globalization and the resulting intensification of financial markets interconnectedness contributed to a drastic increase in risk. This evolution calls for a rethinking of both the models and the empirical methods used for the assessment of risk dynamics. To this end, we propose first to develop a synthetic and consistent framework to properly model individual interdependencies and their impact on aggregated dynamics, by combining elements from two different literatures. On the one hand, graph theory and network statistics help to assess and model how interdependencies are structured and characterized among a set of individuals. On the other hand, spatial econometrics provides solutions to identify and estimate regression models assuming some functional form for individual interdependences. Combining the two approaches should thus provide an innovative way to model financial interdependencies as well as contagion phenomena. One key contribution will be

to assess in what respect relaxing the assumption of exogenous fixed predetermined distance matrix in standard spatial specifications impacts the identification of the parameters of the model as well as the statistical properties of the estimators. Second based on those theoretical explorations, we will propose relevant estimation methods of the model and compare their performances. Finally, a further step will be to extend our previous model to a nonlinear one, which calls again for both proper specification and estimation methods.

Cyrille Dossougoin (CORE, UCL) works under the scope of this FSR project supervised by Sophie Berau (ILSM and CORE, UCL).

APPLICATION OF HIGH PERFORMANCE COMPUTING IN SHORT-TERM SCHEDULING OF ELECTRIC POWER SYSTEMS UNDER UNCERTAINTY

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

Ignacio Aravena (CORE, UCL) works under the scope of this FSR project supervised by Anthony Papavasiliou (CORE, UCL).

ONLINE COMBINATORIAL OPTIMIZATION

The overall objective of our proposal is to make a significant contribution to the theory and practice of online combinatorial optimization. We consider two major directions:

- Algorithmic. The design and analysis of efficient algorithms for online combinatorial optimization problems that arise in real-world applications.
- Complexity. The study of the limits in the efficiency of certain problems.

For both objectives, we need to define measures of efficiency. In analysis of algorithms, an important measure of performance is running time. Fortunately, prohibitive running times are not very frequent with online algorithms, as they are typically defined through a simple and fast update operation that is executed whenever a new element of the input arrives. At the same time, it is often easy to analyze the asymptotic running time of online algorithms using

the standard Turing machine model of computation. Online algorithms usually have running times that are comparable to those obtained with an offline algorithm, if we ignore the time between arrivals. Sometimes, they are even faster because they do not require reporting the optimal solution. However, the most important metric in online algorithms is not related to running time, but to the uncertainty in the (not yet revealed) input. We are interested in online algorithms whose output is close (in objective value) to the one achievable with full access to the input. The way to measure the impact of this uncertainty depends on the assumptions about the input.

Claudio Telha (CORE, UCL) works under the scope of this FSR project supervised by Mathieu Van Vyve (CORE, UCL).

BEYOND INCENTIVE REGULATION

Traditionally, public authorities implement separate policies to regulate nancial and quality performance of network utilities. In addition, governmental policies put more emphasis on the former than on the latter. The trade-off between service level and cost efficiency is implicit and its properties are poorly examined. Moreover, new developments in these industries - e.g. smart grids in electricity distribution and environmental concerns in water distribution - stress even more the need for a new holistic approach to regulation. It is customary to evaluate network utilities' performance based on the amount of output provided or total number of customers served. In essence, the current regulation concentrates on the quantity dimension of service provision. One of our goals is to develop models where network operators' performances are assessed using a quality normalized multi-output perspective. In this alternative context, quality features correspond to these additional dimensions included in the analysis. In particular, we expect to elaborate empirical studies that analyze the regulation of quality for energy (electricity, gas) water and railways infrastructure provision. Our aspiration is to contribute to policy-making with the development of a family of optimal incentive mechanisms defined simultaneously by service quality and nancial performance.

Per Agrell (CORE, UCL), Axel Gautier (Université de Liège and CORE, UCL) and Sergio Perelman (Université de Liège) are the promoters of this project financed by the Fonds National de la Recherche Scientifique. Mehdi

CONTROL AND OPTIMIZATION OF NETWORKED SYSTEMS WITH POORLY UNDERSTOOD COUPLINGS

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

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

Our research goal is to develop control and optimization methods for such networked systems with unknown or poorly understood coupling, which is thus directly related to wind farms.

This research nanced by the FNRS under a FRIA project is coordinated by Jean Hendrickx (INMA, UCL) and François Glineur (CORE and INMA, UCL). Adrien Taylor (INMA, UCL) works under the scope of this project.

DEVELOPMENT OF A TOOL FOR PLANNING AND OPTIMIZING ACTIVE AUTONOMOUS ELECTRICAL DISTRIBUTION GRIDS

The project of research is intended to develop a tool for the planning of active low-voltage distribution networks. The active nature covers four aspects: the presence of distributed generation, the flexibility of the load, the storage capacities and the active management of the grid thanks to an increased level of automation. Furthermore, this study will focus on the case of autonomous networks in a context of rural electrification for developing countries. Those autonomous grids are self-sufficient in terms of production capability and may have the possibility to be connected to a higher voltage level. The development of the planning tool will occur in two steps. First, it is necessary to model the load, the distributed generation, the storage and the grid with appropriate models. In particular, a fraction of the load and the dispersed generation based on renewables have a stochastic nature. Probabilistic previsional models need to be used at this level. Then, a multi-objective optimization must be carried out based on a set of predefined technico-economic criteria and constraints such as the reliability of the supply, the minimization of the losses in the lines or the optimal location of storage elements. The integration of a set of models for the aspects above and an optimization tool, along with a process of decision support, should lead to a flexible and built-in tool. This tool will work by making a comparison with the traditional planning methods and will be tested on real study-cases in order to make the necessary adjustments.

This research is nanced by the FNRS under a FRIA project and is coordinated by Emmanuel De Jaeger (EPL, UCL) and Fran212cois Glineur (CORE and INMA, UCL). Beno^t Martin (MCTR, UCL) works under the scope of this project.

HIGH DIMENSIONAL ECONOMETRICS

High dimensional models arise today in a lot of economic studies. In a linear regression model, for instance, it corresponds to the situation where the number

of covariates is large, i.e. close or larger than the sample size. In a multivariate time series setting, high dimensionality refers to the high number of time series that are studied jointly. Due to the ease of data collection today, the empirical researcher faces more frequently such large data sets. 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 price 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 (such as, 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, in view of providing 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.

This research is nanced by the FNRS under a FRESH project and is coordinated by Sebastien Van Bellegem (CORE, UCL). Joniada Milla and Monalisa Sen (CORE, UCL) work under the scope of this project.

GAME THEORETIC APPROACHES IN SUPPLY CHAIN MANAGEMENT

The project aims at developing modelling and experimental approaches for strategic behaviour in supply chains using cooperative game theory. Relatively little positive work has been published in the area of game theory in supply chain coordination, in spite of clearly identified opportunities for applications (limited number of well-defined strategic decision makers, observable decisions of durable character, repeated interaction, etc).

Felix Sommer (INGI, UCL) works at CORE under the scope of this project coordinated by Per Agrell (CORE, UCL) and Constantin Blome (CORE, UCL) and nanced by the Fonds National de la Recherche Scientique (FNRS).

**OPTIMAL FERTILITY, HEALTH AND EDUCATION
IN MARKET ECONOMIES**

The proposed research aims at identifying policies that allow improving the steady state eciency and welfare upon the laissez-faire market outcome. This is achieved exploiting the externalities existing between the 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, UCL) is the promoter of this project nanced by the Fonds National de la Recherche Scientique.

**STOCHASTIC MODELLING OF DEPENDENCE:
SYSTEMS UNDER STRESS**

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

Johan Segers (ISBA, UCL) is the promoter of this project also coordinated by Luc Bauwens (CORE, UCL), Michel Denuit (ISBA, UCL), Christian Hafner (ISBA, UCL), Sebastien Van Belleghem (CORE, UCL) and Rainer Von Sachs (ISBA, UCL). This Actions de Recherche Concertees (ARC) project is nanced by the Communaute française de Belgique. Manuela Braione (CORE, UCL), Emanuela Puscas (ISBA, UCL) and Michal Warchol (ISBA, UCL) work under the scope of this project.

**MANAGEMENT OF SHARED RESOURCES IN
SUPPLY CHAINS (SHARC)**

Supply Chain Management (SCM) is widely recognized as the largest source of potential gains in efficiency for the operations of organizations. It has also been the subject of many articles in the scientific literature, in the field of

Operations Management, Operations Research, and Economy. The main lesson from SCM is that it is no longer enough for organizations to think about their own operations, they should take into account all other organizations that participate in the same value creation chain.

The emphasis until now has been on sharing information and co-ordinating flows of goods between organizations. This has led to new ways of organizing operations and new contracts between organizations since companies have recognized that there is a direct link between the performance of supply chains and the availability and quality of timely information.

Thus shared resources in a supply chain are of very different natures. They range from the most mundane such as pallets or boxes to transport goods between different participants in the supply chain, to shared factories that entail large investments or shared intellectual property.

The Centre de Recherches d'Etudes en Gestion Industrielle (CREGI) from UCL Mons is taking part in this Actions de Recherches Concertees (ARC) project nanced by the Communaute française de Belgique. The research is coordinated by Per Agrell (CORE, UCL), Philippe Chevalier (CORE, UCL), Jean-Sebastien Tancrez (LSM, UCL) and Mathieu Van Vyve (CORE, UCL). Adel Hatami-Marbini (CORE, UCL), Tanguy Kegelart (CORE, UCL), Wenly Peng (CORE, UCL), Fahimeh Shamsaei (CORE, UCL) and Vladimir Shikhman (CORE, UCL) work under the scope of this project at CORE.

FINANCIAL COMPLEX SYSTEMS (FIXS)

The recent nancial crisis has emphasized the crucial role of financial institutions in general and of banks in particular for the proper functioning of modern economies. It also revealed their fragility, urging for an effective regulatory framework to be set up. Against this background, the research programme we propose intends to reach two major objectives.

(A) In the short and medium term, we plan to conduct a set of specific research projects that should contribute to tackle the formidable intellectual challenges posed by the nancial crisis to the academic community. Our research agenda will specifically concur to provide a rationale for understanding contemporaneous nancial systemic fragility that would be both theoretically based and supported by empirical validation, in order to help policy makers designing an

efficient set of macro-prudential rules. To that aim, we will specifically concentrate on questions regarding (i) the understanding of contagion mechanisms among increasingly interdependent financial entities, (ii) the description of individual behaviors and their interactions in the financial markets, that may foster instability and damage the entire financial system. To address them, we propose a research agenda that gathers various disciplines of hard and social sciences and consists in developing jointly theoretical models related to the broad class of complex systems methods as well as empirical techniques that properly take into account individual interdependences characterizing current banking and financial systems. More specifically, our theoretical approach will be based on network analysis and multi-agent frameworks to better apprehend how complex interconnections between financial agents or institutions may foster financial instability at the global level, as well as heterogeneous agent models (HAM) to explore how nonlinear asset prices dynamics may result from the confrontation of heterogeneous individual behaviors and impact the overall system. From the empirical side, we propose to rely on several econometric models ranging from static to dynamic panel data models with spatial interactions.

(B) In the medium and long term, we aim to establish an original pole of expertise in financial complex systems within the «Académie Universitaire Louvain» which would materialize in high-quality research, regular scientific events (workshops, conferences) and teaching activities (doctoral courses, summer schools). Sophie Beraud (CORE and LSM, UCL), Oscar Bernal (Université de Namur), Annick Castiaux (Université de Namur) and Jean-Yves Gnabo (Université de Namur) coordinate this ARC project financed by the Communauté française de Belgique.

COMBINATORIAL OPTIMIZATION: METAHEURISTICS AND EXACT METHODS (COMEX)

The main objectives of this project are:

- 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. 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.

Successful achievement of these objectives will lead to (i) a number of important, fundamental research contributions, (ii) a significant impact on the different sectors where combinatorial optimization problems arise, and (iii) to a considerable added value for the Belgian economy.

This project is supported by the Belgian Science Policy under an IAP Research project (P7/36). Bartosz Filipecki (CORE, UCL) works under the scope of this project coordinated by Bernard Fortz (Université libre de Bruxelles) and Mathieu Van Vyve (CORE, UCL).

EXACT NONNEGATIVE MATRIX FACTORIZATION: ALGORITHMS, BOUNDS AND APPLICATIONS TO OPTIMIZATION

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

This project is supported by the Belgian Science Policy under an IAP research project (P7/19). Julien Dewez (CORE, UCL) works under the scope of this project coordinated by Fran217cois Glineur (CORE, UCL).

MEASURING EQUIVALENT INCOMES: THE IMPLEMENTATION OF INDIVIDUAL WELL-BEING MEASURES FROM BELGIAN DATA (MEQIN)

This research project aims at dening the statistical methodology that will allow one to build well-being measures that are consistent with the following principles:

- well-being is a multi-dimensional phenomenon;
- one reason what anti-poverty policies have had such disappointing outcomes is that the point of view of the poor people themselves has not suciently be taken into account;
- the aggregation of the many dimensions of well-being and insecurity has to be made first at the level of the person, and then be aggregated at the social level;
- the dominant paradigm of the even distribution of well-being in the household should be dropped, and
- social policies will not be designed adequately without a precise account of how potential beneficiaries themselves react to the induced changes in their environment.

This project is supported by the Belgian Science Policy under the framework of a Brain research project. Bea Cantillon (Universiteit Antwerpen), Bram De Rock (Université libre de Bruxelles), François Maniquet (CORE, UCL) and Erik Schokkaert (KU Leuven) are the promoters of this project. Eve Ramaekers works under the scope of this project.

POVERTY, RESOURCE EQUALITY, AND SOCIAL POLICIES (PORESP)

This project aims at revisiting the economics of poverty by using recent advances in welfare economics. First, poverty measurement theory is enriched by taking account of individual preferences over the several dimensions of poverty. New poverty indices are dened. They are applied using panel data of material standard of living and subjective satisfaction to study the recent evolution of poverty in developed societies. Second, the ethical value of poverty reduction is added to theories of social welfare based on equality of opportunities. New evaluation criteria of taxation policies are derived. Third, extreme poverty is redened by introducing views of social identity and feelings of self-esteem or

shame. That requires modeling poverty by taking account of the interactions between poor agents and the providers of social services aimed at beneting the poor. These models are used to better understand why anti-poverty policies often fail to reach the poor, and, consequently, why poverty is so persistent in developed societies.

This project is nanced by the European Research Council and coordinated by François Maniquet (CORE, UCL). Sinem Bas, Benît Decerf, Aditi Dimri, Mery Ferrando, Claudia Hupkau, Dirk Neumann and Eve Ramaekers work under the scope of this project at CORE.

TOWARDS RURAL SYNERGIES AND TRADE-OFFS BETWEEN ECONOMIC DEVELOPMENT AND ECOSYSTEM SERVICES (TRUSTEE)

In Europe and the United States, developmental paths of rural areas are believed to be plural (Edora, 2011). As early as Thünen (1826), regional and urban economists began analysing spatial and regional disparities through three drivers: (i) natural-resource advantages, (ii) economies of agglomeration, and (iii) costs of transport and communication. Even though natural amenities have been introduced into numerous economic studies, their inclusion remains quite limited. National and international assessments show that ecosystems are and often continue to be degraded; therefore, ecosystem services and public goods are now considered a part of policy and have become increasingly important within the European context (European Commission, 2010). Population and production locations, commodities, and flow of people are critical components of the relationship between economic development and ecosystem services. Such a relationship has three major unresolved questions:

- Does an optimal spatial organisation of activities, leading to rural economic development while ensuring the provision of ecosystem services, exist?
- How does one combine market mechanisms and policies to reach sustainable spatial allocation of activities?
- Under which conditions do ecosystem services constitute opportunities for rural development?

The trade-off/synergy dilemma between economic development and ecosystem services is one of the major issues of sustainable rural development. The main research objective of TRUSTEE is to disentangle the complex relationships between economic development and ecosystem services at different spatial scales.

We will use an interdisciplinary approach that will involve economists, geographers, agronomists, and ecologists. At every step of the research process, we will involve scientists, experts, and stakeholders. In doing so, this research will also strengthen the capacity of a range of stakeholders to design sustainable strategies for rural areas. The sub-objectives are:

- Analyse the multi-scaled determinants of economic development and ecosystem services on a large European gradient of rural and rural/urban areas.
- Increase our understanding of how to achieve mutual benefits for economic development in rural areas and ecosystem services.
- Identify and assess the governance mechanisms and policy instruments that enhance sustainable rural vitality in very diverse contexts.
- Produce synergies among international researchers of varied disciplines and between researchers and various stakeholders at different governance scales.

Isabelle Thomas (CORE, UCL) outsources this project financed by the European Commission under a Seventh Framework Programme.

SOCIAL NETWORKS AND TRAVEL BEHAVIOUR

The past decade has gone through rapid ICT (Information and Communication Technologies) developments, which had wide societal impacts. ICT enhanced the shift from social groups defined by location to individually-based social networks. High-speed telecoms allow for ad-hoc personalised networks that affect travel behaviour. Unfortunately, research has lagged behind ICT advances, as our understanding of current travel behaviour is limited and existing urban mobility solutions cater to population behaviour that no longer exists. The transport demand models used today are based on inadequate understanding of the new social structure. A new transport paradigm is needed for the ultraurbanized smart city.

This action aims to initiate a new collaboration framework for the various EU research groups that develops 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 mobilised 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 publishing scientific results.

Isabelle Thomas (CORE, UCL) takes part in project financed by the European Commission under the COST framework Program.

ACCESSIBILITY INSTRUMENTS FOR PLANNING PRACTICE IN EUROPE

Accessibility concepts are increasingly acknowledged as fundamental to understand the functioning of cities and urban regions. In particular, accessibility instruments are able to provide a framework for understanding the reciprocal relationships between land use and mobility. Such a framework has important potential advantages when transferred to the realm of urban planning. However, despite the large number of instruments available in literature, they are not widely used to support urban planning practices. Significant benefits are expected, both in terms of process - the establishment of bridges between scholars and practitioners from different approaches and different domains - and in terms of results - insights on how to improve the relevance of accessibility instruments for urban planning practices.

This COST Action project is supported by the EU RTD framework and coordinated at CORE by Isabelle Thomas.

MIXED-INTEGER NONLINEAR OPTIMIZATION (MIND)

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

Difficulty of MILO problems is often due to the fact that objective functions or constraints that are structurally nonlinear (e.g., quadratic) are linearized by introducing new integer variables. In many cases, it was observed that this is not the best way to proceed, as facing the nonlinearity directly without the new

variables leads to much better results. Algorithmic technology for the resulting Mixed-Integer Nonlinear Optimization (MINO) problems is still at its early stage.

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

The researchers formed within this project, once recruited by an enterprise at the end of their training, will have the potential to apply all the available knowledge to optimize complex decision making in the real-world.

This project is financed by the European Commission on the scope of an ITN (Networks for Initial Training). Andrea Lodi (Universita di Bologna) is the investigator of the project, coordinated at CORE by François Glineur, Yurii Nesterov, Mathieu Van Vyve and Laurence Wolsey. Abdelraham Aly works at CORE under the scope of this project.

ENERGETIC TRANSITION

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

This project is financed by CLIMACT in collaboration with the Federal Planning Bureau, l'Institut de Conseil et d'Etudes en Développement Durable (ICEDD), l'Institut pour un Développement Durable (IDD) and the LENTIC (Université de Liège). At CORE this project is coordinated by Thierry Brechet.

DYNAMIC DEMAND RESPONSE AS PROVIDER OF ANCILLARY SERVICES

Electricity demand response has the potential of providing flexibility for enhanced reliability of power systems operations and improved efficiency of electricity markets. This project aims at studying the impact and integration of demand response into the Belgian electricity market and system, especially for the provision of ancillary services.

This project sponsored by the «Region bruxelloise» under the frame of an Innoviris Programme is coordinated by Fran223cois Glineur (CORE, UCL) and Emmanuel Dejaeger (ICTM, UCL). Arnaud Latiers works under the scope of this project at CORE.

SECURE MULTIPARTY COMPUTATION (CAMUS)

Camus intends to facilitate the collaboration between people/companies with diverging interests aiming to reach a common objective. In many contexts, competitors, or partners negotiating a commercial transaction, need to settle together a set of values: a selling price, a production volume, the use time of a common resource, ... Determining optimal values for these parameters often implies sharing a lot of information (actual production costs, preferred periods, ...), and the negotiating partners tend to be reluctant to reveal this information. In practice, this behaviour results in a suboptimal parametrization which may be harmful in particular for small or emerging actors.

It is the ambition of Camus to solve this problem through techniques emulating a «virtual trusted third party». The project will define communication protocols allowing a group of actors to behave as if a trusted third party were present: everybody would act as if he was providing this virtual trusted third party with all his confidential information. The third party would use it only to compute the desired result and then reveal the expected optimization result, and nothing more.

This project sponsored is by the RegionWallonne and coordinated by Sebastien Brunet (IWEPS, Namur, Belgium), Olivier Pereira (EPL, UCL) and Mathieu Van Vyve (CORE, UCL). Abdelraham Aly works under the scope of this project at CORE.

TERRITORIAL PLANNING AND ENERGY TRANSITION 2050

The purpose of this project is to explore the interplay between territorial planning and energy transition in a long term perspective (2050) in the Walloon Region. The project is interdisciplinary as it combines methodological tools and concepts coming from geography, urban planning, economics, scenario analysis, and linear programming.

The project sponsored by the Region Wallonne is coordinated by Thierry Brechet (CORE, UCL), Yves Hanin (LOCI, UCL), Dominique Peeters (CORE, UCL), Fiorella Quadu (LOCI, UCL). Simon Verelst (CORE, UCL) and Veronique Rousseaux (LOCI, UCL) work under the scope of this project.

**EUROPEAN DOCTORATE IN ECONOMICS ERASMUS
MUNDUS (EDEEM)**

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

Frederic Docquier (IRES, UCL) coordinates this project at UCL. Benoît Decerf, Sinem Bas, Aditi Dimri, Manuel Förster, Andrew Pua and N. Baris Vardar are currently enrolled in this programme at CORE.

ADVANCES IN BEHAVIORAL ECONOMICS, GENDER AND GROWTH

The objective of this research is twofold. First, we plan to develop a theoretical framework that allows us to study which networks and coalitions will be formed when individual and collective incentives could be in conflict. In addition, it is crucial to understand which networks and coalitions are likely to emerge if agents do not have full information about the network and coalition structure and are neither myopic nor farsighted but have limited ability to forecast the

future. Will limited information lead to persistence of networks and coalition structures that differ from those that would arise under full information? Does imperfect monitoring affect network and coalition formation differently than under incomplete information? We will test through different experiments alternative theories of behavior in situations where group and network effects play an important role. We will also run experiments in order to disentangle the role of imperfect monitoring and incomplete information in network and coalition formation problems. Second, we will study the efficiency of different forms of collaboration among heterogeneous agents in situations where agents are part of a network and belong to coalitions. We will also analyze the role of group and network effects in the design of optimal school choice mechanisms and of more effective policies to address persistent inequalities and mismatch in the labor market.

The project is financed by the Spanish Ministry of Economy and Computation. Ana Mauleon (Université Saint-Louis, Brussels and CORE, UCL) and Vincent Vannetelbosch (CORE, UCL) work under this project.

THE ANALYSIS OF ECONOMIC PERFORMANCE

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

The project is financed by the Spanish Ministry of Science and Education. Per Agrell (CORE, UCL) and Emili Grifell-Tatje (Universitat Autònoma Barcelona) coordinate this project.

**HUGE-SCALE SPARSE OPTIMIZATION: THEORY, ALGORITHMS
AND APPLICATIONS**

The age of Big Data has begun. Data of huge sizes is becoming ubiquitous and practitioners unprecedented sizes, but with specific structure, in particular sparsity. For example, in many applications from machine learning, compressed sensing, social networks and computational biology we can formulate sparse (quadratic) optimization problems with millions or billions of variables. Classical first or second order optimization algorithms are not designed to scale to 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 tools and optimization algorithms with low per-iteration cost and good scalability properties for solving sparse huge scale optimization problems. The project brings together researchers with expertise in optimization capable of dealing with the big and sparse data settings.

François Glineur (CORE, UCL) 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.

PEOPLE

YEARLY AVERAGE PER 10 YEAR PERIOD

Period	Professors	Assistants Ph.D. students Researchers	Long-and short- term visitors	Administration
1966-1975	14	15	26	4
1976-1985	20	29	45	6
1986-1995	26	40	56	8
1966-2005	32	43	84	10

RECENT YEARLY NUMBERS

Period	Professors	Assistants Ph.D. students Researchers	Long-and short- term visitors	Administration
2005-2006	40	53	91	9
2006-2007	38	47	119	12
2007-2008	36	54	73	15
2008-2009	38	57	96	14
2009-2010	42	55	75	14
2010-2011	42	38	108	11
2011-2012	42	30	67	10
2012-2013	43	36	77	10
2013-2014	42	37	84	9

PUBLICATIONS

YEARLY AVERAGE PER 10 YEAR PERIOD

Period	Discussion Papers	Books	Published papers	Theses
1966-1975	32	1	24	2
1976-1985	47	1	53	2
1986-1995	62	5	69	5
1996-2005	78	4	105	7

RECENT YEARLY NUMBERS

Period	Discussion Papers	Books	Published papers	Theses
2005–2006	118	8	129	9
2006–2007	115	6	133	12
2007–2008	82	1	133	8
2008–2009	84	5	128	7
2009–2010	86	6	172	6
2010–2011	81	11	166	8
2011–2012	63	7	117	6
2012–2013	64	6	106	6
2013–2014	59	1	148	6
total of the 48 years	2864	155	4628	226

RECENT YEARLY NUMBERS

Period	Seminars			Conferences	Yearly contracts
	Economics	Econometrics	Operations Research		
2005–2006	81	30	20	10	12
2006–2007	79	32	27	7	16
2007–2008	83	28	19	4	27
2008–2009	80	35	24	6	38
2009–2010	78	28	19	11	41
2010–2011	69	26	41	13	35
2011–2012	79	25	27	7	22
2012–2013	58	21	31	8	25
2013–2014	53	36	19	7	31
total of the 48 years	3105	1129	1090	184	611

SEMINARS, CONFERENCES AND CONTRACTS
YEARLY AVERAGE PER 10 YEAR PERIOD

Period	Seminars			Conferences	Yearly contracts
	Economics	Econometrics	Operations Research		
1996–1975	26	15	17	0	4
1976–1985	48	22	24	2	6
1986–1995	79	25	26	4	13
1996–2005	94	22	21	5	15

All details can be found on the CORE webpage (<http://www.uclouvain.be/encore>).

- Books and Edited Books
- CORE Reprints
- Other Published Papers
- CORE Discussion Papers
- Other Discussion Papers and Manuscripts
- Articles in Newspapers
- Reports

BOOKS AND EDITED BOOKS

TRADE, TRANSPORT & ECONOMIC GEOGRAPHY

- Masahisa Fujita and Jacques-François Thisse. *Economics of Agglomeration. Cities, Industrial Location and Globalization* (2nd edition). Cambridge: Cambridge University Press, 2013.

Economic activities are not concentrated on the head of a pin, nor are they spread evenly over a featureless plane. On the contrary, they are distributed very unequally across locations, regions, and countries. Even though economic activities are, to some extent, spatially concentrated because of natural features, economic mechanisms that rely on the trade-off between various forms of increasing returns and different types of mobility costs are more fundamental. This book is a study of the economic reasons for the existence of a large variety of agglomerations arising from the global to the local. This second edition combines a comprehensive analysis of the fundamentals of spatial economics and an in-depth discussion of the most recent theoretical developments in new economic geography and urban economics. It aims to highlight several of the major economic trends observed in modern societies.

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CORE DISCUSSION PAPERS

ECONOMETRICS

2013/68 Federica Russo, Michel Mouchart and Guillaume Wunsch

Confounding and control in a multivariate system. An issue in causal attribution

It is widely agreed that, in establishing whether variable X causes variable Y , a third variable Z may confound the relation and thus hinder causal assessment. The solution developed within the 'traditional' framework is to control for any third variable, susceptible of confounding the relation between X and Y . This paper examines complex systems of variables, characterised by multiple causes and multiple effects. The paper advances the view that in such contexts confounding is a moot issue, under a suitable specification of the causal model. When networks of causal relations are considered, possible confounders are included in the appropriate causal paths from the causes to the outcome. The challenge for the model builder then amounts to developing a structural model that species the role of variables in each path, rather than just controlling for possible confounders.

2014/12 Luc Bauwens, Lyudmila Grigoryeva and Juan-Pablo Ortega

Estimation and empirical performance of non-scalar dynamic conditional correlation models

This paper presents a method capable of estimating richly parametrized versions of the dynamic conditional correlation (DCC) model that go beyond the standard scalar case. The algorithm is based on the maximization of a Gaussian quasi-likelihood using a Bregman-proximal trust-region method to handle the various non-linear stationarity and positivity constraints that arise in this context. We consider the general matrix Hadamard DCC model with full rank, rank equal to two and, additionally, two different rank one matrix specifications. In the last mentioned case, the elements of the vectors that determine the rank one parameter matrices are either arbitrary or parsimoniously dened using the Almon lag function. We use actual stock returns data in dimensions up to thirty in order to carry out performance comparisons according to several in- and out-of-sample criteria. Our empirical results show that the use of richly parametrized models adds value with respect to the conventional scalar case.

2014/13 Christian M. Hafner and Arie Preminger

A note on the Tobit model in the presence of a duration variable

The Tobit model (censored regression model) is an important basic model appearing in many applications in economics. In this paper we consider a duration Tobit model in which a duration variable which counts the number of times the data is being censored is included as a covariate. We show that in this case, the dependent variable eventually becomes degenerate, which makes the asymptotic Fisher information matrix singular, rendering the standard methods of asymptotic inference inapplicable. We provide a simulation study and an empirical application to support our results.

2014/14 Jean-François Carpentier and Arnaud Dufays

Specic Markov-switching behaviour for ARMA parameters

We propose an estimation method that circumvents the path dependence problem existing in Change-Point (CP) and Markov Switching (MS) ARMA models. Our model embeds a sticky infinite hidden Markov-switching structure (sticky IHMM), which makes possible a self-determination of the number of régimes as well as of the specification : CP or MS. Furthermore, CP and MS frameworks usually assume that all the model parameters vary from one régime to another. We relax this restrictive assumption. As illustrated by simulations on moderate samples (300 observations), the sticky IHMM-ARMA algorithm detects which model parameters change over time. Applications to the U.S. GDP growth and the DJIA realized volatility highlight the relevance of estimating different structural breaks for the mean and variance parameters.

2014/17 Yukai Kevin Yang

Testing constancy of the error covariance matrix in vector models against parametric alternatives using a spectral decomposition

I consider multivariate (vector) time series models in which the error covariance matrix may be time-varying. I derive a test of constancy of the error covariance matrix against the alternative that the covariance matrix changes over time. I design a new family of Lagrange-multiplier tests against the alternative hypothesis that the innovations are time-varying according to several parametric specifications. I investigate the size and power properties of these tests and find that the test with smooth transition specification has satisfactory size properties. The tests are informative and may suggest to consider multivariate volatility modelling.

ENERGY ECONOMICS

2013/51 Anthony Papavasiliou, Yi He and Alva Svoboda

Self-commitment of combined cycle units under electricity price uncertainty

Day-ahead energy market clearing relies on a deterministic equivalent model with a limited time horizon, which may lead to inefficient scheduling of generating units from the point of view of generators. For this reason, generators may wish to forgo the profit hedging offered by day-ahead electricity markets and assume the risk of self-committing their units with the hope of securing greater profits. This phenomenon may undermine the depth of the day-ahead market, especially in conditions of high price volatility due to deep renewable energy integration. In this paper we investigate the influence of risk aversion and price volatility on the decision of generators to self-commit units. We present a stochastic programming model for self-committing combined cycle units under price uncertainty with a conditional value at risk criterion. We use Bender's decomposition to solve the problem and present results on a case study to draw conclusions.

2013/74 Mehdi Madani and Mathieu Van Vyve

A new formulation of the European day-ahead electricity market problem and its algorithmic consequences

A new formulation of the optimization problem implementing European market rules for nonconvex day-ahead electricity markets is presented, that avoids the use of complementarity constraints to express market equilibrium conditions, and also avoids the introduction of auxiliary binary variables to linearise these constraints. Instead, we rely on strong duality theory for linear or convex quadratic optimization problems to recover equilibrium constraints imposed by most of European power exchanges facing indivisible orders. When only so-called stepwise preference curves are considered to describe continuous bids, the new formulation allows to take full advantage of state-of-the-art solvers, and in most cases, an optimal solution together with market clearing prices can be computed for large-scale instances without any further algorithmic work. The new formulation also suggests a very competitive Benders-like decomposition procedure, which helps to handle the case of interpolated preference curves that yield quadratic primal and dual objective functions, and consequently a dense quadratic constraint. This procedure essentially consists in strengthening classical Benders cuts locally. Computational experiments on real data kindly provided

by main European power exchanges (Apx-Endex, Belpex and Epex spot) show that in the linear case, both approaches are very efficient, while for quadratic instances, only the decomposition procedure is tractable and shows very good results. Finally, when most orders are block orders, and instances are combinatorially very hard, the new MILP approach is substantially more efficient.

ENVIRONMENTAL ECONOMICS

2013/72 N. Baris Vardar

Imperfect resource substitution and optimal transition to clean technologies

Non-renewable and renewable resources are imperfect substitutes due to technical and geographical constraints. What is the role of imperfect substitution on the optimal transition path to the clean technologies? We address this question by characterizing the optimal growth path and resource use of an economy. We show that the economy initially starts with using the non-renewable and renewable resources simultaneously and gradually increases the share of renewable. The outcome can be either (i) the economy switches to a backstop at a certain date or (ii) the initial regime lasts forever. The results show that the economy converges to a steady state even if the backstop is too costly and a green, zerocarbon economy is the optimal final state in any case. We also present some simulation results to illustrate the shapes of the optimal paths. This analysis allows us to discuss the policy implications and question the existence of the Green Paradox.

2014/6 Yuri Yatsenko, Natali Hritonenko and Thierry Brechet

Modeling of environmental adaptation versus pollution mitigation

The paper combines analytic and numeric tools to investigate a nonlinear optimal control problem relevant to the economics of climate change. The problem describes optimal investments into pollution mitigation and environmental adaptation at a macroeconomic level. The steady-state analysis of this problem focuses on the optimal ratio between adaptation and mitigation. In particular, we analytically prove that the long-term investments into adaptation are profitable only for economies above certain efficiency threshold. Numerical simulation is provided to estimate how the economic efficiency and capital deterioration affect the optimal policy.

2014/8 Simon Buckle, Mirabelle Muûls, Joerg Leib and Thierry Brechet

Prospects for Paris 2015: do major emitters want the same climate?

International negotiations have failed to achieve an ambitious outcome to limit climate risks. A Cournot outcome where countries determine their mitigation commitments in the full knowledge of those by others could be an important step. It would avoid a Stackelberg (leader-follower) outcome where one or more major emitters impose a level of climate risk on the rest of the world. This requires these countries to have sufficiently similar preferences over global cumulative emissions. We develop a novel stylised economic growth model to analyse the dynamics of international negotiations. Economies can be classified according to their committed emissions and the initial level of atmospheric CO₂. We define a new metric, the desired mitigation effort, which provides an empirical methodology for comparing and evaluating countries' mitigation commitments. A numerical calibration suggests a degree of convergence between the major emitters that might allow a Cournot-style agreement at the Paris Conference in 2015.

2014/21 N. Baris Vardar

Optimal energy transition and taxation of non-renewable resources

This paper investigates the optimal taxation path of a non-renewable resource in the presence of an imperfect substitute renewable resource. We present an optimal growth model and characterize the social optimum and the decentralized equilibrium. We show that the economy gradually reduces the share of non-renewable resource and converges to a steady state in which it uses only the renewable resource. The decentralized economy converges to the same steady state as the social optimum in terms of capital stock and consumption whether there is a regulator intervention or not. What matters for welfare, however, is the speed at which the economy approaches the clean state $\{$ the energy transition $\}$, which determines the level of environmental damages. We obtain the optimal taxation rule and show that its time profile can be either always increasing, decreasing or U-shaped depending on the initial state of the economy. Finally we provide some simulation results to illustrate these theoretical findings.

GAME THEORY

2013/52 Ana Mauleon, Elena Molis, Vincent Vannetelbosch and Wouter Vergote

Dominance invariant one-to-one matching problems

Solution concepts in social environments use either a direct or indirect dominance relationship, depending on whether it is assumed that agents are myopic or farsighted. Direct dominance implies indirect dominance, but not the reverse. Hence, the predicted outcomes when assuming myopic (direct) or farsighted (indirect) agents could be very different. In this paper, we characterize dominance invariant one-to-one matching problems when preferences are strict. That is, we obtain the conditions on preference profiles such that indirect dominance implies direct dominance in these problems and give them an intuitive interpretation. Whenever some of the conditions are not satisfied, it is important to know the kind of agents that are being investigated in order to use the appropriate stability concept. Furthermore, we characterize dominance invariant one-to-one matching problems having a non-empty core. Finally, we show that, if the core of a dominance invariant one-to-one matching problem is not empty, it contains a unique matching, the dominance invariant stable matching, in which all agents who mutually top rank each other are matched to one another and all other agents remain unmatched.

2013/54 François Maniquet and Massimo Morelli

Approval quorums dominate participation quorums

We study direct democracy with population uncertainty. Voters' participation is often among the desiderata by the election designer. We show that with a participation quorum, i.e. a threshold on the fraction of participating voters below which the status quo is kept, the status quo may be kept in situations where the planner would prefer the reform, or the reform is passed when the planner prefers the status quo. On the other hand, using an approval quorum, i.e. a threshold on the number of voters expressing a ballot in favor of the reform below which the status quo is kept, we show that those drawbacks of participation quorums are avoided. Moreover, an electoral system with approval quorum performs better than one with participation quorum even when the planner wishes to implement the corresponding participation quorum social choice function.

2014/3 Ana Mauleon, Nils Roehl and Vincent Vannetelbosch

Constitutions and social networks

The objective of the paper is to analyze the formation of social networks where individuals are allowed to engage in several groups at the same time. These group structures are interpreted here as social networks. Each group is supposed to have specific rules or constitutions governing which members may join or leave it. Given these constitutions, we consider a social network to be stable if no group is modified anymore. We provide requirements on constitutions and players' preferences under which stable social networks are induced for sure. Furthermore, by embedding many-to-many matchings into our setting, we apply our model to job markets with labor unions. To some extent the unions may provide job guarantees and, therefore, have influence on the stability of the job market.

2014/4 Nicolas Carayol, Remy Delille and Vincent Vannetelbosch

Allocating value among farsighted players in network formation

We propose a concept to study the stability of social and economic networks when players are farsighted and allocations are determined endogenously. A set of networks is a von Neumann-Morgenstern farsightedly stable set with bargaining if there exists an allocation rule and a bargaining threat such that (i) there is no farsighted improving path from one network inside the set to another network inside the set, (ii) from any network outside the set there is a farsighted improving path to some network inside the set, (iii) the value of each network is allocated among players so that players suffer or benefit equally from being linked to each other compared to the allocation they would obtain at their respective credible bargaining threat. We show that the set of strongly efficient networks is the unique von Neumann-Morgenstern farsightedly stable set with bargaining if the allocation rule is anonymous and component efficient and the value function is top convex. Moreover, the componentwise egalitarian allocation rule emerges endogenously.

2014/10 Mikhail Iskakov, Alexey Iskakov and Alexey Zakharov

Equilibria in secure strategies in the Tullock contest

It is well known that a pure-strategy Nash equilibrium does not exist for a two-player rent-seeking contest when the contest success function parameter is greater than two. We analyze the contest using the concept of equilibrium in secure strategies, which is a generalization of the Nash equilibrium. It is defined by two conditions: (i) no player

can make a profitable deviation that decreases the payoff of another player and (ii), for any profitable deviation there is a subsequent deviation by another player, that is profitable for the second deviator and worse than the status quo for the first deviator. We show that such equilibrium always exists in the Tullock contest. Moreover, when the success function parameter is greater than two, this equilibrium is unique up to a permutation of players, and has a lower rent dissipation than in a mixed-strategy Nash equilibrium.

2014/15 Federico Grigis de Stefano

Strategic stability of equilibria: the missing paragraph

This paper introduces two set valued Nash equilibrium refinements that are a natural generalization of the concept of stable set of equilibria introduced in Kohlberg and Mertens (1986) and satisfy all the properties defined in Mertens (1989). It also establishes a connection between Nash equilibrium refinements and stochastic games as a tool to define a stable set of equilibria.

2014/27 Gustavo Bergantinos and Juan D. Moreno-Ternero

The axiomatic approach to the problem of sharing the revenue from bundled pricing

We explore in this paper the axiomatic approach to the problem of sharing the revenue from bundled pricing. We formalize two models for this problem on the grounds of two different informational bases. In both models, we provide axiomatic rationale for natural rules to solve the problem. We, nonetheless, obtain drastic differences under each scenario, which highlights the importance of setting the appropriate informational basis of the problem.

2014/30 Olivier Bos and Tom Truyts

Auctions with prestige motives

Social status, or prestige, is an important motive for buying art or collectibles and for participation in charity auctions. We study a symmetric private value auction with prestige motives, in which the auction outcome is used by an outside observer to infer the bidders' types. We elicit conditions under which an essentially unique D1 equilibrium bidding function exists in four auction formats: first-price, second-price, all-pay and the English auction. We obtain a strict ranking in terms of expected revenues: the first-price and all-pay auctions are dominating the English auction but

are dominated by the second-price auction. Expected revenue equivalence is restored asymptotically for the number of bidders going to infinity.

2014/32 P. Jean-Jacques Herings, Ana Mauleon and Vincent Vannetelbosch

Stability of networks under level-K farsightedness

We provide a tractable concept that can be used to study the influence of the degree of farsightedness on network stability. A set of networks GK is a level- K farsightedly stable set if three conditions are satisfied. First, external deviations should be deterred. Second, from any network outside of GK there is a sequence of farsighted improving paths of length smaller than or equal to K leading to some network in GK . Third, there is no proper subset of GK satisfying the first two conditions. We show that a level- K farsightedly stable set always exists and we provide a sufficient condition for the uniqueness of a level- K farsightedly stable set. There is a unique level-1 farsightedly stable set $G1$ consisting of all networks that belong to closed cycles. Level- K farsighted stability leads to a refinement of $G1$ for generic allocation rules. We then provide easy to verify conditions for a set to be level- K farsightedly stable and we consider the relationship between level- K farsighted stability and efficiency of networks. We show the tractability of the concept by applying it to a model of criminal networks.

2014/35 Ulrike Kornek, Kai Lessmann and Henry Tulkens

Transferable and non transferable utility implementations of coalitional stability in integrated assessment models

To study the stability of coalitions in the standard game theoretic model of international environmental agreements, two alternative concepts are used: potential internal stability and core stability. Both concepts make use of the possibility of reallocating payoffs within a coalition through transfers, formulated in terms of transferable utility among the players. For international applications where players are countries, such as done in the growing literature on integrated assessment models, non-transferable utility games would be economically better suited. In this note, we provide a framework for comparing the treatment of coalitions in the game theoretically minded integrated assessment models, from that point of view. Under way, we extend the definition of the two stability concepts to games without transferable utility, assuming instead the transferability of some physical good. We also show that potential internal stability

and blocking power of coalitions can be tested by solving a simple optimization problem.

GROWTH AND DEVELOPMENT

2014/25 Nguyen Thang Dao

From agriculture to manufacture: how does geography matter?

This paper shows that the development from an agricultural regime through industrialization to a manufacturing regime occurs simultaneously to the demographic transition and the change in labor structure towards an increasing fraction of skilled labor due to technological progress. The manufacturing sector is economically viable when the technological level is sufficiently high. During the industrialization, the technological progress makes technology become more complementary to skilled labor than to unskilled labor, so that individuals tend to decrease the number of unskilled offspring in order to increase the number of skilled ones. This paper also shows that a geographical advantage for agriculture helps an economy to be more prosperous in the agricultural regime, but delays the timing of industrialization and the timing of demographic transition. Hence, an economy with more geographical advantage for agriculture may be overtaken in the development process by another with less geographical advantage for agriculture when the level of technology is high enough.

INDUSTRIAL ORGANIZATION

2013/53 Jean J. Gabszewicz and Skerdilajda Zanaj

(Un)stable vertical collusive agreements

In this paper, we extend the concept of stability to vertical collusive agreements, involving downstream and upstream firms, using a setup of successive Cournot oligopolies. We show that a stable vertical agreement always exists: the unanimous vertical agreement involving all downstream and upstream firms. Thus, stable vertical collusive agreements exist even for market structures in which horizontal cartels would be unstable. We also show that there are economies for which the unanimous agreement is not the only stable one. Furthermore, Stigler's statement according to which the only ones who benefit from a collusive agreement are the outsiders need not be valid in vertical agreements.

2013/57 Philip Ushchec, Igor Sloev and Jacques-François Thisse

Do we go shopping downtown or in the 'burbs'? Why not both?

We combine spatial and monopolistic competition to study market interactions between downtown retailers and an outlying shopping mall. Consumers shop at either marketplace or at both, and buy each variety in volume. The market solution stems from the interplay between the market expansion effect generated by consumers seeking more opportunities, and the competition effect. Firms' profits increase (decrease) with the entry of local competitors when the former (latter) dominates. Downtown retailers swiftly vanish when the mall is large. A predatory but efficient mall need not be regulated, whereas the regulator must restrict the size of a mall accommodating downtown retailers.

2013/59 Paul Belleflamme and Francis Bloch

Dynamic protection of innovations through patents and trade secrets

This paper analyzes the optimal protection strategy for an innovator of a complex innovation who faces the risk of imitation by a competitor. We suppose that the innovation can be continuously fragmented into sub-innovations. We characterize the optimal mix of patent and trade secrets when the innovator faces a strict novelty requirement and can only patent a fraction of the innovation once. We also study the optimal dynamic patenting policy in a soft novelty regime, when the innovator can successively patent different fragments of the process. We compare a regime with prior user rights, when the innovator can use the secret part of the process, even when it is patented by an imitator with a regime without prior user rights.

2013/67 Cristina Pardo-Garcia and Jose J. Sempere-Monerris

Equilibrium mergers in a composite good industry with efficiencies

This paper studies equilibrium merging behavior in composite good industries. Component producers face the option to either merge with a similar component producer (horizontal merger) or a complementary one (complementary merger) of a composite good. Focusing only on strategic reasons, complementary mergers arise at equilibrium only when composite goods are very differentiated while horizontal mergers otherwise. Next, when efficiencies are considered, the level of marginal cost saving required for a horizontal merger in a composite industry to result in a non-increase in the upward price pressure index (UPPI) is greater as compared with the one in a regular industry.

This result can be used by antitrust authorities to be more demanding when dealing with horizontal mergers in composite goods industries.

2013/71 Alexander Osharin, Jacques-François Thisse, Philip Ushchec

and Valery Verbus

Monopolistic competition and income dispersion

We develop a model of monopolistic competition that accounts for consumers' heterogeneity in both incomes and preferences. This model makes it possible to study the implications of income redistribution on the toughness of competition. We show how the market outcome depends on the joint distribution of consumers' tastes and incomes and obtain a closed-form solution for a symmetric equilibrium. Competition toughness is measured by the weighted average elasticity of substitution. Income redistribution generically affects the market outcome, even when incomes are redistributed across consumers with different tastes in a way such that the overall income distribution remains the same.

2014/19 Paul Belleflamme and Martin Peitz

Digital piracy: an update

This note summarizes and updates our previous survey of the economics of digital piracy (Belleflamme and Peitz, 2012).

2014/20 Eva-Maria Scholz

Licensing to vertically related markets

We analyse the problem of a non-producing patentee who licenses an essential process innovation to a vertical Cournot oligopoly. The vertical oligopoly is composed of an upstream and a downstream sector which may differ in their efficiency or, in other words, in the benefit they derive from the innovation. In this framework we characterize the optimal licensing contract in terms of the licensing revenue maximising policy (fixed-fee or per-unit royalty) and sector (upstream and/or downstream sector). First, it is shown that under a fixed-fee contract licensing to the less efficient industry sector may be the patentee's licensing revenue maximising strategy. Here, licensing to a less efficient downstream market is all the time optimal in terms of consumer surplus and aggregate economic welfare. Conversely, licensing to a less or equally efficient upstream industry is potentially inefficient. Second, our findings reveal that the optimal licensing policy is sector dependent. A per-unit royalty contract may

dominate a fixed-fee policy on the downstream market in terms of licensing revenues, while offering a per-unit royalty contract to the upstream industry is never optimal. As a third and final point we address the case of licensing to both industry sectors. Here we also identify conditions under which two-sector licensing of both sectors is less profitable than one-sector licensing of a single industry (and vice versa).

2014/26 Xavier Y. Wauthy

From Bertrand to Cournot via Kreps and Scheinkman: a hazardous journey

The minimal core of strategic decisions a firm has to make is three-fold: What to produce? At which scale? At what price? A full-fledged theory of oligopolistic competition should be able to embrace these three dimensions jointly. Starting from the Cournot-Bertrand dispute and the stream of research it gave birth to, this survey shows that we are far from having such a theory at our disposal today. Many papers cover two dimensions out of three and display insightful results but no paper satisfactorily addresses the complete picture. I discuss the limitations of the different approaches that have been undertaken. This discussion sets a clear agenda for further theoretical research on the oligopoly front.

MICROECONOMIC THEORY

2013/62 Luca G. Deidda and Dimitri Paolini

Wage premia, education race, and supply of educated workers

We model a labor market in which workers' level of education might be a signal of skills. We show that whenever the wage premium for education increases over time - as it might happen under skill biased technological progress - the investment in education needed to sustain a separating equilibrium in which skilled workers perfectly signal their type, also increases. Hence, an increase in the education wage premium induces an education race. If the borrowing capacity of poor workers is lower than that of rich ones due to capital market imperfections, poor-skilled workers will naturally fall behind in this race- and pool together with some unskilled ones - as the investment they would have to undertake to signal their type eventually becomes unaffordable to them. Such mechanism supports a supply side explanation for the joint long run trends of (i) the education wage premia, and (ii) the relative supply, of postgraduates and college graduates in the US labor market, which complements

the demand based explanation for wage skill premia based on skill bias technological change hypothesis.

2014/22 Benoît Decerf

Income poverty measures with relative poverty lines

I derive poverty indices taking into account both the absolute and relative aspects of income well-being. The trade-off made by the social planner between those two aspects is captured at individual level by a well-being ordering. This ordering evaluates the well-being of an agent based on her income and a reference statistic on the income distribution, typically the mean. A family of poverty indices respecting the judgements held in the ordering is axiomatically characterized. Then, I study the consequences of requiring the poverty indices to grant a minimal precedence to the absolute over the relative aspect of income well-being. This compelling requirement has strong implications. In particular, the Poverty Gap Ratio is the only index in the popular Foster-Greer-Thorbecke family to satisfy it.

OPTIMIZATION METHODS AND OPERATIONS RESEARCH

2013/63 Laurence A. Wolsey and Hande Yaman

Continuous knapsack sets with divisible capacities

We study two continuous knapsack sets Y and \bar{Y} with n integer, one unbounded continuous and m bounded continuous variables in either Y or \bar{Y} form. When the coefficients of the integer variables are integer and divisible, we show in both cases that the convex hull is the intersection of the bound constraints and $2m$ polyhedra arising from a continuous knapsack set with a single unbounded continuous variable. The latter polyhedra are in turn completely described by an exponential family of partition inequalities. A polynomial size extended formulation is known in the Y case. We provide an extended formulation for the \bar{Y} case. It follows that, given a specific objective function, optimization over both Y and \bar{Y} can be carried out by solving a polynomial size linear program. A consequence of these results is that the coefficients of the continuous variables all take the values 0 or 1 (after scaling) in any non-trivial facet-defining inequality.

2013/66 Yurii Nesterov and Vladimir Shikman

Algorithmic models of market equilibrium

In this paper we suggest a new framework for constructing mathematical models of market activity. Contrary to the majority of the classical economical models (e.g. Arrow-Debreu, Walras, etc.), we get a characterization of general equilibrium of the market as a saddle point in a convex-concave game. This feature significantly simplifies the proof of existence theorems and construction of the adjustment processes both for producers and consumers. Moreover, we argue that the unique equilibrium prices can be characterized as a unique limiting point of some simple price dynamics. In our model, the equilibrium prices have natural explanation: they minimize the total excessive revenue of the market's participants. Due to convexity, all our adjustment processes have unambiguous behavioral and algorithmic interpretation. From the technical point of view, the most unusual feature of our approach is the absence of the budget constraint in its classical form.

2013/69 Marco Di Summa

The convex hull of the all-different system with the inclusion property: a simple proof

An all-different constraint for a given family of discrete variables imposes the condition that no two variables in the family are allowed to take the same value. Magos et al. [*Mathematical Programming*, 132 (2012), pp. 209{260}] gave a linear-inequality description of the convex hull of solutions to a system of all-different constraints, under a special assumption called inclusion property. The convex hull of solutions is in this case the intersection of the convex hulls of each of the all-different constraints of the system. We give a short and simple proof of this result, that in addition shows the total dual integrality of the linear system.

2014/5 Yurii Nesterov and Vladimir Shikhman

Convergent subgradient methods for nonsmooth convex minimization

In this paper, we develop new subgradient methods for solving nonsmooth convex optimization problems. These methods are the first ones, for which the whole sequence of test points is endowed with the worst-case performance guarantees. The new methods are derived from a relaxed estimating sequences condition, which allows reconstruction of the approximate primaldual optimal solutions.

Our methods are applicable as efficient real-time stabilization tools for potential systems with infinite horizon. As an example, we consider a model of privacy-respecting taxation, where the center has no information on the utility functions of the agents. Nevertheless, we show that by a proper taxation policy, the agents can be forced to apply in average the socially optimal strategies. Preliminary numerical experiments confirm a high efficiency of the new methods.

2014/7 Sanjeeb Dash, Oktay Günlük and Laurence A. Wolsey

The continuous knapsack set

We study the convex hull of the continuous knapsack set which consists of a single inequality constraint with n non-negative integer and m non-negative bounded continuous variables. When $n = 1$, this set is a slight generalization of the single arc flow set studied by Magnanti, Mirchandani, and Vachani (1993). We first show that in any facet-defining inequality, the number of distinct non-zero coefficients of the continuous variables is bounded by $2^n - n$. Our next result is to show that when $n = 2$, this upper bound is actually 1. This implies that when $n = 2$, the coefficients of the continuous variables in any facet-defining inequality are either 0 or 1 after scaling, and that all the facets can be obtained from facets of continuous knapsack sets with $m = 1$. The convex hull of the sets with $n = 2$ and $m = 1$ is then shown to be given by facets of either two-variable pure-integer knapsack sets or continuous knapsack sets with $n = 2$ and $m = 1$ in which the continuous variable is unbounded. The convex hull of these two sets has been completely described by Agra and Constantino (2006). Finally we show (via an example) that when $n = 3$, the non-zero coefficients of the continuous variables can take different values.

2014/16 Claudio Telha and Mathieu Van Vyve

Efficient approximation algorithms for the economic lot-sizing in continuous time

We consider a continuous-time variant of the classical Economic Lot-Sizing (ELS) problem. In this model, the setup cost is a continuous function with lower bound $K_{\min} > 0$, the demand and holding costs are integrable functions of time and the replenishment decisions are not restricted to be multiples of a base period. Starting from the assumption that certain operations involving the setup and holding cost functions can be carried out efficiently, we argue that this variant admits a simple approximation scheme based on dynamic programming: if the optimal cost of an instance is OPT , we can find a solution with cost at most $(1 + \epsilon)OPT$ using no more

than $O\left(\frac{1}{\varepsilon^2} \frac{\text{OPT}}{K_{\min}} \log \frac{\text{OPT}}{K_{\min}}\right)$ of these operations. We argue, however, that this algorithm could be improved on instances where the setup costs are «generally» very large compared with K_{\min} . This leads us to introduce a notion of input-size that is significantly smaller than $\text{OPT}=K_{\min}$ on instances of this type, and then to define an approximation scheme that executes $O\left(\frac{1}{\varepsilon^2} \sigma^2 \log^2\left(\frac{\text{OPT}}{K_{\min}}\right)\right)$ operations. Besides dynamic programming, this second approximation scheme builds on a novel algorithmic approach for Economic Lot Sizing problems.

PUBLIC AND WELFARE ECONOMICS

2013/65 Carl Gaigne, Stephane Riou and Jacques-François Thisse

How to make the metropolitan area work? Neither big government, nor laissez-faire

We study how political boundaries and tax competition among jurisdictions interact with the labor and land markets to determine the economic structure and performance of metropolitan areas. Contrary to general belief, institutional fragmentation and cross-border commuting need not be welfare-decreasing, but the size of the central city matters for welfare. Under tax competition the central business district is too small. Tax competition also prevents public policy enhancing global productivity to produce their full impact. Although our results support the idea of decentralizing the supply of local public services by independent jurisdictions, they also highlight the need of coordinating tax policies.

2013/70 Philippe De Donder and Pierre Pestieau

Lobbying, family concerns and the lack of political support for estate taxation

We provide an explanation for why estate taxation is surprisingly little used over the world, given the skewness of the estate distribution. Taxing estates implies meddling with intra-family decisions, which may be frowned upon by many. At the same time, the concentration of estates means that a low proportion of the population stands to gain a lot by decreasing estate taxation. We provide an analytical model, together with numerical simulations, where agents bequeathing large estates make monetary contributions that are used to play up the salience of the encroachment aspects of estate taxation on family decisions in order to decrease its political support.

2014/1 Erik Schokkaert and Tom Truyts

Preferences for redistribution and social structure

We model inter-individual differences in preferences for redistribution as a function of (a) self-interest; (b) stable ideological traits; (c) subjective perceptions of the relative importance of the main determinants of income differences (luck, effort, talent). Individuals base the latter on information obtained from their reference group. We analyse the consequences for redistributive preferences of homophilous reference group formation based on talent. We argue that our theoretical results make it possible to understand and integrate some of the main insights from the empirical literature. We illustrate with GSS data from 1987 how our model may help in structuring empirical work.

2014/2 Maarten Van Dijck and Tom Truyts

The agricultural invasion and the political economy of agricultural trade policy in Belgium, 1875-1900

After 1875, cheap grain from the United States and Russia flooded the European markets. Many countries like Germany, France, and Sweden turned to agricultural trade protection, while others, like the UK and Denmark, held on to a free trade position. Belgium adopted a middle position, leaving its grain markets open but protecting animal husbandry, dairy production, and the processing of foodstuffs. The econometric analysis of the votes of Belgian Members of Parliament on four proposals to install protectionist measures on agricultural trade seeks to identify which economic or political interests explain the Belgian policy option.

2014/9 Lionel Artige, Antoine Dedry and Pierre Pestieau

Social security and economic integration

The purpose of this letter is to analyze the impact of economic integration on capital accumulation and capital flows when countries differ in their social security systems, especially as regards the degree of funding of pensions and the regulation of the retirement age. Funding and early retirement both foster capital accumulation relative to pay-as-you-go pensions with flexible retirement. In the case of economic integration, both imply capital outflow possibly resulting in utility losses.

2014/11 Helmuth Cremer and Pierre Pestieau

Means-tested long term care and family transfers

One of the pervasive problems with means-tested public long term care (LTC) programs is their inability to prevent individuals who could afford private long term services from taking advantage of public care. They often manage to elude the means-test net through «strategic impoverishment». We show in a simple model how this problem comes about, how it affects welfare and how it can be mitigated.

2014/18 Koen Decancq, Marc Fleurbaey and Erik Schokkaert

Inequality, income, and well-being

Individual well-being depends not only on income but also on other dimensions of life, such as health, the quality of social relations and of the environment, employment, and job satisfaction. In this paper we survey the economic literature on how to construct such overall measures of well-being. We distinguish three approaches: the capability (and functionings) approach, the use of subjective life satisfaction measures and the calculation of equivalent incomes. We discuss the normative assumptions underlying these three approaches, focusing on two issues: the degree to which individual preferences are respected and where in each approach the boundaries of individual responsibility are drawn. We compare the measurement of inequality in well-being with the use of multidimensional inequality measures. We illustrate the general theoretical issues in three domains of application: measuring the effects of household size and composition in the literature on equivalence scales, valuing publicly provided goods and services, and making international comparisons of well-being involving international PPP comparisons.

2014/23 Antoine Dedry, Harun Onder and Pierre Pestieau

Aging, social security design and capital accumulation

This paper analyzes the impact of aging on capital accumulation and welfare in a country with a sizable unfunded social security system. Using a two-period overlapping-generation model with endogenous retirement decisions, we show that both the type of aging and the type of unfunded social security system are important in understanding this impact. We consider two demographic changes, declining fertility and increasing longevity, and three types of pensions, denied contributions, denied benefits and denied annuities, to investigate the differences in implications of aging.

2014/24 Biung-Ghi Ju and Juan D. Moreno-Tertero

Fair allocation of disputed properties

We model problems of allocating disputed properties as generalized exchange economies in which agents have preferences and claims over multiple goods, and the social endowment of each good may not be sufficient to satisfy all individual claims. In this context, we investigate procedural and end-state principles of fairness, their implications and relations. To do so, we explore «procedural» allocation rules represented by a composition of a rights-assignment mechanism (to assign each profile of claims individual property rights over the endowment) and Walrasian, or other individually rational, exchange rule. Using variants of fairness based on no-envy as end-state principles, we provide axiomatic characterizations of the three focal egalitarian mechanisms, known in the literature on rationing problems as constrained equal awards, constrained equal losses, and proportional mechanisms. Our results are connected to focal contributions in political philosophy, and also provide rationale for market-based environmental policy instruments (such as cap-and-trade schemes and personal carbon trading) and moral foundation for the three proposals to allocate GHG emission rights known as the equal per capita sharing, the polluter pays principle and the equal burden sharing (the victims pay principle).

2014/28 Jean Hindriks and Yukihiro Nishimura

International tax leadership among asymmetric countries

Multinational companies can shift profit and income between branches in order to reduce the overall tax liabilities of the company. The result is a tax competition between countries. In this paper we consider the sequential choice of tax rates to illustrate the potential effects of tax leadership. We use a profit shifting model with multinational firms that operate in two countries, large and small. Governments compete by setting source-based corporate income taxes. We show that: (i) the sequential tax equilibria always Pareto dominate the simultaneous tax equilibrium. (ii) Each country prefers to follow than to lead the tax game. (iii) The tax leadership by the large country risk-dominates the tax leadership by the small country. Therefore our analysis provides a plausible explanation for the endogenous emergence of the tax leadership by the large countries. The results are contrasting with previous results in the literature.

2014/29 Jean Hindriks and Yukihiro Nishimura

A note on equilibrium leadership in tax competition models

This paper reexamines the work of Kempf and Rota-Graziosi (Journal of Public Economics, 94: 768-776, 2010), which shows that leadership by the small region is the risk dominant equilibrium under the endogenous timing game. They obtain this result in a model where the asymmetry among countries translates into different gradients of the demand for capital but identical vertical intercept. In this note, we simply reverse the form of asymmetry by considering different vertical intercepts but identical gradient. The reason is that market power is typically related to the intercept and not to the slope of the demand function. We then show that the large region tax leadership becomes the risk dominant equilibrium and can even become Pareto superior.

2014/31 Juan D. Moreno-Ternero and Lars P. Sterdal

Normative foundations for equity-sensitive population health evaluation functions

Standard models for the evaluation of population health, such as the so-called models of aggregate Quality Adjusted Life Years (QALYs), or aggregate Healthy Years Equivalent (HYE), are usually criticized on equity grounds. We provide in this paper normative justifications for alternative equity-sensitive models, such as the so-called models of multiplicative QALYs, multiplicative HYE, and generalizations of the two. Our axiomatic approach assumes social preferences over distributions of individual health states experienced in a given period of time. It conveys informational simplicity, as it does not require information about individual preferences on health.

2014/33 Lionel Artige, Laurent Cavenaile and Pierre Pestieau

The macroeconomics of PAYG pension schemes in an aging society

This paper analyzes and compares the macroeconomic performance of defined-benefit and defined-contribution pay-as-you-go pension systems when population ages. When the fertility rate decreases or longevity rises, it is shown that a shift from defined-benefit (dened total benefit or dened annuities) to dened contribution always results in higher per-capita income and life-cycle welfare at the steady state. All results are derived with general production and utility functions.

SUPPLY CHAIN MANAGEMENT

2013/73 Alejandro Lamas and Philippe Chevalier

Jumping the hurdles for collaboration: fairness in operations pooling in the absence of transfer payments

Independent firms may be interested in collaborative alliances in order to reduce their costs and risks, among other benefits. Particularly in operations, different firms can gain from economies of scale by pooling their production resources. Even though there may be a significant reduction of the overall cost, the success of the partnership may generally depend on the fairness of the agreement. With this in mind, the firms can utilize transfer payments with the aim to achieve a balanced allocation of benefits. The implementation of such payments, however, could be difficult in practice, because of the presence of legal constraints or additional contracts that make such agreements more complicated. Therefore, the partners should jointly plan operations as to deal with the trade-off between the efficiency and the fairness. We propose a novel methodology to guide joint operations based on the Rawls' theory of justice, such that we prioritize improving the firm that tends to benefit less from the collaboration. When comparing the quality of such approach with other notions of fairness, we pay particular attention to the effect of the uncertainty on the collaboration. We prove that agreements based on basic notions of fairness have a positive impact on the risk reduction of the firms. Furthermore, our numerical results show that the firms can reduce even more their risk when the agreement is based on more advanced notions of fairness. In particular, our proposed methodology outperforms other approaches of collaboration in terms of risk, while the efficiency is not significantly damaged.

2014/34 Tanguy Kegelart and Mathieu Van Vyve

A conic optimization approach for SKU rationalization

Expanding variety and the number of offered products is attractive for a firm to fit customer needs. Nevertheless, the greater complexity and the proliferation of stock-keeping units (SKUs) without substantial differentiation may not substantially improve customer satisfaction while raising costs. Based on the principle that the product-line size involves operational implications and particularly manufacturing and holding costs, this paper develops a mixed-integer nonlinear mathematical program (MINLP) to support efficient product portfolio reductions. Basically, the fixed costs elimination and the risk-pooling effects must balance the demand contraction

due to customer dissatisfaction. O-the-shelve Mixed-Integer Quadratic Problem (MIQP) solver provides optimal solution to the proposed conic quadratic reformulation, and a real-life industrial case illustrates the program and the algorithm efficiency. Findings show that our mathematical programming subject to various assumptions and estimations is efficient to rationalize portfolios up to at least 400 SKUs.

TRADE, TRANSPORT AND ECONOMIC GEOGRAPHY

2013/55 Melanie Lefevre and Joe Tharakan

Intermediaries, transport costs and interlinked transactions

Farmers in developing countries often encounter difficulties selling their products on local markets. Inadequate transport infrastructure and large distances between areas of production and consumption mean that farmers find it costly to bring their produce to the market and this very often results in small net margins and poverty amongst farmers who are geographically isolated. Agriculture in developing countries is characterized by the presence of intermediaries that have a transport cost advantage over farmers. Because of their market power, these intermediaries are able to impose interlinked contracts and are free to choose a spatial pricing policy. In this paper, we develop a model of input-output interlinked contracts between a trader and geographically dispersed farmers. We analyze what the welfare implications are as well as the effect on the trader's profit of imposing the use by the trader of either uniform or mill pricing policies, as opposed to spatial discriminatory pricing. We establish under what conditions public authorities can increase farmers' income and reduce poverty in rural areas by restricting the spatial pricing policies that intermediaries can use.

2013/56 Gautier M. Krings, Jean-François Carpentier and Jean-Charles Delvenne

Trade integration and trade imbalances in the European Union: a network perspective

We study the ever more integrated and ever more unbalanced trade relationships between European countries. To better capture the complexity of economic networks, we propose two global measures that assess the trade integration and the trade imbalances of the European countries. These measures are the network (or indirect) counterparts to traditional (or direct) measures such as the trade-to-GDP (Gross Domestic Product) and trade deficit-to-GDP ratios. Our indirect tools account for the European intercountry trade structure and follow (i) a decomposition of the global

trade flow into elementary flows that highlight the long-range dependencies between exporting and importing economies and (ii) the commute-time distance for trade integration, which measures the impact of a perturbation in the economy of a country on another country, possibly through intermediate partners by domino effect. Our application addresses the impact of the launch of the Euro. We find that the indirect imbalance measures better identify the countries ultimately bearing deficits and surpluses, by neutralizing the impact of trade transit countries, such as the Netherlands. Among others, we find that ultimate surpluses of Germany are quite concentrated in only three partners. We also show that for some countries, the direct and indirect measures of trade integration diverge, thereby revealing that these countries (e.g. Greece and Portugal) trade to a smaller extent with countries considered as central in the European Union network.

2013/58 Mathieu Parenti

Large and small firms in a global market: David vs. Goliath

This paper studies the impact of trade liberalization when monopolistically competitive and oligopolistic firms coexist in the same market. The model is characterized by a group of multi-product firms which behave strategically and take their impact on market aggregates into account (e.g. the average price, and total output) and by a monopolistically competitive fringe. This difference in behavior leads large firms to charge higher markups. Conditions are derived for the coexistence of both types of firms: heterogeneity in production efficiency, captured by economies of scope for large firms, appears as a necessary condition for them to coexist at equilibrium. Turning to international trade, free trade increases social welfare, as both large and small firms become more competitive. However, when only large firms are able to cover the fixed costs to export, bilateral trade liberalization fosters the exit of small firms, and increases product variety, but it also lowers consumer surplus through a higher average price. Social welfare increases under linear or isoelastic demand but is generally ambiguous.

2013/60 Christian Haedo and Michel Mouchart

Specialized agglomerations with areal data: model and detection

This paper develops new statistical and computational methods for the automatic detection of spatial clusters displaying an over- or under- relative specialization spatial pattern. A probability model provides a space partition into clusters representing homogenous portions of space as far as the probability of locating a primary unit is

concerned. A cluster made of contiguous regions is called an agglomeration. A greedy algorithm detects specialized agglomerations through a model selection criteria. A random permutation test evaluates whether the contiguity property is significant. Finally this algorithm is run on Argentinean data. Evaluating the proposed methodology concludes the paper.

2013/61 Julien Martin and Florian Mayneris

High-end variety exporters defying distance: micro facts and macroeconomic implications

We develop a new methodology to identify high-end variety exporters in French firm-level data. We show that they do not export to many more countries, but they export to more distant ones. This comes with a greater geographic diversification of their aggregate exports. These facts are explained by a lower sensitivity to distance of high-end variety export(er)s. We also show that high-end export(er)s are more sensitive to the average income of the destination country. Because of this different sensitivity to gravity variables, the within-product specialization of a country in the production of high-end varieties is likely to affect its export growth and volatility. We show that a higher sensitivity to per capita income tends to increase the volatility of high-end variety exports. However, a lower sensitivity to distance reduces volatility through a greater geographic diversification. Furthermore, we point out that a lower sensitivity to distance allows high-end varieties to benefit more from growth in more distant markets.

2013/64 Francesco Di Comite, Jacques-François Thisse and Hylke Vandenbussche

Vertical differentiation in export markets

Many trade models of monopolistic competition identify cost efficiency as the main determinant of firm performance in export markets. To date, the analysis of demand factors has received much less attention. We propose a new model where consumer preferences are asymmetric across varieties and heterogeneous across countries. The model generates new predictions and allows for an identification of horizontal differentiation (taste) clearly distinguished from vertical differentiation (quality). Data patterns observed in Belgian firm-product level exports by destination are congruent with the predictions and seem to warrant a richer modelling of consumer demand.

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