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# **PRESENTATION**



Founded in 1966, the **CENTER FOR OPERATIONS RESEARCH AND ECONOMETRICS (CORE)** is an interdisciplinary and interfaculty research center of the Université catholique de Louvain. Its main objectives are the development of scientific research in the fields of economic theory, operations research, and econometrics; the training of young researchers at the doctoral and postdoctoral stages of their career; and the promotion of interuniversity and international scientific exchanges and collaborations.

In 2010 CORE became one of the poles of IMMAQ, a new multisectorial 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) and one consulting entity, SMCS (Support en Méthodologie et Calcul Statistique). The three poles develop and use in their various fields of expertise a coherent set of tools and methods for quantitative modelling and analysis. To commemorate the start of the new Research Institute a doctorate honoris causa was awarded to Elhanan Helpman from Harvard University on May 11, 2010.

Within IMMAQ, CORE has kept its own identity, with its own research policy, affiliated researchers and administrative staff.

## RESEARCH

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CORE's activities integrate fundamental and applied research; they aim at providing frameworks for the analysis of a wide range of decision problems arising from economic policy and the management of private and public firms; developments in the theory of optimization and statistics contributing to the solution of design and decision problems; the development of computational tools (algorithms and software) and their use in empirical studies. The emphasis is on interactive work with a solid theoretical basis and unified by mathematical modeling and reasoning.

This research report gives an overview of the recent work, as it has been published in the CORE Discussion Papers (Section 2). This work is classified in the following research domains: econometric theory, econometrics of financial markets, energy economics, environmental economics, game theory, industrial organization, macroeconomic policies, mathematical finance; microeconomic theory, optimization methods and operations research, public and welfare economics, trade and economic geography. In 2009-2010, 172 papers have been published in scientific journals (see Section 3).

Weekly research seminars in the fields of Econometrics, Economic Theory, Mathematical Programming, Trade and Economic Geography, and Environmental Economics allow CORE members and visitors to present their work and share ideas. In addition, CORE has organized again a series of workshops and conferences. Two workshops deserve special attention, as they have been organized in honour of two important CORE-members that have retired this year: Jacques THISSE and Yves SMEERS. It is a real pleasure to thank them for their important contributions to CORE in the past – and in the future.

Two CORE-members received prestigious scientific prizes in 2009-2010. For his research on social choice and welfare economics, François MANIQUET was awarded the 2010 Francqui Prize. This is the most important scientific award in Belgium: it is assigned by the Francqui foundation to a young researcher (below 50) that already contributed significantly to science. Yurii NESTEROV has received the John von Neumann Theory Prize. The John von Neumann Theory Prize is awarded annually by INFORMS, the Institute for Operations Research and the Management Sciences, to a scholar who has made fundamental, sustained contributions to theory in operations research and the management sciences.

## TRAINING

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Training of young researchers is an important facet of CORE's activities. About 35 students are completing their doctoral studies under the supervision of CORE members (see Section 7). During the academic year 2009-2010, six students have defended their PhD theses. CORE serves as a host institution for the European Doctoral Program in Quantitative Economics, and for the Early Stage four year training Marie Curie project "Public Policy, Market Organization, and Transition Economies" carried out in cooperation with the Central European University in Budapest and the Center for Economic Research and Graduate Studies at Charles University in Prague. From 2011 onwards, CORE will also participate in the European Doctorate in Economics Erasmus Mundus (EDEEM), coordinated by the University of Paris Panthéon-Sorbonne.

Since 1989, CORE organizes regularly the CORE Lecture Series. These lectures are given by young internationally renowned scientists in one of the research areas of interest to the members of the Centre. In 2009-2010 there have been two series of CORE Lectures: in September 2009, Yacine AIT-SAHALIA (Princeton University) has lectured on "Jumps and Volatility in High Frequency Financial Data"; in June 2010, Alexander SHAPIRO (Georgia Institute of Technology) has given a series of lectures on "Stochastic Programming: Modelling and Theory".

## SCIENTIFIC EXCHANGES

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One of the main features of CORE since its very foundation has been its focus on developing interuniversity and international scientific exchanges. CORE has continued actively this tradition of networking, both at the institutional and at the personal level. CORE offers an office 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. The list of short visits is included in Section 1 of this report. In addition, Research Associates and Associate Fellows (the latter mostly affiliated with neighbouring universities such as Brussels, Leuven, Liège and Namur, but also Lille or Maastricht) are regularly present at CORE. Each year a new cohort of post-doctoral research fellows arrives at CORE. To enhance the attractiveness of these CORE fellowships, that are attributed on an international and competitive basis, we now offer three year contracts.

## **ACKNOWLEDGMENTS**

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Many thanks go to the administrative staff of CORE. Without them, CORE could never have become the lively, stimulating and hospitable research environment it is today. They create a place where the academics can concentrate on research and teaching without having to bother too much about practical issues.

In October 2010 Luc BAUWENS has become the President of CORE. We want to sincerely thank the former President Claude D'ASPREMONT, who has made an essential contribution to CORE's prosperity during the last four years.

Finally, we are grateful for the continuing and indispensable support of the Université catholique de Louvain.

Erik SCHOKKAERT





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# PERSONNEL

- 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 2010-2011
- OTHER ITEMS



## ■ MANAGEMENT

Officers for the period covered by this report:

President	Claude d'ASPREMONT
Research Director	Erik SCHOKKAERT
Co-directors	Raouf BOUCEKKINE Philippe CHEVALIER
Executive Director	Francisco SANTANA FERRA

## ■ THE FACULTY

During the academic year 2009-2010, the permanent staff of CORE consisted of **FACULTY MEMBERS** of the Université catholique de Louvain (UCL), Katholieke Universiteit Leuven (KUL), the Université Libre de Bruxelles, Brussels (ULB), the Facultés Universitaires Saint-Louis, Brussels (FUSL), the Université de Liège (ULG), and the Facultés Universitaires Notre-Dame de la Paix, Namur (FUNDP).

### PER AGRELL

Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; president, Research Institute of Louvain School of Management; senior researcher, Fondazione Eni Enrico Mattei (FEEM).

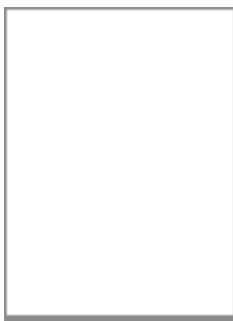
Ph.D. (production economics), Linköping University, Sweden, 1995.

Researcher, International Institute for Applied Analysis (IIASA), Laxenburg, Austria, 1993-1994; post doctoral researcher, University of Georgia, Athens (GA), USA; visiting associate professor in operations research, Copenhagen University, Denmark; 1997-1999; associate professor in managerial economics, Copenhagen University, Denmark, 1998-2001; senior researcher, Universitat Autònoma de Barcelona, Spain, 2008.

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

Associate editor, *International Journal of Production Economics*.





## ANTON BARTEN

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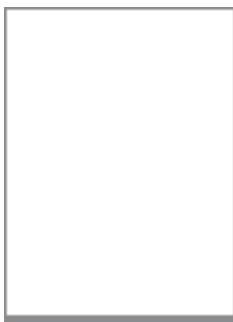
Professor emeritus, Katholieke Universiteit Leuven and Université catholique de Louvain, Belgium.

Ph.D. (economische wetenschappen), Nederlandse Economische School, Rotterdam, The Netherlands, 1966.

Visiting professor, University of California, Berkeley (CA), USA, 1962-1963; University of Wisconsin, Madison (WI), USA, 1963; University of Pennsylvania, Philadelphia (PA), USA, 1964; University of Chicago (IL), USA, 1969-1970.

### Econometrics and macroeconomic models.

Fellow of the Econometric Society, 1980; member of the International Statistical Institute, 1977; corresponding member of the Royal Netherlands Academy of Sciences; foreign member of the Royal Belgian Academy of Sciences.



## LUC BAUWENS

---

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

Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1983.

World Bank, Washington (DC), USA, 1983-1984; senior researcher at Facultés Catholiques de Mons, Belgium, 1984-1987; senior lecturer at

Ecole des Hautes Etudes en Sciences Sociales (EHESS), Marseille, France, 1987-1991.

### Econometrics and statistics.

Leonard J. Savage Thesis Award, 1984; chairman, Département des sciences économiques, Université catholique de Louvain, Belgium, 2000-2003; Francqui Chair, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium, 2005-2006; research director, CORE, Université catholique de Louvain, Belgium, 2006-2009.

Associate editor, *Empirical Economics*, *Journal of Applied Econometrics*, *Journal of Financial Econometrics*, and *Risk Letters*.

## PAUL BELLEFLAMME

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Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium; research affiliate, Center for Economic Studies and Ifo Institute for Economic Research (CESifo), München, Germany; member of the board of AIDE (Association Internationale de Droit Economique).

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, University of London, United Kingdom, 1999-2002.

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

Associate editor, *Information Economics and Policy* and *E-economics*.

## RAOUF BOUCEKKINE

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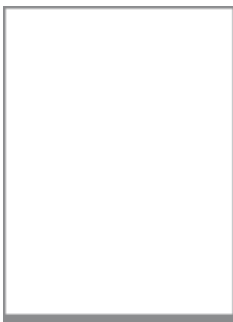
Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales et politiques, Département des sciences économiques), Belgium; part-time chair in economics, University of Glasgow, United Kingdom.

Docteur en sciences économiques, Université Paris Panthéon-Sorbonne, France, 1993.

Assistant and Associate professor, Universidad Carlos III de Madrid, Spain, 1993-1998; visiting professor, Université Louis Pasteur, Strasbourg, France, 2000-2003; Katholieke Universiteit Leuven, Belgium, 2001-2005; HEC-Paris, France, 2003-2007; GREQAM, Université d'Aix-Marseille, 2010.

**Mathematical and computational methods in economics, growth theory and development, economic and mathematical demography.**

Associate editor, *Annales d'Economie et Statistique*, *Journal of Public Economic Theory*, *Macroeconomic Dynamics*, *Mathematical Population Studies*, and *Mathematical Social Sciences*.



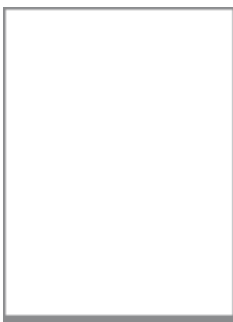
### **THIERRY BRÉCHET**

---

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

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

**Environmental economics.**



### **PHILIPPE CHEVALIER**

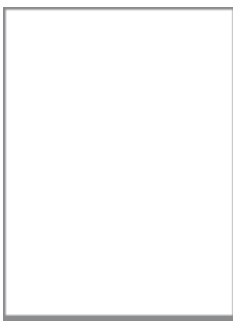
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Professor, Université catholique de Louvain (Louvain School of Management, Louvain-la-Neuve campus), Belgium.

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

Associate Professor, Universidad de Chile, 1992-1994.

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



### **CLAUDE D'ASPREMONT**

---

Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales et politiques, Département des sciences économiques), Belgium and Facultés universitaires Saint-Louis, Brussels, Belgium.

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; visiting scholar, Graduate School of Business, Stanford (CA), USA, Summer 1987 and Spring 1995.

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

Chairman, Département des Sciences Economiques, Université catholique de Louvain, Belgium, 1991-1994; research director, CORE, Université catholique de Louvain, Belgium, 1995-1998; fellow of the Econometric Society, 1984; Francqui Prize 1995; Doctor Honoris Causa, Université Louis Pasteur, Strasbourg, France, 2002; president, CORE, Université catholique de Louvain, Belgium, 2006-2010.

Associate editor, *Games and Economic Behavior*, *Journal of Mathematical Economics*, *Social Choice and Welfare*, *Journal of Public Economic Theory*, and *Revue de philosophie économique*; past associate editor, *European Economic Review* and *Journal of Economics/Zeitschrift für Nationalökonomie*.

## **JULIO DAVILA**

Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales et politiques, Département des sciences économiques), Belgium; Directeur de Recherches CNRS.

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

Chargé de Recherches CNRS, Paris, France, 1998-2009; assistant professor, University of Pennsylvania, USA, 1999-2004; profesor titular, Universidad Autónoma de Barcelona, Spain, 1994-1998; postdoctoral fellow, Harvard University, USA, 1995; associate professor, Paris School of Economics, 2008-to date; visiting professor, Universidad Carlos III de Madrid, Spain, 2006; ECARES - Université Libre de Bruxelles and Solvay Business School, Brussels, Belgium, 2005-2008.

**Economic theory and game theory.**

## **PIERRE DEHEZ**

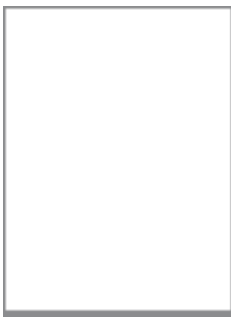
Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales et politiques, Département des sciences économiques), Belgium.

Docteur en sciences économiques, Université catholique de Louvain, 1980 (European Doctoral Program).

Professor: European University Institute, Florence, 1983-1990 and Erasmus Universiteit Rotterdam, The Netherlands, 1991-1992. Visiting professor: University of Illinois, Facultés Universitaires Notre-Dame de la Paix, Namur, University of Cergy-Pontoise, University of Strasbourg, University of Nancy.

**Microeconomics, general equilibrium theory, game theory.**

Chairman, Département des Sciences Economiques, Université catholique de Louvain, 1994-2000; European University Institute (Florence), 1985-1987 and 1989; prorektor in charge of the sector of human and social sciences, Université catholique de Louvain, 2001-2004.



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**DAVID DE LA CROIX**

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

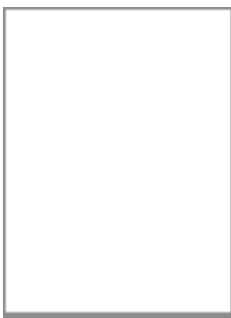
Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1992.

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

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

Francqui Chair, Gent Universiteit, Belgium, 2004; chercheur qualifié honoraire, Fonds National de la Recherche Scientifique (FNRS), Belgium.

Associate editor of the *Journal of Economic Dynamics and Control*.



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**MATHIAS DEWATRIPONT**

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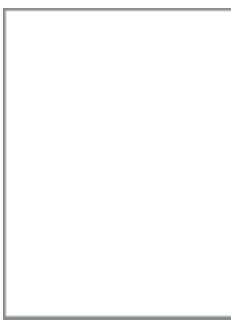
Professor, Université Libre de Bruxelles, Brussels, Belgium; part-time visiting professor, Massachusetts Institute of Technology, Cambridge (MA), USA, 1998-to date; founding member of the Scientific Council of the European Research Council, 2005-to date.

Ph.D. (economics), Harvard University, Cambridge (MA), USA, 1986.

**Economic theory and applications.**

Fellow of the Econometric Society, 1993; Francqui Prize, 1998;

Research director of the Centre for Economic Policy Research (CEPR), London, United Kingdom, 1998-to date; co-director, European Center for Advanced Research in Economics and Statistics (ECARES), Université Libre de Bruxelles, Brussels, Belgium, 1991-2002; Jahnsson Medal 2003; president of the European Economic Association, 2005; Honorary Foreign Member of the American Academy of Arts and Sciences, 2009.



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**JACQUES DRÈZE**

---

Professor emeritus, Université catholique de Louvain, Belgium.

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.

**Economic theory and econometrics.**



Fellow, 1964 and president, 1970 of the Econometric Society; Francqui Chair, Université Libre de Bruxelles, Brussels, Belgium, 1970-1971 and Katholieke Universiteit 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.

#### LOUIS ECKHOUDT

Professor emeritus, Facultés Universitaires Catholiques de Mons, Belgium.

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

**Decisions under risk and health economics.**

Associate editor *Geneva Risk and Insurance Review*, *Journal of Risk and Insurance*, and *Revue Economique*.

#### JEAN J. GABSZEWICZ

Professor emeritus, Université catholique de Louvain, Belgium .

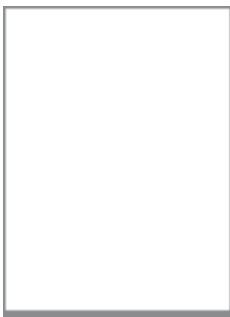
Docteur en droit, Université catholique de Louvain, Belgium, 1961; docteur en sciences économiques, Université catholique de Louvain, Belgium, 1968.

Visiting professor, Polish Academy of Sciences, Warszawa, 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 de Paris Panthéon-Sorbonne, France, 1999-2000; Université de Paris Panthéon-Assas, France, 1999-2001.

**Economic theory.**

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.

Past associate editor *Journal of Economics*, *Ricerche Economica*, *Journal of Economic Theory*, and *European Economic Review*.



## VICTOR GINSBURGH

Professor emeritus, Université Libre de Bruxelles, Brussels, Belgium.

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

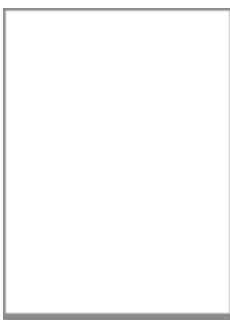
Researcher, Cowles Foundation, Yale University, New Haven (CT), USA, 1975; visiting professor, Université catholique de Louvain, Belgium, 1973, 1978 and 1985; University of Virginia, Charlottesville (VA), USA, 1979; Université Paris Panthéon-Sorbonne, France, 1986-1987 and

1991-1992; Université Paris Panthéon-Assas, France, 1986-2004; Université d'Aix-Marseille, France, 1986-1989; University of Chicago (IL), USA, 1996.

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

Franqui Chair, Université de Liège, Belgium, 1992-1993; president of the International Association of Cultural Economics, 2002-2004; co-director, European Center for Advanced Research in Economics and Statistics (ECARES), Université Libre de Bruxelles, Brussels, Belgium, 2002-2009.

Co-editor, *Journal of Wine Economics*; associate editor, *Recherches Economiques de Louvain - Louvain Economic Review*; past associate editor, *Annales d'économie et de statistique*, *European Economic Review*, and *Journal of Cultural Economics*.



## PIERRE GIOT

Professor, Facultés Universitaires Notre-Dame de la Paix, Namur, (Louvain School of Management, Namur campus), Belgium.

Docteur en sciences économiques (financial 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 Panthéon-Sorbonne, France, 2002.

**Financial econometrics, modeling volatility and risk, market microstructure, venture capital economics.**

### FRANÇOIS GLINEUR

---

Professor, Université catholique de Louvain (Ecole Polytechnique de Louvain, Département d'ingénierie mathématique), Belgium.

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

Optimization (algorithms and modeling, in particular convex optimization, conic optimization, duality and interior-point methods).



### ISABEL GRILO

---

Associate Professor, Université de Lille III, France, 1995-2005. Head of Unit, European Commission (Directorate-General Economic and Financial Affairs), Belgium, 2009-to date.

Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1994 (European Doctoral Program).

Visiting professor, Université catholique de Louvain, Belgium, 1994-2001.

Deputy head of Unit, European Commission (Enterprise Directorate-General), Belgium, 2000-2009.

Economic theory, industrial organization, entrepreneurship.



### CHRISTIAN HAFNER

---

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

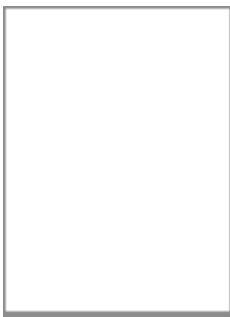
Ph.D. in Economics, Humboldt-Universität zu Berlin, Germany, 1996.

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.

Econometrics and statistics.

Associate editor, *Banking and Finance Review*, *Computational Statistics*, and *Studies in Nonlinear Dynamics and Econometrics*.





## JEAN HINDRIKS

Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales et politiques, Département des sciences économiques), Belgium; Senior fellow, Itinera Institute, Brussels, Belgium.

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

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.

**Public economics and political economy.**



## SÉBASTIEN LAURENT

Associate Professor in econometrics, Universiteit Maastricht, The Netherlands.

Ph.D. in Financial Econometrics, Universiteit Maastricht, The Netherlands, 2002.

Visiting professor at Université catholique de Louvain, Belgium, 2001-to date.

**Financial econometrics, modeling volatility and risk, computational econometrics.**



## ETIENNE LOUTE

Professor, Facultés Universitaires Saint-Louis, Brussels, (Louvain School of Management, Brussels campus), Belgium.

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

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

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

Dean, Faculté des sciences économiques et politiques, Facultés Universitaires Saint-Louis, Brussels, Belgium, 1993-1996; member of SOGESCI (Société Belge pour l'Application des Méthodes

Scientifiques de Gestion, the Belgian OR society), President of SOGESCI (2004-2006), Director of Louvain School of Management, Brussels campus, Belgium, 2007—to date, member of INFORMS, SIAM, SOGESCI, and Mathematical Programming Society.

### FRANÇOIS MANIQUET

---

Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales et politiques, Département des sciences économiques), Belgium; part-time professor, University of Warwick, United Kingdom.

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

**Microeconomic theory (social choice theory, public economics, and game theory).**

Chercheur qualifié honoraire, Fonds National de la Recherche Scientifique (FNRS), Belgium.

Chair Francqui 2009-2010 at Facultés Universitaires Saint-Louis, Brussels, Belgium; Francqui Prize Laureate 2010.

Editor, *Economics and Philosophy*; co-editor, *Mathematical Social Sciences and Social Choice and Welfare*.

### ANA MAULEON

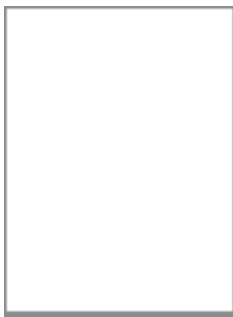
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Chercheur qualifié, Fonds de la Recherche Scientifique (FNRS), Belgium, and associate professor at the Facultés Universitaires Saint-Louis (Faculté des sciences économiques, sociales et politiques), Brussels, Belgium.

Ph.D. in Economics, Universidad del Pais Vasco, Bilbao, Spain, 1997.

Co-director of the Center for Research in Economics (CEREC), 2008-to date, Facultés Universitaires Saint-Louis, Brussels, Belgium.

**Game theory and industrial organization.**



### JEAN-FRANÇOIS MERTENS

---

Professor, Université catholique de Louvain (Faculté des Sciences, Département de mathématique), Belgium.

Docteur en sciences, Université catholique de Louvain, Belgium, 1970.

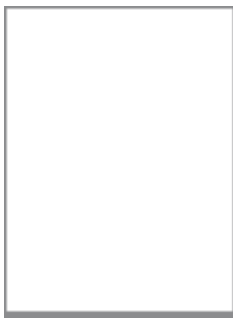
Visiting professor, Universität Heidelberg, Germany, 1970; Hebrew University of Jerusalem, Israël, 1970 and 2001; University of California, Berkeley (CA), USA, 1971 and 1972-1975; Universität Bielefeld, Germany, 1972; Harvard Business School, Boston (MA), USA, 1981; leading

professor of economics and of applied mathematics, S.U.N.Y. at Stony Brook (NY), USA, 1989-1992.

**Economic theory and game theory.**

Fellow of the Econometric Society, 1981.

Past editor, *Journal of Mathematical Economics*, *International Journal of Game Theory*, and *Economic Theory*.



### MICHEL MOUCHART

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Professor emeritus, Université catholique de Louvain, Belgium.

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

International professor CIENES, Santiago, Chili, 1966-1967; visiting professor, University of 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,

France, 1982; Università di Bologna, Italy, 1984; Carnegie-Mellon University, Pittsburgh (PA), USA, 1985; Université des Sciences Sociales de Toulouse, France, 1991-1993; Université de Paris Panthéon-Sorbonne, France, 1993-1994.

**Statistics and econometrics.**

Member of the International Statistical Institute, Bernouilli Society, Société Belge de Statistique.

## YURII NESTEROV

---

Professor, Université catholique de Louvain (Ecole Polytechnique de Louvain, Département d'ingénierie mathématique), Belgium.

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, 1977-1992; visiting professor, Université de Genève, Switzerland, 1992-1993; invited professor, CORE, Université catholique de Louvain, Belgium, 1993-2000.

John Von Neumann Theory Prize, 2009.

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

## DOMINIQUE PEETERS

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

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, 1982; visiting professor, Université du Québec, Montréal, Canada, 1986; Université de Bourgogne, France, 1991; University of Tsukuba, Japan, 1996-1997; Université Louis Pasteur, Strasbourg, France, 2006.

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

## PIERRE PESTIEAU

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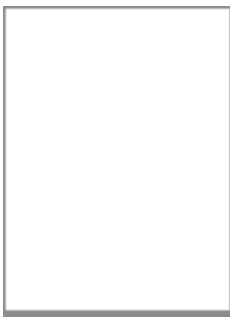
Professor emeritus, Université de Liège, Belgium.

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

Assistant professor, Cornell University, Ithaca (NY), USA, 1971-1976.

**Population economics and public economics.**

Co-editor, *Journal of Public Economics*; associate editor, *CESifo Economic Studies*, *Economica*, *Finanz-Archiv*, and *Journal of Public Economic Theory*.



## ERIK SCHOKKAERT

Professor, Katholieke Universiteit Leuven, Belgium.

Ph.D. (economics), Katholieke Universiteit 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; research director, CORE, 2009 – to date.

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

Francois chair 2005-2006, Universiteit Antwerpen, Belgium.

Associate editor, *Social Choice and Welfare, Economics & Philosophy, and Health Policy.*



## LÉOPOLD SIMAR

Professor emeritus, Université catholique de Louvain and Facultés Universitaires Saint-Louis, Brussels, Belgium.

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, 1991-2009; Humboldt Universität, Berlin, Germany, 1993-2003; Texas University, Austin (TX),

USA, 1995-2005; Rice University, Houston (TX), USA, 1996, 1998; 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, 2006; ENSAE, Paris, France, 2001-2009; Institut Français du Pétrole, Rueil, France, 1991-2009; Clemson University (SC), USA, 2007-2008; 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, Région Midi-Pyrénées, Toulouse School of Economics, France; Universität Karlsruhe (TH), Germany, 2008-2009.

**Mathematical statistics, nonparametric statistics, resampling methods, production frontier.**

Elected member of the International Statistical Institute; dean, Faculté des sciences économiques, sociales et politiques, Facultés Universitaires Saint-Louis, Bruxelles, Belgium, 1978-1990; Founder-Chairman, Institut de statistique, Université catholique de Louvain, Belgium, 1992-2004; past president of the Belgian Statistical Society, 1991-2001; honorary member of the Belgian Statistical Society.

Associate editor of the *Journal of Productivity Analysis.*



## YVES SMEERS

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Professor, Université catholique de Louvain (Ecole Polytechnique de Louvain, Département d'ingénierie mathématique), Belgium.

Master of Science (industrial administration) and Ph.D. (operations research), Carnegie-Mellon University, Pittsburgh (PA), USA, 1972.

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

European editor, *Energy Journal*; associate editor, *Energy Economics*.

## FRANS SPINNEWYN

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Professor emeritus, Katholieke Universiteit Leuven, Belgium.

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

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

**Microeconomics.**

B.A.C. prize, 1976.

## JACQUES-FRANÇOIS THISSE

---

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

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

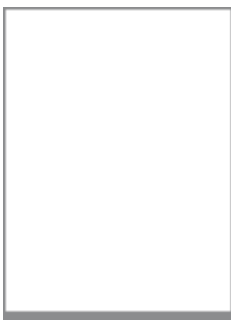
Visiting professor, McMaster University, Hamilton, Canada, 1981; University of Pennsylvania, Philadelphia (PA), USA, 1985; INSEAD, Fontainebleau, France, 1987; Virginia Polytechnic Institute, Blacksburg (VA), USA, 1990; Université de Paris I (Panthéon-Sorbonne), France, 1991-1996; Institut National de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

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; 2010; European Prize in Regional

Science, 2007; Doctor Honoris Causa, Université de Montréal, Canada, 2005, Université Paris Panthéon-Assas, France, 2010 and Ecole Normale Supérieure de Cachan, France, 2010.

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

Associate editor, *International Journal of Economic Theory*, *International Journal of Industrial Organization*, *Japanese Economic Review*, *Journal of Economic Geography*, *Journal of Economics and Management Strategy* and *Regional Science and Urban Economics*.



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#### ISABELLE THOMAS

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Directeur de Recherches, Fonds National de la Recherche Scientifique (FRS-FNRS), Belgium, and professor, Université catholique de Louvain (Faculté des sciences, Département de géographie), Belgium.

Docteur en sciences (géographiques), Université catholique de Louvain, Belgium, 1984.

Prix Philippe Aydalot in Regional Science, 1989 ; BMW Scientific Award, 2001.

Presently member of the board of ERSa, ASRDLF, BIVeC/GIBET.

**Economic geography, transport geography, optimal locations, cartography, quantitative analysis in geography, economic theory and game theory.**

Member of the editorial board of *Belgeo*, *Cybergéo*, *L'Espace Géographique*, *International Regional Science Review*, and *Revue d'Economie Régionale et Urbaine*



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#### HENRY TULKENS

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Professor emeritus (2003), Université catholique de Louvain, Belgium.

Dr. jur., Katholieke Universiteit Leuven, Belgium, 1960; Docteur en sciences économiques, Université catholique de Louvain, Belgium, 1968.

Visiting positions (teaching and/or research) held at: University of Chicago 1963-64; University of California, Berkeley 1964-65; Université d'Aix-Marseille II 1971; Université Libre de Bruxelles, Brussels 1971-72 and 1973-74; Princeton University 1973 and 1983; Stanford University,

1973 and 1979; Hebrew University of Jerusalem 1976 and 1981; Université Laval, Canada 1977; Université Paris XII, (Val de Marne), 1978; Université de Montréal, 1985; Beijer Institute of Ecological Economics, Stockholm, 1992 and 1993; Fondazione ENI Enrico Mattei, Milan, 1993; Ecole Nationale de la Statistique et de l'Administration Economique, Paris 1995; International Monetary Fund, Washington DC, 1997 and 2004; Université de Paris I (Panthéon-Sorbonne), 2003; University of the South Pacific, Suva, Fiji, 2004, National University of Singapore 2002, 2007, 2008.

**Economic theory and public finance.**

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.

### **HYLKE VANDENBUSSCHE**

Professor, Université catholique de Louvain (Faculté des sciences économiques, sociales et politiques, Chaire Jacquemin, Département des sciences économiques), Belgium.

Ph.D. in Economics, Universiteit Antwerpen, Belgium, 1995.

Lecturer in Industrial Economics, Judge Institute of Management of the University of Cambridge, United Kingdom, 1994-1996; postdoctoral researcher, Nationaal Fonds voor Wetenschappelijk Onderzoek, Belgium, 1999-2005; professor in applied economics, Katholieke Universiteit Leuven, Belgium, 1999; visiting professor, Dartmouth College, Hanover (SH), USA, 2001 and 2003.

**International economics, empirical trade, trade policy, programme evaluation, tax policy.**

Vereniging voor Economie Vlaanderen (VEV-Award), 1999; panel member of the journal *Economic Policy*, 2000-2002.

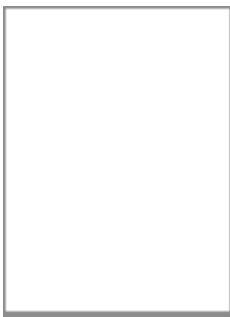
### **VINCENT VANNETELBOSCH**

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

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, Facultés Universitaires Saint-Louis, Brussels, Belgium, 2005-to date; director of the European Doctoral Program in Quantitative Economics, 2004-to date.

**Game theory and industrial organization.**



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**MATHIEU VAN VYVE**

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

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

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



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**XAVIER WAUTHY**

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

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.

**Industrial organization, microeconomic theory.**



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**LAURENCE WOLSEY**

Professor, Université catholique de Louvain (Ecole Polytechnique de Louvain, Département d'ingénierie mathématique), Belgium.

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.

**Discrete optimization, operations research, applied mathematics.**

Associate editor, *Mathematical Programming A*.

## ■ ADMINISTRATIVE STAFF

Micheline DELIZE ■ Séverine DINJAR ■ Caroline DUTRY ■ Catherine GERMAIN ■ Alain GILLIS ■ Fabienne HENRY ■ Marie HERVO ■ Sylvie MAUROY ■ Eric NAHIMANA ■ Anne-Marie PESSLEUX ■ Francisco SANTANA FERRA ■ Caroline THEODOR

We would like to thank SIMM (SGSI), especially Laurent Buset and Raphaël Tursis for their helpful collaboration.

## ■ DOCTORAL STUDENTS AND RESEARCH ASSISTANTS

Carlotta BALESTRA ■ Anton BELYAKOV ■ Quentin BOTTON ■ Stéphane BOUCHE ■ Filippo CALCIANO ■ Jean-François CARPENTIER ■ Jean-François CAULIER ■ Robert CHARES ■ Chiara CONTI ■ Nguyen Thang DAO ■ Gauthier DE MAERE D'AERTRYCKE ■ Karen DECANQ ■ Rafael DE MELO ■ Olivier DEVOLDER ■ Arnaud DUFAYS ■ Olivier DURAND-LASSERVE ■ Fernanda ESTEVAN ■ Emanuele FORLANI ■ Joachim GAHUNGU ■ Maia GEJADZE ■ Nicolas GILLIS ■ Gilles GRANDJEAN ■ Salome GVETADZE ■ Thai HA-HUY ■ Adel HATAMI-MARBINI ■ Tanguy ISAAC ■ Jonathan JONES ■ Alejandro LAMAS ■ Jean-Charles LANGE ■ Mathias LORENZ ■ Sylvette LY ■ Marco MANTOVANI ■ Marco MARINUCCI ■ Jean-François MAYSTADT ■ Bénédicte MEERT ■ Tanja MLINAR ■ Margherita NEGRI ■ Vladislav NORA ■ Daria ONORI ■ Anna PARZIALE ■ Paolo Giovanni PIACQUADIO ■ Joël RAUCQ ■ Dzianis ROZHYN ■ Besik SAMKHARADZE ■ Géraldine STRACK ■ Jean-Christophe VAN DEN SCHRIECK ■ Laurent VANMALDEREN ■ Grégory VANDENBULCKE ■ Francesco VIOLANTE ■ Thibaut ZEIMES

## ■ RESEARCH FELLOWS

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

Thomas BAUDIN, Paris School of Economics, France  
 Paolo BRUNORI, Università degli Studi di Bari, Italy  
 Koen DECANQ, Katholieke Universiteit Leuven, Belgium  
 Claire DUJARDIN, Département de géographie, UCL, Belgium  
 Koen JOCHMANS, Katholieke Universiteit Leuven, Belgium  
 Yassine LEFOUILLI, Université Paris I (Panthéon-Sorbonne), France  
 Marie-Louise LEROUX, Université de Toulouse I Capitole, France  
 Florian MAYNERIS, Paris School of Economics, France  
 Elena MOLIS BANALES, Facultés Universitaires Saint-Louis, Brussels, Belgium  
 Alain PHOLO BALA, Université catholique de Louvain, Belgium  
 Eve RAMAEKERS, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium  
 Rüdiger STEPHAN, Technische Universität Berlin, Germany  
 Tom TRUYTS, Katholieke Universiteit Leuven, Belgium  
 Hiroshi UNO, Osaka University, Japan  
 Ying WEI, The Chinese University of Hong Kong, Shatin, Hong Kong, People's Republic of China  
 Stéphane ZUBER, Université de Toulouse I Capitole, France

## ■ 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.

Geoffrey CARUSO, Université du Luxembourg, Luxembourg  
Bernard FORTZ, Université Libre de Bruxelles, Brussels, Belgium  
Axel GAUTIER, Université de Liège, Belgium  
Leonidas KOUTSOUGERAS, University of Manchester, United Kingdom  
Stéphane LAMBRECHT, Université de Lille I, France  
Pierre PICARD, University of Manchester, United Kingdom  
Joe THARAKAN, Université de Liège, Belgium  
Eric TOULEMONDE, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium  
Dirk VAN DE GAER, Universiteit Gent, Belgium  
Wouter VERGOTE, Facultés Universitaires Saint-Louis, Brussels, Belgium

## ■ RESEARCH ASSOCIATES

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

Parkash CHANDER, University of Singapore, Republic of Singapore  
Jan ECKHOUT, University of Pennsylvania, USA and Universitat Pompeu Fabra, Spain  
Marc FLEURBAEY, Université Paris Descartes, France  
Johanna GOERTZ, University of Guelph, Canada  
Jean-Jacques HERINGS, Universiteit Maastricht, The Netherlands  
Roland LUTTENS, Fund for Scientific Research, Universiteit Gent, Belgium  
Juan MORENO TERNERO, Universidad de Malaga, Spain  
Susana PERALTA, Universidade Nova de Lisboa, Portugal  
Guillaume ROELS, Institut d'Economie Appliquée, HEC-Montréal  
Jeroen ROMBOUTS, Université de Montréal, Canada  
Jose J. SEMPERE MONERRIS, Universitat de Valencia, Spain  
Huasheng SONG, Zhejiang University, China

## ■ 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 weeks. Among them

Zynep AKSIN, Koç University, Istanbul, Turkey  
Kajii ATSHUSHI, Kyoto University, Japan  
Noël BONNEUIL, Ecole des Hautes Etudes en Sciences Sociales, Paris, France  
Kirill BORISOV, European University, St Petersburg, Russia  
Eloisa CAMPIONI, Università degli Studi di Roma Tor Vergata, Italy  
Valentino DARDANONI, Università di Palermo, Italy  
Marco DI SUMMA, Università di Torino, Italy

Simon Cheng Ze FAN, Lingnan University, Hong Kong, People's Republic of China  
 Florence GOFFETTE-NAGOT, Université Lumière, Lyon, France  
 Hamid HAMOUDI, Universidad Rey Juan Carlos, Madrid, Spain  
 Natalia HRITONENKO, University of Montenegro, Podgorica, Montenegro  
 Pierre-André JOUVET, Université Paris X, Nanterre, France  
 Sergey KOKOVIN, Novosibirsk State University, Russia  
 Jacek KRAWCZYK, Victoria University of Wellington, New Zealand  
 Omar LICANDRO, European University Institute, Firenze, Italy  
 Guy MEUNIER, Ecole Polytechnique, Paris, France  
 Kaz MIYAGIWA, Emory University, Atlanta (GA), USA  
 Fred MURPHY, Temple University, USA  
 Giorgia OGGIONI, Università degli Studi di Brescia, Italy  
 Guillermo OWEN, Naval Postgraduate School, Monterey (CA), USA  
 Mathieu PARENTI, Université Paris I, France  
 Fabien PRIEUR, Université de Savoie, Annecy-le-Vieux, France  
 Indrajit RAY, University of Birmingham, United Kingdom  
 Margarita SAMARTIN, Universidad Carlos III de Madrid, Spain  
 Christelle SAPATA, Universitat Pompeu Fabra, Barcelona, Spain  
 Dorian SOULIES, Université de Nice Sophia-Antipolis, Nice, France  
 Federico STEPHANO, Banco Popolare di Sondrio, Brescia, Italy  
 Rodney STRACHAN, University of Queensland, Brisbane, Australia  
 Koji TAKAMIYA, Nigata University, Japan  
 Julien THENIE, Ordecys, Chêne-Bougeries, Suisse  
 Sébastien VAN BELLEGEM, Université de Toulouse I Capitole, France  
 Marie-Hélène VANDERSMISSEN, Université Laval, Canada  
 Myrna WOODERS, Vanderbilt University, Nashville (TN), USA  
 Zili YANG, State University of New York, Binghamton (NY), USA  
 Youri YATSENKO, Houston Baptist University (TX), USA  
 Evgeny ZHELOBODKO, Novosibirsk State University, Russia  
 Xiwei ZHU, Zhejiang University, People's Republic of China

## ■ RESEARCH FELLOWS AND VISITING FACULTY MEMBERS FOR 2010-2011

The following scholars will be in residence for all or part of the next academic year

Ignace ADANT, EdF and Ecole Polytechnique Palaiseau, France  
 Thomas BAUDIN, Paris School of Economics, France  
 Aitor CALO-BLANCO, Universidad Pablo de Olavide, Sevilla, Spain  
 Chiara CANTA, Toulouse School of Economics, France  
 Andrés CARVAJAL, University of Warwick, Coventry, United Kingdom  
 Kwanghun CHUNG, University of Florida, Gainesville (FL), USA  
 Koen DECANCO, Katholieke Universiteit Leuven, Belgium  
 Claire DUJARDIN, Département de géographie, UCL, Belgium

Koen JOCHMANS, Katholieke Universiteit Leuven, Belgium  
Dimitris KOROBILIS, University of Strathclyde, Glasgow, United Kingdom  
Marie-Louise LEROUX, Université de Toulouse I Capitole, France  
Chantal MARLATS, Paris School of Economics, France  
Sebastian MARTIN RIVAS, Universidad de Malaga, Spain  
Florian MAYNERIS, Paris-Jourdan Sciences Economiques, France  
Dimitri PAOLINI, University of Sassari, Italy  
Alain PHOLO BALA, Université catholique de Louvain, Belgium  
Eve RAMAEKERS, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium  
Jeroen ROMBOUTS, HEC Montréal, Canada  
Fred SCHROYEN, Norwegian School of Economics & Business Administration, Bergen, Norway  
Olivier TERCIEUX, Paris School of Economics, France  
Tom TRUYTS, Katholieke Universiteit Leuven, Belgium  
Paschalis TSIAFLAKIS, Katholieke Universiteit Leuven, Belgium  
Hiroshi UNO, Osaka University, Japan  
Sébastien VANBELLEGEM, Université de Toulouse I Capitole, France  
Vincent VANDERNOOT, Louvain School of Management, UCL, Belgium  
Adrien VIGIER, Queen's College, Cambridge, United Kingdom  
Stéphane ZUBER, Université de Toulouse I Capitole, France

## ■ OTHER ITEMS

### PRIZES AND AWARDS

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Thomas BAUDIN has obtained the 2009 Louis Forest Thesis Prize from the "Chancellerie des Universités de Paris" for his thesis "The analysis of fertility behaviors: public policies and cultural determinants".

Stéphane LAMBRECHT was elected Laureate of the "Premier concours national d'agrégation en sciences économiques" in France.

François MANIQUET was awarded with the Chair Francqui 2009-2010 at Facultés Universitaires Saint-Louis in Brussels. He was also awarded with the Francqui Prize on June 9, 2010. This prestigious Belgian scientific prize is awarded each year by the Francqui Foundation in recognition of the achievements of a young Belgian scientist (under 50 years old).

Florian MAYNERIS obtained a FEEM (Fondazione ENI Enrico Mattei) award, a prize organized jointly with the European Economic Association (EEA) aimed at rewarding the best research by young economists. The award is given to the authors of the three best papers presented by young economists at the annual congress of the EEA.

Yurii NESTEROV (with Yinyu YE) has received the 2009 John von Neumann Theory Prize. This prize of the Institute for Operations Research and the Management Sciences (INFORMS) is awarded annually to a scholar who has made fundamental and sustained contributions to theory in operations research and the management sciences.



On January 29, 2010, Jacques THISSE received the title of Doctor Honoris Causa from Université Paris Panthéon-Assas for the whole of his work. On April 9, 2010, he received a second title of Doctor Honoris causa from Ecole Normale Supérieure de Cachan for his research in industrial economics.

Tom TRUYTS obtained the 1<sup>st</sup> Prize, Poster Competition European Science Days on Signaling Theory, Steyr, Austria.



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# RESEARCH ACTIVITIES

- SURVEY OF RESEARCH TOPICS

- Econometric theory

- Econometrics of financial markets

- Energy economics

- Environmental economics

- Game theory

- Industrial organization

- Macroeconomic policies

- Mathematical finance

- Microeconomic theory

- Optimization methods and operations research

- Public and welfare economics

- Trade and economic geography

- CHAIRS AND RESEARCH PROJECTS UNDER CONTRACTS



## ■ SURVEY OF RESEARCH TOPICS

This section, organized by major areas of research, gives abstracts of the discussion papers that appeared in the period covered by this report.

### ECONOMETRIC THEORY

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2009/61    *On marginal likelihood computation in change-point models*  
Luc BAUWENS, Jeroen V.K. ROMBOUTS

Change-point models are useful for modeling time series subject to structural breaks. For interpretation and forecasting, it is essential to estimate correctly the number of change points in this class of models. In Bayesian inference, the number of change points is typically chosen by the marginal likelihood criterion, computed by Chib's method. This method requires to select a value in the parameter space at which the computation is done. We explain in detail how to perform Bayesian inference for a change-point dynamic regression model and how to compute its marginal likelihood. Motivated by our results from three empirical illustrations, a simulation study shows that Chib's method is robust with respect to the choice of the parameter value used in the computations, among posterior mean, mode, and quartiles. Furthermore, the performance of the Bayesian information criterion, which is based on maximum likelihood estimates, in selecting the correct model is comparable to that of the marginal likelihood.

2010/3    *Split-panel jackknife estimation of fixed-effect models*  
Geert DHAENE and Koen JOCHMANS

We propose a jackknife for reducing the order of the bias of maximum likelihood estimates of nonlinear dynamic fixed-effect panel models. In its simplest form, the half-panel jackknife, the estimator is just  $2\hat{\theta} - \bar{\theta}_{1/2}$ , where  $\hat{\theta}$  is the MLE from the full panel and  $\bar{\theta}_{1/2}$  is the average of the two half-panel MLEs, each using T/2 time periods and all N cross-sectional units. This estimator  $\hat{\theta}$ . The order of the bias is further reduced if two partitions of the panel are used, for example, two half-panels and three 1/3-panels, and the corresponding MLEs. On further partitioning the panel, any order of bias reduction can be achieved. The split-panel jackknife estimators are asymptotically normal, centered at the true value, with variance equal to that of the MLE under asymptotics where T is allowed to grow slowly with N. In analogous fashion, the split-panel jackknife reduces the bias of the profile likelihood and the bias of marginal-effect estimates. Simulations in fixed-effect dynamic discrete-choice models with small T show that the split-panel jackknife effectively reduces the bias and mean squared error of the MLE, and yields confidence intervals with much better coverage.

2010/39    *Aggregation of exponential smoothing processes with an application to portfolio risk evaluation*  
Giacomo SBRANA and Andrea SILVESTRI

In this paper we propose a unified framework to analyse contemporaneous and temporal aggregation of exponential smoothing (EWMA) models. Focusing on a vector IMA(1,1) model, we obtain a closed form representation for the parameters of the contemporaneously and temporally

aggregated process as a function of the parameters of the original one. In the framework of EWMA estimates of volatility, we present an application dealing with Value-at-Risk (VaR) prediction at different sampling frequencies for an equally weighted portfolio composed of multiple indices. We apply the aggregation results by inferring the decay factor in the portfolio volatility equation from the estimated vector IMA(1,1) model of squared returns. Empirical results show that VaR predictions delivered using this suggested approach are at least as accurate as those obtained by applying the standard univariate RiskMetrics™ methodology.

2010/46 *School system evaluation by value-added analysis under endogeneity*  
Jorge MANZI, Ernesto SAN MARTIN, and Sébastien VAN BELLEGEM

Value-added analysis is a common tool in analysing school performances. In this paper, we analyse the SIMCE panel data which provides individual scores of about 200,000 students in Chile, and whose aim is to rank schools according to their educational achievement. Based on the data collection procedure and on empirical evidences, we argue that the exogeneity of some covariates is questionable. This means that a nonvanishing correlation appears between the school-specific effect and some covariates. We show the impact of this phenomenon on the calculation of the value-added and on the ranking, and provide an estimation method that is based on instrumental variables in order to correct the bias of endogeneity. Revisiting the definition of the value-added, we propose a new calculation robust to endogeneity that we illustrate on the SIMCE data.

2010/50 *Nonparametric frontier estimation from noisy data*  
Maik SCHWARZ, Sébastien VAN BELLEGEM, and Jean-Pierre FLORENS

A new nonparametric estimator of production frontiers is defined and studied when the data set of production units is contaminated by measurement error. The measurement error is assumed to be an additive normal random variable on the input variable, but its variance is unknown. The estimator is a modification of the m-frontier, which necessitates the computation of a consistent estimator of the conditional survival function of the input variable given the output variable. In this paper, the identification and the consistency of a new estimator of the survival function is proved in the presence of additive noise with unknown variance. The performance of the estimator is also studied through simulated data.

## ECONOMETRICS OF FINANCIAL MARKETS

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2009/69 *Asymmetric CAPM dependence for large dimensions: the canonical vine autoregressive model*  
Andréas HEINEN and Alfonso VALDESOGO

We propose a new dynamic model for volatility and dependence in high dimensions that allows for departures from the normal distribution, both in the marginals and in the dependence. The dependence is modeled with a dynamic canonical vine copula, which can be decomposed into a cascade of bivariate conditional copulas. Due to this decomposition, the model does not suffer from the curse of dimensionality. The canonical vine autoregressive (CAVA) captures asymmetries in the dependence structure. The model is applied to 95 S&P500 stocks. For the marginal distributions, we use non-Gaussian GARCH models, that are designed to capture skewness and

kurtosis. By conditioning on the market index and on sector indexes, the dependence structure is much simplified and the model can be considered as a non-linear version of the CAPM or of a market model with sector effects. The model is shown to deliver good forecasts of Value-at-Risk.

2010/20    *Multivariate option pricing with time varying volatility and correlations*  
Jeroen V.K. ROMBOUTS and Lars STENTOFT

In recent years multivariate models for asset returns have received much attention, in particular this is the case for models with time varying volatility. In this paper we consider models of this class and examine their potential when it comes to option pricing. Specifically, we derive the risk neutral dynamics for a general class of multivariate heteroskedastic models, and we provide a feasible way to price options in this framework. Our framework can be used irrespective of the assumed underlying distribution and dynamics, and it nests several important special cases. We provide an application to options on the minimum of two indices. Our results show that not only is correlation important for these options but so is allowing this correlation to be dynamic. Moreover, we show that for the general model exposure to correlation risk carries an important premium, and when this is neglected option prices are estimated with errors. Finally, we show that when neglecting the non-Gaussian features of the data, option prices are also estimated with large errors.

2010/25    *On the forecasting accuracy of multivariate GARCH models*  
Sébastien LAURENT, Jeroen V.K. ROMBOUTS, and Francesco VIOLANTE

This paper addresses the question of the selection of multivariate GARCH models in terms of variance matrix forecasting accuracy with a particular focus on relatively large scale problems. We consider 10 assets from NYSE and NASDAQ and compare 125 model based one-step-ahead conditional variance forecasts over a period of 10 years using the model confidence set (MCS) and the Superior Predictive Ability (SPA) tests. Model performances are evaluated using four statistical loss functions, which account for different types and degrees of asymmetry with respect to over/under predictions. When considering the full sample, MCS results are strongly driven by short periods of high market instability during which multivariate GARCH models appear to be inaccurate. Over relatively unstable periods, i.e. dot-com bubble, the set of superior models is composed of more sophisticated specifications such as orthogonal and dynamic conditional correlation (DCC), both with leverage effect in the conditional variances. However, unlike the DCC models, our results show that the orthogonal specifications tend to underestimate the conditional variance. Over calm periods, a simple assumption like constant conditional correlation and symmetry in the conditional variances cannot be rejected. Finally, during the 2007-2008 financial crisis, accounting for non-stationarity in the conditional variance process generates superior forecasts. The SPA test suggests that, independently from the period, the best models do not provide significantly better forecasts than the DCC model of Engle (2002) with leverage in the conditional variances of the returns.

2010/40 *Commodities inventory effect*

Jean-François CARPANTIER

Asymmetric GARCH models were developed for equity stocks to take into account the larger response of the conditional variance to negative price shocks. We show that these asymmetric GARCH models are also relevant for modelling commodity prices. Contrary to the equity case, positive shocks are the main contributors to the conditional variance of commodity prices. The theory of storage, by relating the state of the inventories of a commodity to its conditional variance, is a serious candidate to explain the phenomenon, as positive price shocks for commodities usually serve as proxies for the deterioration of the inventories. We find that this inverse leverage effect, or “inventory effect”, is relatively robust, for different subsamples, for diverse types of commodities and for different ways of specifying the asymmetry, though weaker than the leverage effect for equity stocks. Appropriately specifying the asymmetric conditional variance of commodities could improve risk management, hedging strategies or Value-at-Risk estimates. Incidentally, the inventory effect sheds some new light on the debate about the origin of the leverage effect.

2010/49 *Option pricing with asymmetric heteroskedastic normal mixture models*

Jeroen V.K. ROMBOUTS and Lars STENTOFT

This paper uses asymmetric heteroskedastic normal mixture models to fit return data and to price options. The models can be estimated straightforwardly by maximum likelihood, have high statistical fit when used on S&P 500 index return data, and allow for substantial negative skewness and time varying higher order moments of the risk neutral distribution. When forecasting out-of-sample a large set of index options between 1996 and 2009, substantial improvements are found compared to several benchmark models in terms of dollar losses and the ability to explain the smirk in implied volatilities. Overall, the dollar root mean squared error of the best performing benchmark component model is 39% larger than for the mixture model. When considering the recent financial crisis this difference increases to 69%.

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**ENERGY ECONOMICS**

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2010/1 *Degree of coordination in market-coupling and counter-trading*

Giorgia OGGIONI and Yves SMEERS

Cross-border trade remains a contentious issue in the restructuring of the European electricity market. Difficulties stem from the lack of a common market design, the separation between energy and transmission markets, and the insufficient coordination between Transmission System Operators (TSOs). This paper analyzes the cross-border trade problem through a set of models that represent different degrees of coordination both between the energy and transmission markets and among national TSOs. We first present the optimal organisation, not implemented in Europe, where energy and transmission are integrated according to the nodal price paradigm and Power Exchanges (PXs) and TSOs are integrated. This is our reference case. We then move to a more realistic representation of the European electricity market based on the so-called market-coupling design where energy and transmission are operated separately by PXs and TSOs. When considering different degrees of coordination of the national TSOs' activities, we



unexpectedly find that some arrangements are more efficient than the lack of coordination might suggest. Specifically we find that even without a formal coordination of the TSOs' counter-trading operations, non discriminatory access to common counter-trading resources for all TSOs may lead to a partial implicit coordination of these TSOs. In other words, an internal market of counter-trading resources partially substitutes the lack of integration of the TSOs. While a full access to counter-trading resources is a weaker requirement than the horizontal integration of the TSO, it is still quite demanding. We show that quantitative limitations to the access of these resources decrease the efficiency of counter-trading. The paper supposes price taking agents and hence leaves aside the incentive to game the system induced by zonal systems.

2010/27 *Uncertain long-run emissions targets, CO<sub>2</sub> price and global energy transition: a general equilibrium approach*

Olivier DURAND-LASSERVE, Axel PIERRU, and Yves SMEERS

The persistent uncertainty about mid-century CO<sub>2</sub> emissions targets is likely to affect not only the technological choices that energy-producing firms will make in the future but also their current investment decisions. We illustrate this effect on CO<sub>2</sub> price and global energy transition within a MERGE-type general-equilibrium model framework, by considering simple stochastic CO<sub>2</sub> policy scenarios. In these scenarios, economic agents know that credible long-run CO<sub>2</sub> emissions targets will be set in 2020, with two possible outcomes: either a "hard cap" or a "soft cap". Each scenario is characterized by the relative probabilities of both possible caps. We derive consistent stochastic trajectories - with two branches after 2020 - for prices and quantities of energy commodities and CO<sub>2</sub> emissions permits. The impact of uncertain long-run CO<sub>2</sub> emissions targets on prices and technological trajectories is discussed. In addition, a simple marginal approach allows us to analyze the Hotelling rule with risk premia observed for certain scenarios.

2010/28 *Stochastic equilibrium models for generation capacity expansion*

Andreas EHRENMANN and Yves SMEERS

Capacity expansion models in the power sector were among the first applications of operations research to the industry. The models lost some of their appeal at the inception of restructuring even though they still offer a lot of possibilities and are in many respect irreplaceable provided they are adapted to the new environment. We introduce stochastic equilibrium versions of these models that we believe provide a relevant context for looking at the current very risky market where the power industry invests and operates. We then take up different questions raised by the new environment. Some are due to developments of the industry like demand side management: an optimization framework has difficulties accommodating them but the more general equilibrium paradigm offers additional possibilities. We then look at the insertion of risk related investment practices that developed with the new environment and may not be easy to accommodate in an optimization context. Specifically we consider the use of plant specific discount rates that we derive by including stochastic discount rates in the equilibrium model. Linear discount factors only price systematic risk. We therefore complete the discussion by inserting different risk functions (for different agents) in order to account for additional unpriced idiosyncratic risk in investments. These different models can be cast in a single mathematical representation but they do not have the same mathematical properties. We illustrate the impact of these phenomena on a small but realistic example.

**ENVIRONMENTAL ECONOMICS**

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2009/54    *"Mitigation, adaptation, suffering": in search of the right mix in the face of climate change*

Henry TULKENS and Vincent VAN STEENBERGHE

The usually assumed two categories of costs involved in climate change policy analysis, namely abatement and damage costs, hide the presence of a third category, namely adaptation costs. This dodges the determination of an appropriate level for them. Including adaptation costs explicitly in the total environmental cost function allows one to characterize the optimal (cost minimizing) balance between the three categories, in statics as well as dynamics. Implications are derived for cost benefit analysis of adaptation expenditures.

2010/16    *Model predictive control, the economy, and the issue of global warming*

Thierry BRÉCHET, Carmen CAMACHO, and Vladimir M. VELIOV

This study is motivated by the evidence of global warming, which is caused by human activity but affects the efficiency of the economy. We employ the integrated assessment Nordhaus DICE-2007 model. Generally speaking, the framework is that of dynamic optimization of the discounted inter-temporal utility of consumption, taking into account the economic and the environmental dynamics. The main novelty is that several reasonable types of behavior (policy) of the economic agents, which may be non-optimal from the point of view of the global performance but are reasonable from an individual point of view and exist in reality, are strictly defined and analyzed. These include the concepts of "business as usual", in which an economic agent ignores her impact on the climate change (although adapting to it), and of "free riding with a perfect foresight", where some economic agents optimize in an adaptive way their individual performance expecting that the others would perform in a collectively optimal way. These policies are defined in a formal and unified way modifying ideas from the so-called "model predictive control". The introduced concepts are relevant to many other problems of dynamic optimization, especially in the context of resource economics. However, the numerical analysis in this paper is devoted to the evolution of the world economy and the average temperature in the next 150 years, depending on different scenarios for the behavior of the economic agents. In particular, the results show that the "business as usual", although adaptive to the change of the atmospheric temperature, may lead within 150 years to increase of temperature by 2°C more than the collectively optimal policy.

2010/17    *Markets for emission permits with free endowment: a vintage capital analysis*

Thierry BRÉCHET, Tsvetomir TSACHEV, and Vladimir M. VELIOV

In this paper we develop a vintage capital model for a firm involved in a market for tradable emission permits. We analyze both the firm's optimal investment plans and the market equilibrium. This allows us to scrutinize how firms use permits with free endowment, and to highlight the implications of non-optimal uses both at the firm and at the market level. We provide a new rationale for the market of tradable permits not to be cost-efficient. The novel technical points in this context are the use of a distributed (vintage) optimal control model of the firm, the use of optimality conditions for non-smooth problems, and the involvement of a nonlinear Fredholm integral equation of the first kind for the description of the equilibrium price of permits and its practical meaning for market regularization.

2010/31    *Technological greening, eco-efficiency, and no-regret strategy*  
 Thierry BRÉCHET and Sylvette LY

In this paper we analyze the relationship between technological greening, eco-efficiency and no regret strategies. By using a simple theoretical model, we evaluate the effects of technological greening on creation value, pollution level, and eco-efficiency. We show three contrasting effects of technological greening. First, technological greening may increase the pollution of a firm and also of the whole industry. Second, the indicator of eco-efficiency can be misleading because it may improve in situations where pollution increases and/or profit decreases after technological greening. Third, technological greening that induces an improvement of the eco-efficiency indicator does not necessarily lead to a no-regret strategy. As a result, the indicator should not be used for decision making.

## GAME THEORY

2009/59    *All-pay auctions with endogenous rewards*  
 Olivier BOS and Margin RANGER

This paper examines a perfectly discriminating contest (all-pay auction) with two asymmetric players. Valuations are endogenous and depend on the effort each player invests in the contest. The shape of the valuation function is common knowledge and differs between the contestants. Some key properties of R&D races, lobbying activity, and sport contests are captured by this framework. Once the unique equilibrium in mixed strategies analyzed, we derive a closed form of the expected expenditure of both players. We characterize the expected expenditure by the means of incomplete Beta functions. We focus on unordered valuations.

2009/66    *Strongly rational sets for normal-form games*  
 Gilles GRANDJEAN, Ana MAULEON, and Vincent VANNETELBOSCH

Curb sets [Basu and Weibull, Econ. Letters 36 (1991), 141-146] are product sets of pure strategies containing all individual best-responses against beliefs restricted to the recommendations to the remaining players. The concept of minimal curb sets is a set-theoretic coarsening of the notion of strict Nash equilibrium. We introduce the concept of minimal strong curb sets, which is a set-theoretic coarsening of the notion of strong Nash equilibrium. Strong curb sets are product sets of pure strategies such that each player's set of recommended strategies must contain all coalitional best-responses of each coalition to whatever belief each coalition member may have that is consistent with the recommendations to the other players. Minimal strong curb sets are shown to exist and are compared with other well-known solution concepts. We also provide a dynamic learning process leading the players to playing strategies from a minimal strong curb set.

2009/77    *Announcement wars as an equilibrium selection device*  
 Nicola ACOCELLA, Giovanni DI BARTOLOMEO, Andrew HUGUES HALLETT, and Paolo G. PIACQUADIO

This paper attempts to give a rationale to public announcements, so often observed in the real world, and to formalize the idea that they can be used as a form of equilibrium selection device

when multiple equilibria arise. It also shows how announcements solve the problems of coordination failures as predicted by the empirical literature based on experimental studies.

2009/80    *Strategic complementarities and nested potential games*  
Hiroshi UNO

This note shows that every finite game of strategic complementarities is a nested pseudo-potential game defined in Uno (2007, *Economics Bulletin* 3 (17)) if the action set of each player is one-dimensional, except possibly for one player.

2009/82    *Nash equilibria of games with increasing best replies*  
Filippo L. CALCIANO

The intuitive idea of two activities being complements, for example tea and lemon, is that increasing the level of one makes somehow desirable to increase the level of the other (Samuelson, 1974). Hence complementarity, in its very nature, is a sensitivity property of the set of solutions to an optimization problem. In the context of games, complementarity should then be captured by properties of the joint best reply. We introduce notions of increasingness for the joint best reply, which capture properly this intuitive idea of complementarity among players' strategies. We show, by generalizing the fixpoint theorems of Veinott (1992) and Zhou (1994), that the Nash sets of our games are nonempty complete lattices. Hence we extend the class of games with strategic complementarities.

2010/4     *Cores of games with positive externalities*  
Parkash CHANDER

This paper introduces a core concept, called the  $\gamma$ -core, in the primitive framework of a strategic game. For a certain class of strategic games, it is a weaker concept than the strong Nash equilibrium, but in general stronger than the conventional  $\alpha$ - and  $\beta$ -cores. We argue that the coalition formation process is an infinitely repeated game and show that the grand coalition forms if the  $\gamma$ -core is nonempty. This is a weaker sufficient condition than the previous such condition (Maskin (2003, Theorem 4)). As an application of this result, it is shown that the  $\gamma$ -core of an oligopolistic market is nonempty and thus the grand coalition forms.

2010/10    *Nested potentials and robust equilibria*  
Hiroshi UNO

This paper introduces the notion of nested best response potentials for complete information games. It is shown that a unique maximizer of such a potential is a Nash equilibrium that is robust to incomplete information in the sense of Kajii and Morris (1997, mimeo).

2010/19    *When frictions favour information revelation*  
Tanguy ISAAC

We study information revelation in markets with pairwise meetings. First, we reconsider the one-sided case within a constant entry flow model. The same question has been studied in an identical framework in Serrano and Yosha (1993). We prove that there exists an additional equilibrium not detected by Serrano and Yosha (1993). We show that this equilibrium is characterized by

incomplete information revelation. Until now, no equilibrium with incomplete revelation of information was known in this model. Our second main result is that, at this new equilibrium, information revelation is worse when frictions are weaker. One proves also that increasing the frictions is a Pareto improvement. Finally, we show that those properties should also characterize some equilibria of the two-sided case studied by Wolinsky (1990).

2010/22 *Coalition formation among farsighted agents*

P. Jean-Jacques HERINGS, Ana MAULEON, and Vincent VANNETELBOSCH

A set of coalition structures  $P$  is farsightedly stable (i) if all possible deviations from any coalition structure  $p$  belonging to  $P$  to a coalition structure outside  $P$  are deterred by the threat of ending worse off or equally well off, (ii) if there exists a farsighted improving path from any coalition structure outside the set leading to some coalition structure in the set, and (iii) if there is no proper subset of  $P$  satisfying the first two conditions. A non-empty farsightedly stable set always exists. We provide a characterization of unique farsightedly stable sets of coalition structures and we study the relationship between farsighted stability and other concepts such as the largest consistent set and the von Neumann-Morgenstern farsightedly stable set. Finally, we illustrate our results by means of coalition formation games with positive spillovers.

2010/26 *Cooperative provision of indivisible public goods*

Pierre DEHEZ

A community faces the obligation of providing an indivisible public good. Each member is capable of providing it at a certain cost and the solution is to rely on the player who can do it at the lowest cost. It is then natural that he or she be compensated by the other players. The question is to know how much they should each contribute. We model this compensation problem as a cost sharing game to which standard allocation rules are applied and related to the solution resulting from the auction procedures proposed by Kleindorfer and Sertel (1994).

## INDUSTRIAL ORGANIZATION

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2009/52 *Regulating quality by regulating quantity: a case against minimum quality standards*

Nicolas BOCCARD and Xavier WAUTHY

We show in a simple model of entry with sunk cost, that a regulator prefers limiting the output, or capacity, of the incumbent firm rather than imposing a "Minimum Quality Standard" in order to help the entrant to provide high quality. As a by-product, our analysis makes a contribution to the study of Bertrand-Edgeworth competition in a market with differentiated products.

2009/58 *A note on price competition in product differentiation models*

Jean J. GABSZEWICZ

We define a two-variant model of product differentiation which, depending on the number of consumers preferring one variant to the other, provides equilibrium prices reflecting the natural valuation of these variants by the market.

2009/68    *Endogenous network formation in patent contests and its role as a barrier to entry*  
Marco MARINUCCI and Wouter VERGOTE

In a setting of R&D co-opetition we study, by using an all-pay auction approach, how collaboration affects strategic decisions during a patent contest and how the latter influences the possible collaboration network structures the firms can hope to form. The all pay auction approach allows us to 1) endogenize both network formation and R&D intensities and 2) take heterogeneous and private valuations for patents into account. We find that, different from previous literature, the complete network is not always the only pairwise stable network, even and especially if the benefits from cooperating are important. Interestingly, the other possible stable networks all have the realistic property that some firms decide not to participate in the contest. Thus, weak cooperation through network formation can serve as a barrier to entry on the market for innovation. We further show that there need not be any network that survives a well known refinement of pairwise stability, strong stability, which imposes networks to be immune to coalitional deviations.

2009/70    *Product differentiation and vertical integration in presence of double marginalization*  
Skerdilajda ZANAJ

In this paper, we present a model of endogenous vertical integration and horizontal differentiation. There exists two output brands and two versions of the input. The only mean for output differentiation is the input version used in output production. Firms may choose to vertically integrate to produce internally the required input version at marginal cost, rather than to buy it at the market price, if that version is made available. We show that vertical mergers increase the possibility that output goods are differentiated. Moreover, this occurs when the cost to differentiate the input is high. On the other hand, vertical integration is detrimental for brand variety if the cost to differentiate inputs is negligible.

2009/81    *Market coverage and the nature of product differentiation: a note*  
Xavier WAUTHY

In this note, we analyze the equilibrium outcomes of pricing games with product differentiation in relation with the extent of market coverage. It is a received idea in the IO literature that the horizontal and vertical models of product differentiation are almost formally equivalent. We show that this idea turns out to be wrong when the full market coverage assumption is relaxed. We then argue that there exist two fundamentally different classes of address-models of differentiation, although their difference is not perfectly captured by the standard horizontal/vertical typology.

2010/18    *Bank secrecy, illicit money and offshore financial centers*  
Pierre M. PICARD and Patrice PIERETTI

This paper discusses the effects of pressure policies on offshore financial centers as well as their ability to enforce the compliance of those centers with anti-money laundering regulations. Offshore banks can be encouraged to comply with rigorous monitoring of an investor's identity and the origin of his/her funds when pressure creates a sufficiently high risk of reputational harm to the investor. We show that such pressure policies harm both offshore and onshore investors and can benefit both the bank industry and tax administrations. We show that social optimal pressure policies are dichotomous decisions between no pressure at all and a pressure great

enough to persuade offshore banks to comply. The delegation of pressure policies to onshore tax institutions may be inefficient. Deeper financial integration fosters compliance by the offshore center.

2010/21 *Leniency programs for multimarket firms: the effect of Amnesty Plus on cartel formation*

Yassine LEFOULI and Catherine ROUX

We examine the effect of the Amnesty Plus policy on the incentives of firms to engage in cartel activities. Amnesty Plus is aimed at attracting amnesty applications by encouraging firms, convicted in one market, to report their collusive agreements in other markets. It has been vigorously advertised that Amnesty Plus weakens cartel stability. We show to the contrary that Amnesty Plus may not have this desirable effect, and, if improperly designed, may even stabilize a cartel. We suggest a simple discount-setting rule to avoid this anticompetitive effect.

2010/32 *Universal service financing in competitive postal markets. One size does not fit all*  
Axel GAUTHIER and Dimitri PAOLINI

In the postal sector, the net cost of universal service depends on the content of the service, the postal market characteristics and the country's geographical configuration. These three groups of factors affect both the direct cost of providing the service and the extent of competition on the market. In this paper, we consider countries with different geographical characteristics and we show that the choice of an appropriate mechanism to share the cost of universal service between market participants depends on the country configuration. Thus, for universal service financing, one size does not fit all.

2010/33 *Competition and growth: reinterpreting their relationship*  
Dario ONORI

In this paper we modify a standard quality ladder model by assuming that R&D is driven by outsider firms and the winners of the race sell licenses over their patents, instead of entering directly the intermediate good sector. As a reward they get the aggregate profit of the industry. Moreover, in the intermediate good sector firms compete à la Cournot and it is assumed that there are spillovers represented by strategic complementarities on costs. Our goal is to prove that there exists an interval of values of the spillover parameter such that the relationship between competition and growth is an inverted-U-shape.

## MACROECONOMIC POLICIES

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2009/53 *An incentive mechanism to break the low-skill immigration deadlock*  
David DE LA CROIX and Frédéric DOCQUIER

Although movements of capital, goods and services are growing in importance, workers movements are impeded by restrictive policies in rich countries. Such regulations carry substantial economic costs for developing countries and prevent global inequality from declining. Even if rich countries are averse to global inequality, a single country lacks incentives to welcome additional migrants as it would bear the costs alone while the benefits accrue to all rich states. Aversion to

global inequality confers a public good nature to the South-North migration of lowskill workers. We propose an alternative allocation of labor maximizing global welfare subject to the constraints that the rich countries are at least as well off as in the current “nationalist” (or “Nashionalist”) situation. This “no regret” allocation can be decentralized by a tax-subsidy scheme, which makes people internalize the fact that as soon as a rich country welcomes an additional migrant, global inequalities are reduced and everybody in the rich world is better off too. Our model is calibrated using statistics on immigration, working-age population and output. We simulate the proposed scheme on different sets of rich countries.

2009/65    *Why corrupt governments may receive more foreign aid*

David DE LA CROIX and Clara DELAVALLADE

In this paper we argue that if the cross-country heterogeneity in productivity is more important than the heterogeneity in government quality, it can be optimal to give more foreign aid to more corrupt countries. We build a multi-country model of optimal aid in which we disentangle the correlation between aid and equilibrium corruption into two components: the first one reflects variations in the quality of institutions and the second encompasses variations in productivity levels. The data suggest that both components of the correlation are significant, however the effect of variations in productivity levels is stronger. This implies that most corrupt countries, since they are also the poorest, receive higher amounts of foreign aid.

2010/14    *Currency substitution in the economies of Central Asia: How much does it cost?*

Asel ISAKOVA

Underdeveloped financial markets and periods of high inflation have stimulated dollarization and currency substitution in the economies of Central Asia. Some authors argue that the latter can pose serious obstacles for the effective conduct of monetary policy and can affect households' welfare. This study uses a model with money-in-the-utility function to estimate the elasticity of substitution between domestic and foreign currencies in three economies of Central Asia - Kazakhstan, the Kyrgyz Republic, and Tajikistan. Utility derived from holding money balances is represented by a CES function with money holdings denominated in two currencies. The residents are assumed to diversify their monetary holdings due to instability of the domestic currency. The steady state analysis reveals that though currency substitution decreases governments' seigniorage revenue, holding foreign money can be welfare generating if domestic currency depreciates vis-à-vis the currencies in which households' foreign balances holdings are denominated. De-dollarization can only be achieved through further macroeconomic stabilization that will bring price and exchange rate stability. Financial sector development will also decrease currency substitution through the provision of reliable financial instruments and the gaining of public confidence.



## MATHEMATICAL FINANCE

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2009/51 *Multi-assets real options*

Joachim GAHUNGU and Yves SMEERS

Real options present a wide topic in investment literature nowadays. However, despite big advances in the single asset investment pricing, the theory is miser of informations about problems involving more than one asset. We show in this paper that using dynamic programming, one can find an analytic trigger for a three assets simple exchange problem. Although we get a forward investment rule, one cannot find the precise option value ex ante but only an average value. The precise option value depends on the first exit time from the continuation region, which is stochastic. This is a quite intuitive effect of the course of dimensionality of the problem. Valuating a single asset project gives a single condition for the optimal decision rule. The same holds for the simple exchange problem with two assets since the value of the project just depends on the price over cost ratio. In a three assets problem, as the project does not depend anymore of a single state variable, one cannot run for a decision rule depending on the first exit time from the continuation region.

2010/5 *Liquidity risks on power exchanges*

Gauthier DE MAERE D'AERTRYCKE and Yves SMEERS

Financial derivatives are important hedging tool for asset's managers. Electricity is by its very nature the most volatile commodity, which creates big incentive to share the risk among the market participants through financial contracts. But, even if the volume of derivatives contracts traded on Power Exchanges has been growing since the beginning of the restructuring of the sector, electricity markets continue to be considerably less liquid than other commodities. This paper tries to quantify the effect of this insufficient liquidity on power exchange, by introducing a pricing equilibrium model for power derivatives where agents can not hedge up to their desired level. Mathematically, the problem is a two stage stochastic Generalized Nash Equilibrium and its solution is not unique. Computing a large panel of solutions, we show how the risk premium and player's profit are affected by the illiquidity.

2010/44 *Multivariate concave and convex stochastic dominance*

Michel DENUIT, Louis EECKHOUDT, Ilia TSETLIN, and Robert L. WINKLER

Stochastic dominance permits a partial ordering of alternatives (probability distributions on consequences) based only on partial information about a decision maker's utility function. Univariate stochastic dominance has been widely studied and applied, with general agreement on classes of utility functions for dominance of different degrees. Extensions to the multivariate case have received less attention and have used different classes of utility functions, some of which require strong assumptions about utility. We investigate multivariate stochastic dominance using a class of utility functions that is consistent with a basic preference assumption, can be related to well-known characteristics of utility, and is a natural extension of the stochastic order typically used in the univariate case. These utility functions are multivariate risk averse, and reversing the preference assumption allows us to investigate stochastic dominance for utility functions that are multivariate risk seeking. We provide insight into these two contrasting forms of stochastic dominance, develop some criteria to compare probability distributions (hence alternatives) via

multivariate stochastic dominance, and illustrate how this dominance could be used in practice to identify inferior alternatives. Connections between our approach and dominance using different stochastic orders are discussed.

## MICROECONOMIC THEORY

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2009/62    *Exchange of indivisible goods and indifferences: the top trading absorbing sets mechanisms*

Jorge ALCALDE-UNZU and Elena MOLIS

There is a wide range of economic problems involving the exchange of indivisible goods without monetary transfers, starting from the housing market model of the seminal paper of Shapley and Scarf and including other problems like the kidney exchange or the school choice problems. For many of these models, the classical solution is the application of an algorithm/mechanism called Top Trading Cycles, attributed to David Gale, which satisfies good properties for the case of strict preferences. In this paper, we propose a family of mechanisms, called Top Trading Absorbing Sets mechanisms, that generalizes the Top Trading Cycles for the general case in which individuals can report indifferences and preserves all its desirable properties.

2009/74    *Sustainability, optimality, and viability in the Ramsey model*

Noël BONNEUIL and Raouf BOUCEKKINE

The Ramsey model of economic growth is revisited from the point of view of viability. A viable state is a state from which there exists at least one trajectory that remains in the set of constraints of minimal consumption and positive wealth. Viability is presented with a constraint of minimal consumption, then with an additional criterion of economic sustainability. The comparison of viability kernels with or without sustainability shows how much consumption should be reduced and when. The viable-optimal solution in the sense of inter-temporal consumption is obtained on the viability boundary of an auxiliary system. Technological progress works against population growth to favor the possibility for a given state of being viable or viable-sustainable.

2009/83    *Stock prices, anticipations and investment in general*

Jacques H. DRÈZE, Oussama LACHIRI, and Enciro MINELLI

We propose an objective for the firm in a model of production economies extending over time under uncertainty and with incomplete markets. We derive the objective of the firm from the assumption of initial-shareholders efficiency. Each shareholder is assumed to communicate to the firm her marginal valuation of profits at all future events (expressed in terms of initial resources). In defining her own marginal valuation of the firm's profits, a shareholder takes into consideration the direct impact of a change in the value of dividends but also the impact of future dividends on the firm's stock price when she trades shares. To predict the impact on the stock price, she uses a state price process, her price theory. The firm computes its own shadow prices for profits at all date-events by simply adding up the marginal valuations of all its initial shareholders. If no restrictions are placed on individual price theories, the existence of equilibria may require financial constraints on a firm's investment when its shareholders are more optimistic than the market

about the profitability of such investment. We then impose that price theories be compatible with the observed equilibrium: they should satisfy a no-arbitrage condition. We show by means of an example that, with incomplete markets and no-short selling constraints, this restriction on price theories is not enough to bring consistency in the individuals' marginal evaluations: a financial constraint on the firm's investment may still be needed to obtain an equilibrium.

2010/7     *The stability of the roommate problem revisited*

Elena IÑARRA, Conchi LARRERA, and Elena MOLIS

The lack of stability in some matching problems suggests that alternative solution concepts to the core might be a step towards furthering our understanding of matching market performance. We propose absorbing sets as a solution for the class of roommate problems with strict preferences. This solution, which always exists, either gives the matchings in the core or predicts other matchings when the core is empty. Furthermore, it satisfies the interesting property of outer stability. We also determine the matchings in absorbing sets and find that in the case of multiple absorbing sets a similar structure is shared by all.

2010/11   *Experimental results on the roommate problem*

Elena MOLIS and Robert F. VESZTEG

We use laboratory experiments to analyze decentralized decision-making in one-sided matching markets. We find that subjects tend to make decisions in line with theoretical models, as their offering and accepting decisions are only guided by the objective of improving upon the status quo. However, isolated individual mistakes, that do not disappear with experience or time, often make theoretically-stable matchings unstable in the laboratory. Markets with incomplete information are especially prone to this problem.

## OPTIMIZATION METHODS AND OPERATIONS RESEARCH

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2009/55   *Split rank of triangle and quadrilateral inequalities*

Santanu S. DEY and Quentin LOUVEAUX

A simple relaxation of two rows of a simplex tableau is a mixed integer set consisting of two equations with two free integer variables and non-negative continuous variables. Recently Andersen et al. and Cornuéjols and Margot showed that the facet-defining inequalities of this set are either split cuts or intersection cuts obtained from lattice-free triangles and quadrilaterals. Through a result by Cook et al., it is known that one particular class of facetdefining triangle inequality does not have a finite split rank. In this paper, we show that all other facet-defining triangle and quadrilateral inequalities have finite split rank. The proof is constructive and given a facet-defining triangle or quadrilateral inequality we present an explicit sequence of split inequalities that can be used to generate it.

2009/72    *Local quadratic convergence of polynomial-time interior-point methods for conic optimization problems*

Yurii NESTEROV and Levent TUNCEL

In this paper, we establish a local quadratic convergence of polynomial-time interior-point methods for general conic optimization problems. The main structural property used in our analysis is the logarithmic homogeneity of selfconcordant barrier functions. We propose new path-following predictor-corrector schemes which work only in the dual space. They are based on an easily computable gradient proximity measure, which ensures an automatic transformation of the global linear rate of convergence to the local quadratic one under some mild assumptions. Our step-size procedure for the predictor step is related to the maximum step size (the one that takes us to the boundary). It appears that in order to obtain local superlinear convergence, we need to tighten the neighborhood of the central path proportionally to the current duality gap.

2010/2    *Efficiency of coordinate descent methods on huge-scale optimization problems*

Yurii NESTEROV

In this paper we propose new methods for solving huge-scale optimization problems. For problems of this size, even the simplest full-dimensional vector operations are very expensive. Hence, we propose to apply an optimization technique based on random partial update of decision variables. For these methods, we prove the global estimates for the rate of convergence. Surprisingly enough, for certain classes of objective functions, our results are better than the standard worstcase bounds for deterministic algorithms. We present constrained and unconstrained versions of the method and its accelerated variant. Our numerical test confirms a high efficiency of this technique on problems of very big size.

2010/8    *Locating fire-stations: an integrated approach for Belgium*

Philippe CHEVALIER, Isabelle THOMAS, David GERAETS, Els GOETGHEBEUR, Olivier JANSSENS, Dominique PEETERS, and Frank PLASTRIA

This paper demonstrates the potential of a decision-support system developed for Belgium by a consortium of universities and a private firm, in the framework of a public call by the Ministry of the Interior. The system is designed to provide the Belgian emergency management administration with a complete decision-aid tool for the location of fire-stations. The originality of the project is that it includes a risk-modeling approach developed at a national scale. This analysis involves a multiscale GIS system which includes a thorough representation of the physical, human, and economic spatial realities, a risk modeling approach, an adequate optimal location and allocation model (taking into account both queuing and staffing problems). The final result is an interactive operational tool for defining locations, equipment allocations, staffing, response times, the cost/efficiency trade-off, etc. which can be used in an assessment as well as a prospective context. It has numerous functionalities including rapid modification of the modeling conditions to allow for quick scenario analysis, multiscale analysis, and prospective analysis.

2010/9     *Design of a network of reusable logistic containers*  
Jean-Charles LANGE and Pierre SEMAL

In this paper, we consider the management of the return flows of empty logistic containers that accumulate at the customer's sites. These containers must be brought back to the factories in order to sustain future expeditions. We consider a network composed of several factories and several customers in which the return flows are independent of the delivery flows. The models and their solutions aim at finding to which factory the containers have to be brought back and at which frequency. These frequencies directly define the volume of logistic containers to hold in the network. We consider fixed transportation costs depending on the locations of the customers and of the factories and linear holding costs for the inventory of logistic containers. The analysis also provides insight on the benefit of pooling the containers among different customers and/or factories.

2010/29     *Solving infinite-dimensional optimization problems by polynomial approximation*  
Olivier DEVOLDER, François GLINEUR, and Yurii NESTEROV

In this paper, we solve a class of convex infinite-dimensional optimization problems using a numerical approximation method that does not rely on discretization. Instead, we restrict the decision variable to a sequence of finite-dimensional linear subspaces of the original infinite-dimensional space and solve the corresponding finite-dimensional problems in an efficient way using structured convex optimization techniques. We prove that, under some reasonable assumptions, the sequence of these optimal values converges to the optimal value of the original infinite-dimensional problem and give an explicit description of the corresponding rate of convergence.

2010/34     *Double smoothing technique for infinite-dimensional optimization problems with applications to optimal control*  
Olivier DEVOLDER, François GLINEUR, and Yurii NESTEROV

In this paper, we propose an efficient technique for solving some infinite-dimensional problems over the sets of functions of time. In our problem, besides the convex point-wise constraints on state variables, we have convex coupling constraints with finite-dimensional image. Hence, we can formulate a finite-dimensional dual problem, which can be solved by efficient gradient methods. We show that it is possible to reconstruct an approximate primal solution. In order to accelerate our schemes, we apply double-smoothing technique. As a result, our method has complexity  $O(1/\varepsilon \ln 1/\varepsilon)$  gradient iterations, where  $\varepsilon$  is the desired accuracy of the solution of the primal-dual problem. Our approach covers, in particular, the optimal control problems with trajectory governed by a system of ordinary differential equations. The additional requirement could be that the trajectory crosses in certain moments of time some convex sets.

2010/45     *An extension of disjunctive programming and its impact for compact tree formulations*  
Rüdiger STEPHAN

In the 1970's, Balas introduced the concept of disjunctive programming, which is optimization over unions of polyhedra. One main result of his theory is that, given linear descriptions for each of the polyhedra to be taken in the union, one can easily derive an extended formulation of the

convex hull of the union of these polyhedra. In this paper, we give a generalization of this result by extending the polyhedral structure of the variables coupling the polyhedra taken in the union. Using this generalized concept, we derive polynomial size linear programming formulations (compact formulations) of a well-known spanning tree approximation of Steiner trees and flow equivalent trees for node- as well as edge-capacitated undirected networks. We also present a compact formulation for Gomory-Hu trees and, as a consequence, of the minimum T-cut problem (but not for the associated T-cut polyhedron). Recently, Kaibel and Loos introduced a more involved framework called *polyhedral branching systems* to derive extended formulations. The most of our model can be expressed in terms of their framework. The value of our model can be seen in the fact that it completes their framework with an interesting algorithmic aspect.

2010/47    *A multilevel approach for nonnegative matrix factorization*  
Nicolas GILLIS and François GLINEUR

Nonnegative Matrix Factorization (NMF) is the problem of approximating a nonnegative matrix with the product of two low-rank nonnegative matrices and has been shown to be particularly useful in many applications, e.g., in text mining, image processing, computational biology, etc. In this paper, we explain how algorithms for NMF can be embedded into the framework of multi-level methods in order to accelerate their convergence. This technique can be applied in situations where data admit a good approximate representation in a lower dimensional space through linear transformations preserving nonnegativity. A simple multilevel strategy is described and is experimentally shown to speed up significantly three popular NMF algorithms (alternating nonnegative least squares, multiplicative updates, and hierarchical alternating least squares) on several standard image datasets.

## **PUBLIC AND WELFARE ECONOMICS**

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2009/57    *Voting on pensions: sex and marriage*  
Marie-Louise LEROUX, PIERRE PESTIEAU, and MARIO RACIONERO

Existing political economy models of pensions focus on age and productivity. In this paper we incorporate two additional individual characteristics: sex and marital status. We ignore the role of age, by assuming that people vote at the start of their life, and characterize the preferred rate of taxation that finances a Beveridgean pension scheme when individuals differ in wage, sex and marital status. We allow for two types of couples: one-breadwinner and two-breadwinner couples. Marriage pools both wage and longevity differences between men and women. Hence singles tend to have more extreme preferred tax rates than couples. We show that the majority voting outcome depends on the relative number of one-breadwinner couples and on the size of derived pension rights.

2009/60    *On the fiscal treatment of life expectancy related choices*  
Julio DAVILA and Marie-Louise LEROUX

In an overlapping generations economy setup we show that, if individuals can improve their life expectancy by exerting some effort, costly in terms of either resources or utility, the competitive equilibrium steady state differs from the first best steady state. This is due to the fact that under

perfect competition individuals fail to anticipate the impact of their longevity-enhancing effort on the return of their annuitized savings. We identify the policy instruments required to implement the first-best into a competitive equilibrium and show that they are specific to the form, whether utility or resources, that the effort takes.

2009/64    *A comparison of optimal tax policies when compensation or responsibility matter*  
Laurence JACQUET and Dirk VAN DE GAER

This paper examines optimal redistribution in a model with high and low-skilled individuals with heterogeneous tastes for labor, that either work or not. With such double heterogeneity, traditional Welfarist criteria including Utilitarianism fail to take the compensation-responsibility trade-off into account. As a response, several other criteria have been proposed in the literature. This paper is the first to compare the extent to which optimal policies based on different normative criteria obey the principles of compensation (for differential skills) and responsibility (for preferences for labor), when labor supply is along the extensive margin. The criteria from the social choice literature perform better in this regard than the traditional criteria, both in first and second best. More importantly, these equality of opportunity criteria push the second best policy away from an Earned Income Tax Credit and in the direction of a Negative Income tax.

2009/67    *Transfer pricing rules, OECD guidelines, and market distortions*  
Kristian BEHRENS, Susana PERALTA, and Pierre M. PICARD

We study the impact of transfer pricing rules on sales prices, firms' organizational structure, and consumers' utility within a two-country monopolistic competition model featuring source-based profit taxes that differ across countries. Firms can either become multinationals, i.e., they serve the foreign market through a fully controlled affiliate; or they can become exporters, i.e., they serve the foreign market by contracting with an independent distributor. Compared to the benchmark cases, where tax authorities are either unable to audit firms or where they are able to audit them perfectly, the use of the OECD's Comparable Uncontrolled Price (CUP) or Cost-Plus (CP) rule distorts firms' output and pricing decisions. The reason is that the comparable arm's length transactions between exporters and distributors, which serve as benchmarks, are not efficient. We show that implementing the CUP or CP rules is detrimental to consumers in the low tax country, yet benefits consumers in the high tax country.

2009/71    *Wives, husbands and wheelchairs optimal tax policy under gender-specific health*  
Marie-Louise LEROUX and Grégory PONTIÈRE

We study the optimal taxation problem in an economy composed of two-person households (men and women), where agents influence their own old-age dependency prospects through health spending. It is shown that the utilitarian social optimum can be decentralized by means of lump sum transfers from men to women, because women exhibit a higher disability-free life expectancy than men for a given level of health spending. Once self-oriented concerns for coexistence are introduced, the decentralization of the first-best requires also gender-specific subsidies on health spending aimed at internalizing the effect of each agent's health on the spouse's welfare. In the presence of singles in the population, the optimal policy requires also a differentiated subsidization of health spending for singles and couples. Finally, under imperfect observability of

couples, the incentive compatibility constraints reinforce the need for subsidization of health spendings.

2009/76 *How powerful is demography? The Serendipity Theorem revisited*

David de la CROIX, Pierre PESTIEAU, and Grégory PONTIÈRE

Introduced by Samuelson (1975), the Serendipity Theorem states that the competitive economy will converge towards the optimum steady-state provided the optimum population growth rate is imposed. This paper aims at exploring whether the Serendipity Theorem still holds in an economy with risky lifetime. We show that, under general conditions, including a perfect annuity market with actuarially fair return, imposing the optimum fertility rate and the optimum survival rate leads the competitive economy to the optimum steady-state. That Extended Serendipity Theorem is also shown to hold in economies where old adults work some fraction of the old-age, whatever the retirement age is fixed or chosen by the agents.

2009/78 *The taxation of savings in overlapping generations economies with unbacked risky assets*

Julio DAVILA

This paper establishes, in the context of the Diamond (1965) overlapping generations economy with production, that the risk that savings in unbacked assets (like fiat money or public debt) become worthless implies that, not only the first-best steady state, but even the best steady state attainable with those saving instruments fails to be a competitive equilibrium outcome under laissez-faire. It is nonetheless shown as well that this best monetary steady state can be implemented as a competitive equilibrium with the adequate policy of taxes on returns to capital, subsidies to returns to monetary savings, and lump-sum transfers. Interestingly enough, this policy requires no redistribution of income among agents, unlike the implementation of the first-best steady state. The policy is balanced every period at the steady state and, since no public spending exists in the model, it serves the only purpose of implementing a steady state that provides all agents with a higher utility than the laissez-faire competitive equilibrium steady state. The results thus provide a rationale for an active fiscal policy that has nothing to do with redistributive goals or the need to fund any kind of public sending.

2009/79 *Optimal education and pensions in an endogenous growth model*

Elena DEL REY and Miguel Angel LOPEZ-GARCIA

It is well known that, in OLG economies with life-cycle saving and exogenous growth, competitive equilibria will in general fail to achieve optimality and may even be dynamically inefficient. This is a consequence of individuals accumulating amounts of physical capital that differ from the level, which would maximize welfare along a balanced growth path (the Golden Rule). With human capital, a second potential source of departure from optimality arises, to wit: individuals may not choose the correct amount of education investment. However, the Golden Rule concept, widely used in exogenous growth frameworks, has not found its way into endogenous growth models. In this paper, we propose to recover the Golden Rule of physical and also human capital accumulation. The optimal policy to decentralize the Golden Rule balanced growth path when there are no constraints for individuals to finance their education investments is also



characterized. It is shown that it involves positive pensions and negative education subsidies (i.e., taxes).

2009/85 *School accountability: (how) can we reward schools and avoid cream-skimming*  
Erwin OOGHE and Erik SCHOKKAERT

Introducing school accountability may create incentives for efficiency. However, if the performance measure used does not correct for pupil characteristics, it will lead to an inequitable treatment of schools and create perverse incentives for cream-skimming. We apply the theory of fair allocation to show how to integrate empirical information about the educational production function in a coherent theoretical framework. The requirements of rewarding performance and correcting for pupil characteristics are incompatible if we want the funding scheme to be applicable for all educational production functions. However, we characterize an attractive subsidy scheme under specific restrictions on the educational production function. This subsidy scheme uses only information, which can be controlled easily by the regulator. We show with Flemish data how the proposed funding scheme can be implemented. Correcting for pupil characteristics has a strong impact on the subsidies (and on the underlying performance ranking) of schools.

2010/6 *Equivalent income and the economic evaluation of health care*  
Marc FLEURBAEY, Stéphane LUCHINI, Christophe MULLER, and Erik SCHOKKAERT

We argue that the economic evaluation of health care (cost-benefit analysis) should respect individual preferences and should incorporate distributional considerations. Relying on individual preferences does not imply subjective welfarism. We propose a particular nonwelfarist approach, based on the concept of equivalent income, and show how it helps to define distributional weights. We illustrate the feasibility of our approach with empirical results from a pilot survey.

2010/12 *Copula-based orderings of multivariate dependence*  
Koen DECANCO

In this paper I investigate the problem of defining a multivariate dependence ordering. First, I provide a characterization of the concordance dependence ordering between multivariate random vectors with fixed margins. Central to the characterization is a multivariate generalization of a well-known bivariate elementary dependence increasing rearrangement. Second, to order multivariate random vectors with non-fixed margins, I impose a scale invariance principle, which leads to a copula-based concordance dependence ordering. Finally, a wide family of copula-based measures of dependence is characterized to which Spearman's rank correlation coefficient belongs.

2010/13 *Signaling and indirect taxation*  
Tom TRUYTS

Commodities communicate. Consumers choose a consumption bundle both for its intrinsic characteristics and for what this bundle communicates about their qualities (or 'identity') to spectators. We investigate optimal indirect taxation when consumption choices are motivated by two sorts of concerns: intrinsic consumption and costly signaling. Optimal indirect taxes are

introduced into a monotonic signaling game with a finite typespace of consumers. We provide sufficient conditions for the uniqueness of the D1 sequential equilibrium in terms of strategies. In the case of pure costly signaling, signaling goods can in equilibrium be taxed without burden and the optimal quantity taxes on these goods are infinite. When commodities serve both intrinsic consumption and signaling, optimal taxes can be characterized by a generalization of the Ramsey rule, which also deals with the distortions resulting from signaling.

2010/23    *Long term care insurance puzzle*

Pierre PESTIEAU and Grégory PONTIÈRE

The purpose of this paper is to examine the alternative explanatory factors of the so-called long term care insurance puzzle, namely the fact that so few people purchase a long term care insurance whereas this would seem to be a rational conduct given the high probability of dependence and the high costs of long term care. For that purpose, we survey various theoretical and empirical studies of the demand and supply of long term care insurance. We discuss the vicious circle in which the long term care insurance market is stuck: that market is thin because most people find the existing insurance products too expensive, and, at the same time, the products supplied by insurance companies are too expensive because of the thinness of the market. Moreover, we also show that, whereas some explanations of the puzzle involve a perfect rationality of agents on the LTC insurance market, others rely, on the contrary, on various behavioral imperfections.

2010/24    *On welfare criteria and optimality in an endogenous growth model*

Elena DEL REY and Miguel Angel LOPEZ-GARCIA

In this paper we explore the consequences for optimality of a social planner adopting two different welfare criteria. The framework of analysis is an OLG model with physical and human capital. We first show that, when the SWF is a discounted sum of individual utilities defined over consumption per unit of natural labour, the precise cardinalization of the individual utility function becomes crucial for the characterization of the social optimum. Also, decentralizing the social optimum requires an education subsidy. In contrast, when the SWF is a discounted sum of individual utilities defined over consumption per unit of efficient labour, the precise cardinalization of preferences becomes irrelevant. More strikingly, along the optimal growth path, education should be taxed.

2010/30    *The economics of wealth transfer tax*

Helmuth CREMER and Pierre PESTIEAU

This paper discusses the merits of wealth transfer taxation on both efficiency and equity grounds. It first deals with the popular debate that is dominated by American economists. This debate concerns the US estate tax, which is one, among many, types of wealth transfer tax. After addressing the main issues prevailing in this debate and discussing the lack of popular support for such tax, the paper adopts a more theoretical approach to explore the pluses and the minuses of a wealth transfer tax. The main point is that the desirability of a wealth transfer tax depends on the motives of wealth accumulation and transmission.

2010/35 *The impact of a minimum pension on old age poverty and its budgetary cost. Evidence from Latin America*

Jean-Jacques DETHIER, Pierre PESTIEAU, and Rabia ALI

This paper examines the impact on old age poverty and the fiscal cost of universal minimum old age pensions in Latin America using recent household survey data for 18 countries. Alleviating old age poverty requires a different approach from other age groups and a minimum pension is likely to be the only alternative available. First we measure old age poverty rates for all countries. Second we discuss the design of minimum pensions schemes, means-tested or not, as well as the disincentive effects that they are expected to have on the economic and social behavior of households including labor supply, saving and family solidarity. Third we use the household surveys to simulate the fiscal cost and the impact on poverty rates of alternative minimum pension schemes in the 18 countries. We show that a universal minimum pension would substantially reduce poverty among the elderly except in Argentina, Brazil, Chile, and Uruguay where minimum pension systems already exist and poverty rates are low. Such schemes have much to be commended in terms of incentives, spillover effects, and administrative simplicity but have a high fiscal cost. The latter is a function of the age at which benefits are awarded, the prevailing longevity, the generosity of benefits, the efficacy of means testing, and naturally the fiscal capacity of the country.

2010/36 *Justifying social discounting: the rank-discounted utilitarian approach*

Stéphane ZUBER

The popular discounted utilitarian criterion for infinite horizon social choice has been criticized on the ground that it treats successive generations unfairly. I propose to evaluate intergenerational welfare with a rank- discounted utilitarian (RDU) criterion instead. The criterion amounts to discounted utilitarianism on non-decreasing paths, but it treats all generations impartially: discounting becomes the mere expression of intergenerational inequality aversion. I show that more inequality averse RDU societies have higher social discount rates when future generations are better-off. I apply the RDU approach in two benchmark economic growth models and I prove that it promotes sustainable policies maximizing discounted utility.

2010/37 *Social rationality, separability, and equity under uncertainty*

Marc FLEURBAEY, Thibault GAJDOS, and Stéphane ZUBER

Harsanyi (1955) proved that, in the context of uncertainty, social rationality and the Pareto principle impose severe constraints on the degree of priority for the worst-off that can be adopted in the social evaluation. Since then, the literature has hesitated between an ex ante approach that relaxes rationality (Diamond (1967)) and an ex post approach that fails the Pareto principle (Hammond (1983), Broome (1991)). The Hammond-Broome ex post approach conveniently retains the separable form of utilitarianism but does not make it explicit how to give priority to the worst-off and how much disrespect of individual preferences this implies. Fleurbaey (2008) studies how to incorporate a priority for the worst-off in an explicit formulation, but leaves aside the issue of ex ante equity in lotteries, retaining a restrictive form of consequentialism. We extend the analysis to a framework allowing for ex ante equity considerations to play a role in the ex post approach and

find a richer configuration of possible criteria. But the general outlook of the Harsanyian dilemma is confirmed in this more general setting.

2010/38    *Myopia, redistribution and pensions*

Helmuth CREMER and Pierre PESTIEAU

This paper reviews a number of recent contributions that study pension design with myopic individuals. Its objective is to explore how the presence of more or less myopic individuals affects pension design when individuals differ also in productivity. This double heterogeneity gives rise to an interesting interplay between paternalistic and redistributive considerations, which is at the heart of most of the results that are presented. The main part of the paper is devoted to the issue of pension design when myopic individual do not save “enough” for their retirement because their “myopic self” (with a high discount rate) emerges when labor supply and savings decisions are made. Some extensions and variations are considered in the second part. In particular we deal with situations where labor disutility or preferences for consumption are subject to “habit formation” and where sin goods have a detrimental effect on second period health. Myopic individuals tend to underestimate the effects of both habit formation and sinful consumption, which complicates public policy.

2010/41    *Tagging with leisure needs*

Pierre PESTIEAU and Maria RACIONERO

We study optimal redistributive taxes when individuals differ in two characteristics - earning ability and leisure needs - assumed to be imperfectly correlated. Individuals have private information about their abilities but needs are observable. With two different levels of observable needs the population can be separated into two groups and needs may be used as a tag. We first assume that the social planner considers individuals should be compensated for their leisure needs and characterize the optimal redistributive policy, and the extent of compensation for needs, with tagging. We also consider an alternative social objective in which individuals are deemed responsible for their needs.

2010/42    *The optimal commodity tax system as a compromise between two objectives*

Knud J. MUNK

Policy analysis in applied fields such as agricultural, trade, environmental, and development policy is still often undertaken within a first-best, rather than a more realistic second-best framework. The present paper seeks to contribute to changing this state of affairs by providing an intuitive explanation of what determines the optimal tax system. It derives and interprets an optimal tax formula for an economy with many goods to explain the optimal tax system as reflecting a trade-off between, on the one hand, the objective of encouraging the supply of labour to the market and, on the other hand, the objective of limiting the distortion of the marginal rate of substitution between produced goods. It illustrates this insight by a quantitative general equilibrium model, which does not impose separability between consumption and leisure. The analysis clarifies issues of normalization and deepens the insight due to Corlett and Hague (1953) that goods should be taxed according to their complementarity with leisure.

2010/43 *Utilitarianism and unequal longevities: A remedy ?*

Marie-Louise LEROUX and Grégory PONTIÈRE

This paper re-examines a counterintuitive corollary of utilitarianism under unequal longevities: the tendency to redistribute resources from short-lived towards long-lived agents, against any intuition of compensation. It is shown that this corollary prevails not only under time-additive lifetime welfare, but, also, in general, under non-additive lifetime welfare, so that this counterintuitive redistributive corollary is a robust argument against utilitarianism. This paper studies a remedy to that counterintuitive corollary. This consists in imputing, when solving the social planner's problem, the consumption equivalent of a long life to the consumption of long-lived agents. We identify the conditions under which such a modified utilitarian optimum involves a compensation of short-lived agents with respect to the *laissez-faire*. That remedy is also applied to an economy with risky longevity, where short-lived agents are penalized not only by the limited opportunities to spread resources over time (due to a shorter life), but, also, by lost savings (due to unanticipated death).

2010/48 *The political economy of derived pension rights*

Marie-Louise LEROUX and Pierre PESTIEAU

Derived pension rights exist in most Social Security systems but with variable generosity. They are mainly targeted towards non-working wives and widows and are viewed as a means to alleviate poverty among older women living alone. The purpose of this paper is to explain how they can emerge from a political economy process when the Social Security is a combination of Bismarckian and Beveridgian pillars. It also shows that derived rights tend to encourage stay-at-home wives thus revealing an unpleasant trade-off between female labor participation and poverty alleviation.

## TRADE AND ECONOMIC GEOGRAPHY

2009/56 *Neighbourhood effects and endogeneity issues*

Claire DUJARDIN, Dominique PEETERS, and Isabelle THOMAS

A recent body of research suggests that the spatial structure of cities might influence the socioeconomic characteristics and outcomes of their residents. In particular, the literature on neighbourhood effects emphasizes the potential influence of the socioeconomic composition of neighbourhoods in shaping individual's behaviours and outcomes, through social networks, peer influences or socialization effects. However, empirical work still has not reached a consensus regarding the existence and magnitude of such effects. This is mainly because the study of neighbourhood effects raises important methodological concerns that have not often been taken into account. Notably, as individuals with similar socio-economic characteristics tend to sort themselves into certain parts of the city, the estimation of neighbourhood effects raises the issue of location choice endogeneity. Indeed, it is difficult to distinguish between neighbourhood effects and correlated effects, i.e. similarities in behaviours and outcomes arising from individuals having similar characteristics. This problem, if not adequately corrected for, may yield biased results. In the first part of this paper, neighbourhood effects are defined and some methodological problems involved in measuring such effects are identified. Particular attention is paid to the endogeneity issue, giving a formal definition of the problem and reviewing the main methods that

have been used in the literature to try to solve it. The second part is devoted to an empirical illustration of the study of neighbourhood effects, in the case of labour-market outcomes of young adults in Brussels. The effect of living in a deprived neighbourhood on the unemployment probability of young adults residing in Brussels is estimated using logistic regressions. The endogeneity of neighbourhood is addressed by restricting the sample to young adults residing with their parents. Then, a sensitivity analysis is used to assess the robustness of the results to the presence of both observed and unobserved parental covariates.

2009/63    *On spatial equilibria in a social interaction model*

Pascal MOSSAY and Pierre M. PICARD

Social interactions are at the essence of societies and explain the gathering of individuals in villages, agglomerations, or cities. We study the emergence of multiple agglomerations as resulting from the interplay between spatial interaction externalities and competition in the land market. We show that the geographical nature of the residential space tremendously affects the properties of spatial equilibria. In particular, when agents locate on an open land strip (line segment), a single city emerges in equilibrium. In contrast, when the spatial economy extends along a closed land strip (circumference), multiple equilibria with odd numbers of cities arise. Spatial equilibrium configurations involve a high degree of spatial symmetry in terms of city size and location, and can be Pareto-ranked.

2009/73    *Cycle commuting in Belgium: Spatial determinants and 're-cycling' strategies*

Grégory VANDENBULCKE, Claire DUJARDIN, Isabelle THOMAS, Bas de GEUS, Bart DEGRAEUWE, Romain MEEUSEN, and Luc INT PANIS

This paper attempts to explain the spatial variation of the use of a bicycle for commuting to work at the level of the 589 municipalities in Belgium. Regression techniques were used and special attention was paid to autocorrelation, heterogeneity, and multicollinearity. Spatial lag models were used to correct for the presence of spatial dependence and a disaggregated modelling strategy was adopted for the northern and southern parts of the country. The results show that much of the inter-municipality variation in bicycle use is related to environmental aspects such as the relief, traffic volumes and cycling accidents. Town size, distance traveled and demographic aspects also have some effect. In addition, there are regional differences in the effects of the structural covariates on bicycle use: the impact of variables such as traffic volume and cycling accidents differs substantially between the north and the south of the country. This paper also suggests that high rates of bicycle use in one municipality stimulate cycling in neighbouring municipalities, and hence that a mass effect can be initiated, i.e. more cycle commuting encourages even more commuters in the area to cycle. These findings provide some recommendations for decision-makers wishing to promote a shift from car to bicycle use.

2009/75    *The principal of mutual recognition – a source of divergence?*

Eric TOULEMONDE

Governments set numerous norms to protect consumers. Two countries may achieve the same level of protection of their consumers through different specifications. The adaptation costs induced by these differences create barriers to trade. The principle of mutual recognition addresses the problem by ensuring that products lawfully manufactured in one country are

acceptable without adaptation in another country. We show that by shifting the transaction costs of adapting to several norms from firms to consumers the principle of mutual recognition creates disparities across countries and is (more) beneficial to larger countries.

2009/84 *Neighborhood effects on unemployment? A test à la Altonji*

Claire DUJARDIN and Florence GOFFETTE-NAGOT

The aim of this paper is to test for the influence of neighborhood deprivation on individual unemployment probability in the case of Lyon (France). We estimate a bivariate probit model of unemployment and location in a deprived neighborhood. Our identification strategy is twofold. First, we instrument neighborhood type by the gender composition of household's children and the spouse's workplace. Second, we use the methodology proposed by Altonji et al. (2005), that in our case consists in making hypotheses as to the correlation between the unobservables that determine unemployment and the unobservables that influence the selection into neighborhood types. Our results show that the effect of neighborhood deprivation is not significantly different from zero in the bivariate probit with exclusion restrictions. We also show that a correlation of the unobservables as low as ten percent of the correlation of observables is sufficient to explain the positive neighborhood effect that is observed when endogeneity is not accounted for.

2009/86 *Product and process innovation and the decision to export: firm-level evidence from Belgium*

Ilke VAN BEVEREN and Hylke VANDENBUSSCHE

Using data from the Community Innovation Survey for Belgium in two consecutive periods, this paper explores the relationship between firm-level innovation activities and the propensity to start exporting. To measure innovation, we include indicators of both innovative effort (R&D activities) as well as innovative output (product and process innovation). Our results suggest that the combination of product and process innovation, rather than either of the two in isolation, increases a firm's probability to enter the export market. After controlling for potential endogeneity of the innovation activities, only firms with a sufficiently high probability to start exporting engage in product and process innovation prior to their entry on the export market, pointing to the importance of self-selection into innovation.

2010/15 *Irish firms' productivity and imported inputs*

Emanuele FORLANI

In this paper, we empirically analyze the evolution of firms' productivity and how the efficiency changes with variations in the inputs' origin. Using firm-level information on a sample of Irish firms, we assess the importance of the imported inputs' quota for a firm's efficiency, as well as starting import activity. The main findings are that an increase in the intensive margin of imports raises firms' efficiency of domestic firms; in addition heterogeneous effects across firms are detected. Unlike the findings of most of the literature, there is weak evidence of self-selection in import activity; differently from previous research when we introduce fixed effects, the self-selection disappears. Instead, the few observed firms that start importing raise their productivity compared to non-importing firms; learning by importing is suspected. The results suggest an important policy implication: policies that favor the imports of intermediates enhance the productivity of domestic firms, making them more competitive in the international markets.

## CHAIRS AND RESEARCH PROJECTS UNDER CONTRACTS

This section discusses ongoing research projects at CORE. They are listed by sponsor: chairs, the University, the Belgian Federal Government, the Belgian French-speaking Community, the European Commission or industry.

### **GdF-SUEZ CHAIR: ENERGY ECONOMICS AND RISK MANAGEMENT**

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In order to develop formal and quantitative analysis in energy economics and in the management of risks associated to energy markets, GdF-Suez funds a Chair. Research is done at CORE and in ISBA (as partners within IMMAQ). Claude D'ASPREMONT and Pierre DEVOLDER are in charge of the implementation. Planned research topics include: computational models of the natural gas and electricity markets, quantitative analysis of investment in the energy sector, energy risk management with physical and financial assets, pricing models for natural gas and electricity.

### **LHOIST BERGHMANS CHAIR**

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It is now a recognized fact that environmental issues are pervasive in business. This concern is quite rightly interpreted as the expression of collective aspirations for a better quality of life. The Chair Lhoist Berghmans in Environmental Economics and Management takes part in this process. A teaching and research chair, the Chair Lhoist Berghmans aims at fostering research likely to improve our knowledge from three points of view: (i) evaluating the costs for industry of applying clean technologies, (ii) evaluating the benefits for our society of applying these technologies, (iii) evaluating 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 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 their overall wealth. Improving decision-making tools, both on individual firms and on society as a whole, is the main theme of this research. The Chair held by Thierry BRÉCHET involves about ten researchers at CORE every year. It is also responsible for four courses in environmental economics and management, which are offered in many departments in the university.

### **TRACTEBEL CHAIR**

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The aim of the Tractebel Chair in energy economics held by Yves SMEERS is to develop research on questions arising from the restructuring of the gas and electricity sectors. The activity concentrates on market simulation, investment, and risk management problems. The methodological approach is to cast fundamental ideas of economic theory in a computable framework using methods derived from optimization. Current work concentrates on the analysis of electricity spot prices using variations of unit commitment type models, long-term gas and oil resource development by equilibrium models, investments in generation capacity in an uncertain context through real



option type methods, and development of special contracts for large industrial consumers in the EU-ETS context (again equilibrium models).

### **SUBGAME PERFECT IMPLEMENTATION USING BOUNDED MECHANISMS**

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A social choice rule is implementable if there exists a mechanism where the equilibrium alternatives always coincide with the recommendation of the rule at that particular profile of preferences. The topic of the project is the implementation using bounded mechanism. One aims at characterizing the rules that can be implemented in subgame perfect equilibrium.

François MANIQUET coordinates this project financed by the Fonds Spéciaux de Recherche (FSR) of the Université catholique de Louvain. Margherita NEGRI is working under the scope of this project.

### **DEVELOPMENT AND IMPLEMENTATION OF TOPOLOGY OPTIMIZATION METHODS FOR THE DESIGN OF ELELCTROMAGNETIC DEVICES WITH PULTI-PHYSICS COUPLING**

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The project features three steps:

- Study and improvement of existing topology optimization tools, using a simple test case with the following two features: similarity with a real-world application and fast and accurate simulation to allow extensive numerical testing.
- Application of these tools to real-world cases such as a variable reluctance linear actuator or a ferrofluid micropump, with the objective of validating results obtained at the previous step.
- Application to two industrial test cases arising from a collaboration with two industrial partners.

This FRIA project (Fonds pour la Formation à la Recherche dans l'Industrie et dans l'Agriculture) is coordinated by Bruno DEHEZ, François GLINEUR, and Hamid BEN AHMED.

### **EXPECTATIONS AND VOLATILITY, EFFICIENT CAPITAL ACCUMULATION IMPLEMENTATION, BARGAINING, AND AUCTIONS (MIS ULYSSE)**

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The research program aims at developing the following research lines:

- How can the impact of expectations in the generation of excess volatility be reduced? What are the consequences of imposing rationality conditions on the agents' expectations formation process?
- Have the trade liberalization and economic integration processes a stabilizing effect on the economies? What is the impact of an increasing dispersion in the distribution of characteristics of the fundamentals of an economy on its stability?
- What are the constrained efficient capital accumulation policies in the neoclassical growth model in the presence on uninsurable idiosyncratic shocks and in the overlapping generations economies, how can they be implemented in a decentralized way?

- What is the fiscal tax/subsidy mix that allows to Pareto improve upon the competitive outcomes in overlapping generations economies with production?
- How can auctions and bargaining games be connected in a common framework and what can we learn from that; how can bargaining games competitive outcomes be implemented under non-competitive conditions between few agents?

Stéphane BOUCHE, Nguyen Thang DAO, Vladislav NORA, and Hiroshi UNO are working under the scope of this project coordinated by Julio DAVILA and sponsored by the Fonds National de la Recherche Scientifique.

## **INFINITE-DIMENSIONAL STRUCTURED CONVEX OPTIMIZATION**

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The main objective of this project consists in trying to generalize finite-dimensional algorithms of convex optimization to structured infinite-dimensional convex problems, i.e. problems involving an infinite number of variables and/or an infinite number of constraints. The following themes are considered:

- Dual approach for problems with a finite number of equality constraints
- Polynomial approximation for optimization problems on functional spaces .

In both cases, the objective is to obtain a structured finite-dimensional convex problem.

- Generalization of classical methods and concepts to infinite-dimensional problems, in particular study of duality theory and introduction of a notion of barrier function for a positive function.

Olivier DEVOLDER is working under the scope of this project coordinated by François GLINEUR and Yurii NESTEROV and sponsored by the Fonds National de la Recherche Scientifique.

## **RURAL-TO-URBAN MIGRATION AND THE TAKEOFF OF DEVELOPING ECONOMIES**

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Could urbanization help developing countries coming out of traditional agriculture and reaching higher growth paths? Is there an optimal urbanization level that could be reached thanks to better coordination? Would it lead to convergence of countries? In this paper, we bring into light the impact of rural-to-urban migration on human capital accumulation of a country and hence on its growth opportunities. To this end we use a model in which human capital accumulation, rural-to-urban mobility and productivity level are endogenised and such that increasing returns in human capital give rise to multiple equilibria and to coordination failures.

Bénédicte MEERT is working under the scope of this project financed by the Belgian Fonds National de la Recherche Scientifique (FNRS). Her work is supervised by Frédéric DOCQUIER.

## **HEALTH GEOGRAPHY. DO THE CHARACTERISTICS OF RESIDENTIAL LOCATIONS INFLUENCE HEALTH STATUS AMONG THE BELGIAN POPULATION? A SPATIAL AND ECONOMETRIC APPROACH**

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The general goal of this project is to describe and explain spatial variations in Belgians' health status in function of the characteristics of residential locations. Two health indicators are studied (subjective health and mortality) and various aspects of residential locations are tackled (notably, physical characteristics, housing conditions, access to local resources, sociocultural composition, and perception of the neighbourhood). Different methodological problems put forward by the literature are dealt with, notably, the influence of the chosen spatial unit, the difficult distinction between contextual effects and compositional effects, and the problems of statistical biases arising from the endogeneity of residential locations.

Claire DUJARDIN is working under the scope of this project financed by the Belgian Fonds National de la Recherche Scientifique (FNRS).

## **STUDY OF FAIR AND STRATEGICALLY DECENTRALIZABLE SOLUTIONS TO ALLOCATION PROBLEMS OF GOODS IN ECONOMIC ENVIRONMENTS WITH INDIVISIBILITIES, HETEROGENEITIES, OR EXTERNALITIES**

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One studies allocation problems of goods in economic environments with indivisibilities, heterogeneities, or externalities. The objective is to define rules that allow one selecting, whatever the problem one encounters, allocations considered as optimal. Therefore, rules should be efficient and fair and immune to manipulations of information by strategic agents. In each model one develops, one first follows an axiomatic approach to specify rules that satisfy efficiency and fairness criteria, then one applies implementation theory to determine if one can decentralize such rules. The motivation is hence normative and has, as its ultimate goal, enlightening political decision-makers about the compromises to make to solve such allocation problems.

Eve RAMAEKERS is working under the scope of this project financed by the Belgian Fonds National de la Recherche Scientifique (FNRS).

## **NONNEGATIVE MATRIX FACTORIZATION AND RELATED PROBLEMS: ALGORITHMS, COMPLEXITY AND APPLICATIONS**

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Nonnegative Matrix Factorization (NMF) is the problem of expressing a nonnegative matrix as the product of two low-rank nonnegative matrices. It is a new way of interpreting nonnegative data with applications in text mining, image processing, computational biology, ... One would like to study the complexity of NMF and related problems, design efficient algorithms and finally use the results for some applications.

Nicolas GILLIS, under the supervision of François GLINEUR, is working under the scope of this project financed by the Belgian Fonds National de la Recherche Scientifique (FNRS).

## **COOPERATION AND COMPETITION IN THE KNOWLEDGE ECONOMY**

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The goal of this project is to combine the general methods of industrial organization with the theories pertaining to coalition formation and to network structures in order to shed a new light on the issue of cooperation versus competition among firms. One focuses the analysis on the industries producing "ideas" (i.e., R&D, information, networks, etc). The basic questions are the following: How does the formation of networks affect the process and the intensity of innovation? How does the formation of networks modify the institutional framework in these industries?

This Fonds de la Recherche Fondamentale Collective (FRFC) project is coordinated by Ana MAULEON, Paul BELLEFLAMME, Vincent VANNETELBOSCH, and Xavier WAUTHY and financed by the Fonds National de la Recherche Scientifique (FNRS). Marco MARINUCCI is working under the scope of this project.

## **DEVELOPMENT OF MODELS AND EXACT APPROXIMATE SOLUTIONS METHODS FOR LINEAR AND NON-LINEAR, CONTINUOUS, MIXED AND INTEGER OPTIMIZATION PROBLEMS**

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This project studies the structure of difficult problems of optimization, of the identification of polynomial particular cases and the development of heuristic and exact methods of resolution.

This project financed by the Belgian Fonds National de la Recherche Scientifique (FNRS) gathers the Department of Computer Science of the Université Libre de Bruxelles, Brussels (coordinator: Bernard FORTZ), the Management School of the Université de Liège (coordinator: Yves CRAMA), the Numerical Analysis Research Unit of the Facultés Universitaires Notre-Dame de la Paix, Namur (coordinator: Philippe TOINT) and CORE, Université catholique de Louvain (coordinator: Laurence WOLSEY).

## **VIRTUAL MARKETPLACE FOR PATENT LICENSES (PATLICINFO)**

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Coordinated by Paul BELLEFLAMME (together with Bernard REMICHE, Faculty of Law), this multidisciplinary project aims at providing the scientific community and public authorities with a better understanding of the actual functioning of the markets for patents, the way they (self) organize, their growth potential and how public policies could help to coordinate their development. Articulating primary data collection on patent licensing with case studies, law with econometrics and formal treatments, this project has received the financial support of the Federal Public Service, Economy, SME's, Self-Employed and Energy. Beyond a thorough examination of factors that impede technology transfers through arm's length market transactions on the Belgian territory, this research will help to appraise the role to impart to virtual platforms, either as informational intermediaries ('infomediaries') or as two-sided markets for technologies.

## **ALGORITHMIC CHALLENGES IN LARGE NETWORKS**

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We look at some of the most recent and fundamental computational challenges raised by large networks. Our research activity is concentrated on questions related to the classification, equilibria calculation, visualization, and stochastic analysis of large networks. We address both theoretical and practical aspects of topics such as data-mining of text documents, web-searching, analysis of telephone, traffic and electricity networks, hierarchical reduction of large scale networks, and analysis of dynamical properties of large networks.

Vincent BLONDEL, Paul VAN DOOREN, Yurii NESTEROV, and Pierre-Antoine ABSIL are the co-promoters of this contract.

## **ECONOMETRIC MODELLING OF MULTIVARIATE FINANCIAL TIME SERIES**

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When developing multivariate time series models, a balance between sufficient flexibility and rapidly growing dimensionality (number of relations, of parameters) is necessary in order to incorporate the potentially time-varying dynamics of financial data in large dimensions. These issues are addressed by a range of complementary approaches (non-linear models, latent factor models, finite mixture models, locally stationary models).

Rainer VON SACHS, Luc BAUWENS, Christian HAFNER, and Johan SEGERS are coordinating this Actions de Recherche Concertées (ARC) project financed by the Communauté Française de Belgique. Arnaud DUFAYS and Alfonso VALDESOGO are working under the scope of this project.

## **ECONOMIC ANALYSIS OF HETEROGENEITY IN SOCIAL ORGANIZATION**

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The co-existence under diversity has become one of the most important and challenging issues in multi-cultural societies. The diversity that could be rooted in cultural, religious, linguistic, economic, ideological or historical differences can provide an accelerator and spark to the enrichment and progress of our society. Recent research points out the strong linkage between the diversity of human capital and talents across major cities in the United States to the creativity and innovative technology-based industries located there. The positive impact of diversity of cultural and skill assets could be mitigated by the fact that diversity and polarization may pose a threat to the cohesiveness and preservation of existing political and economic structures. For example, the recent enlargement of the European Union created a powerful Union of more than 450 million people and an economy of about nine trillion Euros, which is close in size to that of the United States. On the other hand, the cultural, historical, religious, and geographical diversity within the bloc with twenty official languages is overwhelming. The economic disparities among the country members are striking. The gaps would widen even further when (or if) Bulgaria, Romania, Croatia, and possibly, Turkey will join the Union. The crucial question is whether there exists a threshold on the degree of the intra-union heterogeneity that would preserve the sustainable cohesiveness of the Union and its ability to generate a consensus among its members.

Jean HINDRIKS, Pierre DEHEZ, Jacques-François THISSE, Vincent VANNETELBOSCH, and Shlomo WEBER coordinate this Actions de Recherche Concertées (ARC) project financed by the Communauté Française de Belgique. Filippo CALCIANO, Yassine LEFOUILLI, and Carlo ROSA are working under the scope of this project.

## **GEOGRAPHICAL MOBILITY OF FACTORS**

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Recent increases in trade and capital flows, foreign direct investments and labor mobility have intensified the integration of national and regional economies, and strengthened the competition between them for both better and worse. At the international or intra-national levels, economies with high skill endowments keep on attracting scarce factors, generating generous return rates and increasing their supremacy. The polarization of economic activities and the concentration of scarce factors (such as knowledge and skills) are shaping both the world and the internal evolution of countries. Through five connected axes, the purpose of this project is to enhance the understanding of the determinants of factor mobility and the interdependencies between factor mobility, public policies and economic performance. Axes 1 and 2 belong to the literature on the determinants of international factor mobility. The novelty of our approach is that it is based on new and unique databases on workers' and firms' mobility. In axes 3 to 5, we build bridges between different strands of literature to characterize the joint determination of factor mobility, economic performances and institutions (including public policies, norms, social capital, etc.).

Frédéric DOCQUIER (coordinator), Henri SNEESSENS, Jacques THISSE, Hylke VANDENBUSSCHE, and Bruno VAN DER LINDEN are working on this Actions de Recherche Concertées (ARC) project financed by the Communauté Française de Belgique.

## **MANAGING SHARED RESOURCES IN SUPPLY CHAINS**

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Supply Chain Management (SCM) is widely recognized as the largest source of potential gains in efficiency for the operations of organisations. 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 organisations 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.

The logical next step is to coordinate not only flows of goods and information, but also shared resources. Information technologies enable much tighter coordination mechanisms between independent organizations. On the other hand the increasing complexity of most services and goods require the utilization of ever more sophisticated (and expensive) resources. Those resources benefit in general from large economies of scale that can better be captured if the

resources can be shared among organizations. The goal is then to achieve the best possible performance with a decentralized control of these resources.

The Centre de Recherches et d'Etudes en Gestion Industrielle (CREGI) from the Facultés Universitaires Catholiques de Mons is taking part in this Actions de Recherche Concertées (ARC) project coordinated at CORE by Per AGRELL, Philippe CHEVALIER, Mathieu VAN VYVE and Laurence WOLSEY and financed by the Communauté Française de Belgique. Adel HATAMI and Tanja MLINAR are working under the scope of this project.

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## **ECONOMIC POLICY AND FINANCE IN THE GLOBAL ECONOMY, EQUILIBRIUM ANALYSIS, AND SOCIAL EVALUATION**

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The Belgian Science Policy administration has renewed this important research contract for a period of five years (2007-2011). CORE, Université catholique de Louvain, is the "Attraction Pole" and the promotor is Claude D'ASPREMONT.

The Belgian partners are ECON-IRES, Université catholique de Louvain (Promotor: Hylke VANDENBUSSCHE), Centrum voor Economische Studien, Katholieke Universiteit Leuven (Promotor: Erik SCHOKKAERT), Groupe d'Economie Quantitative et Optimisation, Facultés Universitaires Notre-Dame de la Paix, Namur (Promotor: Gani ALDASHEV), Fakulteit Economie en Bedrijfskunde, Universiteit Gent (Promotor: Dirk VAN DE GAER), and European Center for Advanced Research in Economics and Statistics (ECARES), Université Libre de Bruxelles, Brussels (Promotor: Philippe WEIL). The European partners are Groupement de Recherche en Economie Quantitative d'Aix-Marseille, Universités d'Aix-Marseille II and III (Promotor: Jean-Benoît ZIMMERMANN), the London School of Economics (Promotor: Frank COWELL), Institut d'Economie Industrielle, Université de Toulouse 1 Capitole (Promotor: Helmuth CREMER), and Universiteit Maastricht (Promotor: Franz PALM).

The objective of the project is to simultaneously develop analytical tools for economic equilibrium analysis and use these tools in the fields of public policy and regulation. The strategic and mechanism design approaches to equilibrium theory in economics, as well as the normative dimension of the analysis and the possible use of optimization methods have to be developed. Various aspects of public decision, both at the micro and the macro level, and the regulation of both social and industrial organizations are examined. Econometric models should support the theoretical analysis.

Rafael DE MELO, Emanuele FORLANI, and Koen JOCHMANS are working within the scope of this project.

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## **OPTIMIZATION OF POSITIVE POLYNOMIALS: NUMERICAL ASPECTS**

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This project sponsored by the Programme Hubert Curien PHC TOURNESOL lies at the common frontier in applied mathematics between algebraic geometry (representation of nonnegative polynomials as sums of squares), numerical analysis (analysis of sensitivity to modeling uncertainties or rounding errors), and mathematical programming (convex and semidefinite optimization, linear matrix inequalities), with potential applications to information and

communication technologies (systems and control, discrete optimization). Another application area deals with combinatorial optimization (lattice point counting and generating functions).

This project is coordinated by François GLINEUR and Paul VAN DOOREN.

## **ASSESSING AND DEVELOPING INITIATIVES OF COMPANIES TO CONTROL AND REDUCE COMMUTER TRAFFIC**

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The objective of this project is to improve public and private decision-making and guide investments in employer-based commuter transport schemes (also called mobility management plans) using a case study analysis and a large scale business questionnaire that will aim at determining what characteristics (company and/or worksite related) make commuter choice programs successful in reducing (and/or controlling) commuter car traffic. This degree of "successfulness" is expressed in terms of savings in travel time and travel distance, potential in inducing modal shift, contribution to a fair division of costs, and employer and employee acceptance, and will be assessed using a spatial and economic model. Hence, the project's results contribute to a policy aimed at inducing sustainable mobility.

The partners of this projects are the Universiteit Gent (coordinator : Frank WITLOX), the Facultés Universitaires Catholiques de Mons (promotor : Bart JOURQUIN), CORE, Université catholique de Louvain (promotor : Isabelle THOMAS), and the Universiteit Antwerp (promotor : Ann VERHETSEL).

Laurent VAN MALDEREN is working within the scope of this project coordinated by Isabelle THOMAS and financed by the Belgian Science Policy.

## **SYSTEMATIC ANALYSIS OF HEALTH RISKS AND PHYSICAL ACTIVITY ASSOCIATED WITH CYCLING POLICIES (SHAPES)**

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The project is at the crossroads of transport and health research and integrates the results of basic studies and experiments in each expertise to support future transport and public health policies. The main objective is to analyze the risks and benefits (voluntary and involuntary) of a modal shift from passenger cars to cycling in an objective way. The specific objective is here to understand and model the spatial aspect of commuting by bicycle in Belgium as well as the associated risks.

This project is coordinated by Isabelle THOMAS and financed by the Belgian Science Policy. The partners are the Vlaamse Instelling voor Technologisch Onderzoek Integrale Milieu Studies (coordinator : Luc INT PANIS), the Faculty of Physical Education of the Vrije Universiteit Brussel (promotor : Romain MEEUSEN), and CORE, Université catholique de Louvain (promotor: Isabelle THOMAS). Julie FRÈRE and Gregory VANDENBULCKE are working within the scope of this research.

## **PUBLIC GOODS, PUBLIC PROJECTS, EXTERNALITIES**

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Defining European policies in provision and financing public goods and services or environment defense is a core challenge for the building of a political Europe. Rather than a political answer, this programme invites to advance the part of economic theory addressing these crucial



questions. Topics include pure public goods and public projects, all kind of impure public goods, public goods as production inputs, externalities, environment. The outcome of the programme will be the creation and development of an effective research network gathering theorists, specialists of political economy and of history of economic analysis and practitioners of public economics.

The participants to this program financed by the European Science Foundation are the University of Graz (promotor: Richard STURN), the Max Planck Institute for Research on Collective Goods, Bonn (promotor: Martin HELLWIG), the Bogazici University (promotor: Unal ZENGINOBUZ), CERMSEM, Université Paris I (Panthéon-Sorbonne) (promotor: Monique FLORENZANO), and CORE, Université catholique de Louvain (promotor: Jean HINDRIKS). Christelle SAPATA is working within the scope of this project.

## **PUBLIC POLICY, MARKET ORGANIZATION AND TRANSITION ECONOMIES**

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The project is lead by a consortium which includes CORE, Université catholique de Louvain, project co-ordinator (coordinator: Jean HINDRIKS), the Central European University (CEU), Budapest (promotor: Istvan TEPLAN), the Center for Economic Research and Graduate Studies of Charles University (CERGE), Prague (promotor: Ivan WILHELM), and the Economics Institute, Academy of Sciences of the Czech Republic (EI), Prague (promotor: Lubomir LIZAL). The European Commission is financing this project for a period of four years (2006-2010).

The aim of the project is to prepare students for careers in teaching, research or government services and to prepare researchers to participate actively in the analysis of the fundamental economic questions facing market regulation and transition economies.

Maia GEJADZE, Salome GVETADZE, Deniz NEBIOGLU, Dzianis ROZHYN, and Bezik SAMKHARADZE are working within the scope of this project.

## **EUROPEAN DISTRIBUTED ENERGY PARTNERSHIP**

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The EU-DEEP project aims at developing business models for the deployment of Distributed Energy Resources (DER) in the European market. The project involves 39 partners, among energy operators, industrial manufacturers, research centers, academics, professionals and national agencies and provides an interdisciplinary approach mixing engineering and economics both in theoretical and applied contexts. UCL (CORE and the Louvain School of Management) is involved in the subproject on sustainable and dynamic regulation models for DER, including analyses of technical and economic organization of the activity, related to coordination, information, and market efficiency concerns. The work contributed to the development of a sustainable European regulation model for the integration of DER in unbundled energy markets, aiming at both theoretical and institutional models. The partners in the subproject financed by the European Commission cooperate closely with the research institute Fondazione Eni Enrico Mattei in Milano.

The coordinator at CORE is Per AGRELL.

## **SOCIAL SECURITY AND DIFFERENTIAL LONGEVITY**

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This project focuses on the issue of the optimal design of Social Security when individuals have different life expectancies and tries to answer the following questions: how should differential mortality be included in pension systems? How should contributions and benefits be linked to life duration? The answers are likely to depend on the modeling of the survival function (whether individuals or public policies can influence it or not). This project lies at the frontier of public economics, health economics, behavioral economics, and the economics of ageing.

Marie-Louise LEROUX is working within the scope of this project financed by the Marie Curie (IEF) FP7 European Commission Programme.

## **SUSTAINCITY**

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The main goal of this project is to address the modelling and computational issues of integrating modern mobility simulations with the latest micro-simulation land use models. The project intends to advance the state-of-the-art in the field of the micro-simulation of prospective integrated models of Land-Use and Transport (LUTI). On the modelling side, the main challenges are to integrate a demographic evolution module, to add an environmental module, to improve the overall consistency and, last, but not least, to deal with the multi-scale aspects of the problems: several time horizons and spatial resolutions are involved.

Alain PHOLO BALA is working under the scope of this project financed by the European Commission and coordinated at CORE by Isabelle THOMAS.

## **LOGISTICS IN WALLONIA. EXECUTIVE MASTER IN INTERNATIONAL SUPPLY CHAIN MANAGEMENT**

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This program for managers who want to have a broader view on supply chain management is coordinated by Philippe CHEVALIER and financed by the Forem (Service public wallon de la formation et de l'emploi). It is based on unique teaching methods in order to ensure that the participants gain the full benefit of their investment, integrating very tightly theory and practice.

Each of the seven modules includes a real life, full-day on site case study including the visit of a logistic or industrial site. The participants work the case in small groups, this gives them an immediate opportunity to confront the course material, their experience and the group exchange dynamics to a current real-life situation. This reality-based approach offers an opportunity of opinion confrontation between the participants, the trainers, and the hosting professionals.

Each module is also taught by an international team of faculty in order to give participants an international view on each subject. In addition, two modules are organized outside Belgium.

## **MODELING AND OPTIMIZATION OF LOGISTIC FLOWS AND THEIR VARIABILITY**

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In order to be competitive, companies are more and more interested in the management of their entire supply chain from the raw materials to the final product. The first objective of this research is to develop better models for the variability of the flows of goods and orders in a supply chain. This variability can induce large buffering costs and it is strongly affected by the decisions taken for the management of the supply chain. The aim is to be able to optimize the decisions in order to improve the performance of the supply chain, taking the variability into account.

Ying WEI is working within the scope of this project coordinated by Philippe CHEVALIER and financed by the Région Wallonne.

## **TRANSLOGISTICS**

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The Walloon government has funded a 2 year and a half research project in transport and logistics through the "Marshall Plan" which involves such firms as Alstom, Alcatel, SNCB, and Arcelor-Mittal. The purpose of this project is to increase the communication skills and technologies in rail, road, and waterway transport firms.

This project is coordinated by Per AGRELL, Philippe CHEVALIER, and Pierre SEMAL and financed by the Région Wallonne.

## **LINKING THEORY AND PRACTICE IN THE VEHICLE ROUTING OPTIMIZATION**

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By reexamining in depth the existing approaches to the Vehicle Routing Optimization, and recentering on their practicability, this research program can potentially, from an industrial viewpoint, lead to

- improvements in the quality of the results furnished to the industrial clients (both in computing time and solution quality);
- increase the number of cases in which software for vehicle routing optimization can provide adequate responses.

From a scientific viewpoint this program should lead to a better understanding of the problems fixed by companies dealing with delivery/collection of goods and extend its research to deal with real applications.

Joël RAUCQ is working under the scope of this project coordinated by Laurence WOLSEY and financed by Routing International.

## **L'ORÉAL SUPPLY CHAIN PARTNERSHIP**

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The partnership has the objective to jointly develop the logistics and supply chain management skills and practices of L'Oréal, through training, analysis, project work at multiple levels and increased awareness of the functional scope within the supply chain.

Géraldine STRACK is working within the scope of this project coordinated by Per AGRELL, Philippe CHEVALIER, and Pierre SEMAL and financed by L'Oréal.

## **LEGAL AND ECONOMIC ANALYSIS OF THE INTERNATIONAL TRANSFERS OF ENVIRONMENTALLY FRIENDLY TECHNOLOGIES**

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The research project financed by the "Prix GdF-Suez" and coordinated by Paul BELLEFLAMME (together with Bernard REMICHE, Faculty of Law) concerns the analysis of international transfers of environmentally friendly technologies, from both a legal and an economic point of view. In particular, the project aims at understanding better the mechanisms through which so-called "green technologies" are diffused, and to assess what regulatory tools are the most suitable to promote such diffusion.

## **LONG TERM ENERGY PRICES**

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The objective of this project is to construct long term equilibrium models of interacting energy forms under uncertainty with the view of constructing consistent long term energy prices.

Olivier DURAND-LASSERVE is working under the scope of this project coordinated by Yves SMEERS and financed by GdF Suez Belgium.

## **REAL OPTIONS, SYSTEMS DYNAMICS, AND BOOM AND BUST IN INVESTMENTS**

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The objective of this project is to construct stylized (real options, system dynamics) equilibrium models of investment in competitive electricity markets with the view of analyzing the possible emergence of investment cycles.

Joachim GAHUNGU is working under the scope of this project coordinated by Yves SMEERS and financed by GdF Suez Belgium.

## **SHORT TERM ENERGY PRICES**

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The objective of this project is to construct multifactor risk models of short term electricity markets with the view of understanding forward electricity markets.

Gauthier DE MAERE D'AETRYCKE is working within the scope of this project coordinated by Yves SMEERS and financed by GdF Suez Belgium.

## **ANALYSIS OF STRATEGIC DECISIONS AND OF GROUP FORMATION IN DIFFERENT ECONOMIC SITUATIONS**

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The solution of many economic, social or political issues involves some cooperation among decision makers. A classical way to tackle these issues is to study the possibility for decision makers

to form coalitions or networks. Which coalitions or networks are likely to be stable? Which coalitions or networks are efficient, i.e. maximizing the overall wealth? Using game theoretical tools, the project aims at deriving results that are general in the sense that they apply to a wide range of different environments: economics of innovation (joint ventures, R&D collaborations), economics of retailing and distribution (trade associations), and international economics (bilateral trade agreements, customs unions).

This project financed by the Ministerio de Education y Ciencia, Spain, is coordinated by Ana MAULEON and Vincent VANNETELBOSCH.

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## **BEHAVIORAL ECONOMICS, NETWORKS, AND COMPETITION**

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We will study equilibrium concepts in coalition and network formation. We will try to answer the following questions: Which coalitional networks are likely to be stable? Which coalitional networks are efficient? Will efficient coalitional networks be formed? This analysis will be conducted theoretically and the predictions tested in the laboratory. In addition, we will also analyze social networks. Social preferences and network structures necessarily interplay and we will provide theoretical results and experimental evidence on this relationship.

This project financed by the Spanish Ministry of Sciences and Innovation, is coordinated by Ana MAULEON and Vincent VANNETELBOSCH.

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## **EVALUATION, CHOICE AND DECISION IN URBAN AND PERIURBAN LAND USE. AN INTERDISCIPLINARY APPROACH OF RESIDENTIAL AND DAILY MOBILITIES**

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The project ECDESUP is funded by the Agence Nationale de Recherche (ANR, France). It is led by ThéMA at the University of Besançon (coordinator: Pierre FRANKHAUSER). It involves researchers from the Université of Strasbourg (promotor: Dominique ANSEL), from the Centre d'Economie et Sociologie Appliquées à l'Agriculture et aux Espaces Ruraux (CESAER) in Dijon (promotor: Mohamed HILAL) and CORE, Université catholique de Louvain (promotor: Dominique PEETERS). It addresses questions related to residential choice and the daily mobility of households, which represent key issues for the sustainable management of urban territories particularly in growing urban fringes or in deprived neighbourhoods.

Geoffrey CARUSO, Dominique PEETERS, and Isabelle THOMAS are working on this project at CORE.

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## **MEASURING PRODUCTIVE EFFICIENCY IN ELECTRICITY DISTRIBUTION: AN APPLICATION TO INCENTIVE REGULATION OF SWISS UTILITIES**

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The project investigates and develops firm-level cost-efficiency measures for use in incentive regulation schemes aiming at the definition of reliable methods. Methods used in practice are not systematically robust, as reported in several studies (Horrace and Schmidt, 1996; Farsi and Filippini, 2004; Smith and Street, 2005; Farsi et al., 2006; Farsi and Filippini, 2009), jeopardizing the effectiveness of incentive regulation. The models usually differ in terms of the different

assumptions, often distribution assumptions, for separating the error and the inefficiency components. These assumptions are in general non-testable, because the “true” values of inefficiency are unobserved. This study will propose a review of a selection of benchmarking methods for the case of Switzerland’s electricity distributors, but also cross-validation of a sound development methodology based on econometric tests and model specification decisions aiming at alternative starting hypotheses regarding statistical distribution, variation over time and separability of inefficiency and unobserved heterogeneity. The analysis will be tailored to the context of Switzerland, characterized by a relatively large number (about 800) of medium and small companies.

The project is financed by the Swiss Federal Energy Office and done in collaboration with ETH, Prof. Filippini and the University of Lugano (USI), Institute for Microeconomics and Public Economics, Mecop. The coordinator at CORE is Per AGRELL.

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## PUBLICATIONS

- CORE REPRINTS
- OTHER PUBLISHED PAPERS
- BOOKS
- EDITED BOOKS AND REPORTS
- ARTICLES IN NEWSPAPERS
- CORE DISCUSSION PAPERS
- OTHER DISCUSSION PAPERS AND MANUSCRIPTS
- EDITORIAL ACTIVITIES





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- Tanja MLINAR, Alejandro LAMAS, and Philippe CHEVALIER. A revenue management approach for shared resources production systems. Conference Proceedings: 3<sup>rd</sup> International Conference on Information Systems, Logistics, and Supply Chain. Casablanca, Morocco, April 13-16, 2010.
- Kaz MIYAGIWA, Huasheng SONG, and Hylke VANDENBUSSCHE. Innovation, antidumping, and retaliation. CEPR Discussion Paper n° 7916, London, 2010.
- Alain PHOLO BALA. Descriptive and geographical data for European cities. SustainCity Working Paper 2.6, Université catholique de Louvain, Belgium.
- Sandra PONCET, Walter STEINGRESS, and Hylke VANDENBUSSCHE. Financial constraints in China: firm-level evidence. IRES Discussion Paper n° 2009035, Université catholique de Louvain, Belgium, 2009.
- Grégory PONTIÈRE and Pierre PESTIEAU. Myopia, regret and risky behaviors. Mimeo, 2009.

- Federica RUSSO, Guillaume WUNSCH, and Michel MOUCHART. Inferring causality through counterfactuals in observational studies. Some epistemological issues. Discussion Paper 1029, Institut de Statistique et Biostatistique et Sciences Actuarielles, Université catholique de Louvain, Louvain-la-Neuve, Belgium, 2010.
- Erik SCHOKKAERT, Luc VAN OOTEGEM, and Elsy VERHOFSTADT. Measuring job quality and job satisfaction. Discussion Paper 2009/620, Universiteit Gent, 2009.
- Henry TULKENS. If no treaty in Copenhagen, how about a climate bailout by the US? ClimNeg Policy Brief n° 7, Chaire Lhoist Berghmans in Environmental Economics and Management, 2009.

## ■ EDITORIAL ACTIVITIES

### PER AGRELL

---

- associate editor  
*International Journal of Production Economics*

### LUC BAUWENS

---

- associate editor  
*Empirical Economics*  
*International Econometric Review*  
*Journal of Financial Econometrics*  
*Risk Letters*
- member of the editorial board  
*Economics Research International*  
*Journal of Applied Econometrics*

### PAUL BELLEFLAMME

---

- associate editor  
*E-conomics, the Open-Access, Open-Assessment E-Journal*  
*Information Economics & Policy*
- member of the editorial board  
*Regards Economiques*

### RAOUF BOUCEKKINE

---

- associate editor  
*Annales d'Economie et Statistique*  
*Journal of Public Economic Theory*  
*Macroeconomic Dynamics*  
*Mathematical Population Studies*  
*Mathematical Social Sciences*

### THIERRY BRÉCHET

---

- guest editor  
*International Economics/Economie Internationale* (special issue on "Public Environmental Policy: Insights from Economic Theory")
- member of the editorial board  
*Regards Economiques*

### CLAUDE d'ASPREMONT

---

- associate editor  
*Games and Economic Behavior*  
*Journal of Mathematical Economics*  
*Journal of Public Economic Theory*  
*Revue de Philosophie Economique*  
*Social Choice and Welfare*

### DAVID DE LA CROIX

---

- associate editor  
*Journal of Economic Dynamics and Control*
- member of the editorial board  
*Clometrica*  
*Fiscal Studies*  
*Recherches Economiques de Louvain – Louvain Economic Review*

### LOUIS ECKHOUDT

---

- associate editor  
*Geneva Risk and Insurance Review*  
*Journal of Risk and Insurance*  
*Revue Economique*

### MARC FLEURBAEY

---

- managing editor  
*Social Choice and Welfare*

### BERNARD FORTZ

---

- associate editor  
*INFORMS Journal on Computing*

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**VICTOR GINSBURGH**

---

- co-editor  
*Journal of Wine Economics*
- associate editor  
*Recherches Economiques de Louvain – Louvain Economic Review*

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**CHRISTIAN HAFNER**

---

- associate editor  
*Banking and Finance Review*  
*Computational Statistics*  
*International Econometric Review*  
*Studies in Nonlinear Dynamics and Econometrics*

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**P. JEAN-JACQUES HERINGS**

---

- associate editor  
*Decisions in Economics and Finance*  
*European Economic Review*  
*International Journal of Game Theory*  
*Journal of Mathematical Economics*

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**JEAN HINDRIKS**

---

- member of the Editorial Board  
*Fiscal Studies*  
*Reflets et Perspectives de la Vie Economique*  
*Regards Economiques*

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**FRANÇOIS MANIQUET**

---

- editor  
*Economics and Philosophy*
- member of the Editorial Board  
*Mathematical Social Sciences*  
*Social Choice and Welfare*  
*Regards Economiques*  
*Revue d'Economie Politique*

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**YURII NESTEROV**

---

- associate editor  
*Foundations of Computational Mathematics*  
*Optimization and Engineering*  
*Optimization Methods and Software*

**PIERRE PESTIEAU**

---

- co-editor  
*Journal of Public Economics*
- associate editor  
*CESifo Economic Studies*  
*Economica*  
*Finanzarchiv*  
*Journal of Public Economic Theory*

**PIERRE PICARD**

---

- co-editor  
*The Manchester School*

**ERIK SCHOKKAERT**

---

- member of the editorial board  
*Economics and Philosophy*  
*Health Policy*  
*Recherches Economiques de Louvain – Louvain Economic Review*  
*Social Choice and Welfare*

**YVES SMEERS**

---

- associate editor  
*Energy Economics*

**JACQUES-FRANÇOIS THISSE**

---

- associate editor  
*International Journal of Economic Theory*  
*International Journal of Industrial Organization*  
*Japanese Economic Review*  
*Journal of Economic Geography*  
*Journal of Economics and Management Strategy*  
*Regional Science and Urban Economics*

**ISABELLE THOMAS**

---

- member of the editorial board  
*Cybergeog* (European Journal of Geography on the Internet)  
*L'Espace Géographique*  
*International Regional Science Review*



**XAVIER WAUTHY**

---

- member of the editorial board  
*Recherches Economiques de Louvain – Louvain Economic Review*

**LAURENCE WOLSEY**

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- associate editor  
*Mathematical Programming A*



# 4

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## CORE LECTURE SERIES



The "CORE Foundation" was set up with the goal of taking new initiatives and stimulating research activities at CORE. One of these initiatives was the creation of a CORE Lecture Series. Regularly, a young internationally renowned scientist is invited to give a set of lectures in one of the research areas of CORE. Two lectures were given during the period covered by this report.

- **SEPTEMBER 14-26, 2009, YACINE AIT-SHALIA, PRINCETON UNIVERSITY (PA), USA**  
*Jumps and Volatility in High Frequency Financial Data*

### PROGRAMME

- September 14, 2009  
**Lecture 1.** Analyzing the spectrum of high frequency returns
- September 15, 2009  
**Lecture 2.** Testing for jumps in high and low frequency returns  
**Lecture 3.** Finite or infinite jump activity in high frequency data, and estimating the degree of jump activity
- September 16, 2009  
**Lecture 4.** Disentangling volatility from jumps in high frequency data  
**Lecture 5.** Dealing with market microstructure noise in volatility estimation

- **JUNE 21-25, 2010, ALEXANDER SHAPIRO, ISYE, GEORGIA TECH (GA), USA**  
*Stochastic Programming: Modeling and Theory*

### PROGRAMME

- June 21, 2010  
**Lecture 1.** Introduction and examples of stochastic programming modeling
  - News vendor and inventory models
  - Portfolio selection problem
- June 22, 2010  
**Lecture 2.** Two and multistage stochastic programming
  - Two stage stochastic programming with recourse: basic theoretical properties, duality, optimality conditions, ...
  - Multistage stochastic programming: concept of nonanticipativity, dynamic programming equations, duality
- June 23, 2010  
**Lecture 3.** Statistical inference of Monte Carlo sampling approach
  - Sample average approximation method
  - Rates of convergence, asymptotics
  - Complexity analysis
  - Validation analysis
  - Variation reduction techniques

- June 24, 2010
  - Lecture 4.** Risk averse stochastic programming
    - Mean risk modeling
    - Coherent risk measures
    - Multistage risk averse optimization
- June 25, 2010
  - Lecture 5.** Miscellaneous
    - Problems with chance (probabilistic) constraints
    - Stochastic approximation method
    - Stochastic dual dynamic programming approach

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## **IMMAQ LECTURE SERIES**





IMMAQ is a multisectorial institute associating researchers from three different research entities: CORE, IRES, ISBA and one consulting entity: SMCS. They develop and use in their various fields of expertise a coherent set of tools and methods for quantitative modelling and analysis.

Three lectures were organized during the period covered by this report.

- January 15, 2010

Paul EMBRECHTS, Swiss Federal Institute of Technology, Zurich, Switzerland

*The financial crisis: warnings, guilt, and a mathematical theorem*

The current financial crisis clearly shows that risk management structures, as well as risk management methodology within banks and the insurance industry have not functioned as was hoped for in a period of extreme stress. Also the regulatory framework put into place over the last 20 years was not able to prevent a considerable systemic risk. Not only were insurance companies (like AIG) deeply involved in the credit crisis, but also insurance models (like the Gaussian Copula model for CDO pricing) got their share of blame. The speaker reviewed some of these aspects from a personal, academic-actuarial point of view and tried to offer light on the questions «Who is to blame?» and «How to go forward?». A mathematical theorem rounded off the presentation.

- March 11, 2010

Christian GOLLIER, Toulouse School of Economics, France

*What should we do for the future? The economics of discounting and sustainable development*

It is often suggested that economic theory is not favourable to sustainable development, mainly because of the relatively high discount rate used to evaluate investment projects. The speaker reviewed the various arguments that have been proposed in the literature to use a smaller rate to discount more distant cash flows. All of them rely on the treatment of the uncertainty affecting the future.

- May 6, 2010

Franklin ALLEN, Wharton School, University of Pennsylvania, Philadelphia (PA), USA

*Emerging from the crisis*

Many proposals for reforming the financial system have been put forward to alleviate the effects of or prevent future crises. Most of these proposals cover one or two aspects of reforms. This paper considers a broad range of reforms including measures to prevent asset price bubbles, checks, and balances for avoiding public sector risk taking, solutions for the global imbalance problem, the resolution of large complex financial institutions, a full competition review of the financial services sector, and banking regulation of the financial services sector.



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## SEMINARS & WORKSHOPS

- ECONOMETRICS SEMINAR
- ECONOMIC THEORY SEMINAR
- MATHEMATICAL PROGRAMMING SEMINAR
- TRADE AND ECONOMIC GEOGRAPHY SEMINAR
- ENVIRONMENTAL ECONOMIC SEMINAR
- ECORE, joint CORE-ECARES SEMINAR
- SOCIAL AND WELFARE SEMINAR



The three regular weekly seminars in econometrics, economic theory, and mathematical programming were held from September through June. Other seminars series were also organized within the framework of outside research contracts.

## ■ ECONOMETRICS SEMINAR

- September 23, 2009. Joachim GRAMMIG, Universität Tübingen, Germany  
*Measuring contributions to price discovery: a new methodology*
- October 7, 2009. Matteo BARIGOZZI, ECARES, Université Libre de Bruxelles, Brussels, Belgium  
*A semionparametric vector MEM. Disentangling commonness and idiosyncrasy for a large panel of volatilities*  
(Joint CORE-ISBA seminar, in the frame of ARC project on time series)
- October 14, 2009. Thi Ngoc Tuan BUI, Katholieke Universiteit Leuven, Belgium and Piet SERCU, Katholieke Universiteit Leuven and LSM, UCL, Belgium  
*Trading systems efficiency and noise: price-discovery dynamics in the two-tier Brussels exchange*  
(Joint with LSM Finance Seminar)
- October 28, 2009. Luc RENNEBOOG, CentER, Universiteit Tilburg, The Netherlands  
*Buying beauty: on prices and returns in the art market*  
(Joint with LSM Finance Seminar)
- November 4, 2009. Koen JOCHMANS, CORE, UCL, Belgium  
*Semiparametric estimation of non-additive models with a binary endogenous variable*
- November 18, 2009. Michael ROCKINGER, HEC, Université de Lausanne  
*Fourth order pseudo maximum likelihood methods*  
(Joint CORE-ISBA-LSM Finance Seminar, in the frame of the ARC project on time series)
- November 25, 2009. Carsten BURHOP, Max Planck Institute, Universität zu Köln, Germany  
*Transactions costs in an emerging stock market: Berlin 1892-1913*  
(Joint with LSM Finance Seminar)
- December 2, 2009. Jorgen DOORNIK, Nuffield College, Oxford, United Kingdom  
*Econometric model selection with more variables than observations*
- December 7, 2009. Valentino DARDANONI, Università di Palermo, Italy  
*Testing for selection effects in insurance markets with unobservable types*  
(Joint with Economic Theory Seminar)
- December 9, 2009. Geert DHAENE, Katholieke Universiteit Leuven, Belgium  
*Split-panel jackknife estimation of fixed-effect models*
- December 16, 2009. Albert J. MENKVELD, Vrije Universiteit Amsterdam and Tinbergen Instituut, Amsterdam, The Netherlands  
*Price pressures*

- January 27, 2010. Andrea TORTORA, Università Bocconi, Milano, Italy  
*Exchange rate forecasting: Bayesian model averaging and structural instability*
- February 3, 2010. Dimitris KOROBILIS, University of Strathclyde, Glasgow, Scotland  
*Assessing the transmission of monetary policy shocks using dynamic factor models*  
(Joint CORE-ISBA Seminar)
- February 26, 2010. Massimiliano CAPORIN, Università degli Studi di Padova, Italy  
*Ranking multivariate GARCH models by cross-sectional dimension*  
(Joint CORE-ISBA Seminar)
- February 26, 2010. Michael McALEER, Erasmus Universiteit Rotterdam, The Netherlands  
*Optimal risk management before, during and after the 2008-09 financial crisis*  
(Joint CORE-ISBA Seminar)
- March 3, 2010. Toru KITAGAWA, University College of London, United Kingdom  
*Testing for instrument independence in the selection model*
- March 10, 2010. Rik FREHEN, Universiteit Tilburg, The Netherlands  
*Efficient estimation of firm-specific betas and its benefits for asset pricing tests and portfolio choice*  
(Joint with LSM Finance Seminar)
- March 17, 2010. Xavier D'HAULTFOEUILLE, CREST, Paris, France  
*Identification of mixture models using support variations*
- March 24, 2010. Richard A. DAVIS, Columbia University, New York (NY), USA  
*The extremogram: a correlogram of extreme events*  
(Joint CORE-ISBA Seminar, in the framework of the ARC project on time series)
- March 31, 2010. Tony CAI, The Wharton School, University of Pennsylvania (PA), USA  
*Robust and generalized nonparametric regression*  
(Joint CORE-ISBA Seminar, in the framework of the ARC project on time series)
- April 21, 2010. Peter ROOSENBOOM, Rotterdam School of Management, Erasmus Universiteit Rotterdam, The Netherlands  
*Synergies disclosure in mergers and acquisitions*  
(Joint with LSM Finance Seminar)
- April 28, 2010. Genaro SUCARRAT, Universidad Carlos III de Madrid, Spain  
*Automated model selection in finance: general-to-specific modeling of the mean, variance, and density*
- May 5, 2010. Mark VAN ACHTER, Universität Mannheim, Germany  
*Internalization, clearing and settlement, and stock market liquidity*  
(Joint with LSM Finance Seminar)
- May 12, 2010. Bent NIELSEN, Nuffield College, Oxford, United Kingdom  
*Discussion: "The forward search: theory and data analysis"*
- May 12, 2010. Rodney STRACHAN, The Australian National University, Canberra, Australia  
*Bayesian inference in the time varying cointegration model*

- May 19, 2010. Jérémie LEFEBVRE, Facultés Universitaires Catholiques de Mons, Belgium  
*Block trades and market liquidity on Euronext Paris*  
(Joint with LSM Finance Seminar)
- May 25, 2010. Jean-Marc ROBIN, Université Paris Panthéon-Sorbonne, France and University College London, United Kingdom  
*On the dynamics of unemployment and wage distributions*  
(Joint ECORE-KUL Seminar, the seminar took place at Katholieke Universiteit Leuven, Belgium)

## ■ ECONOMIC THEORY SEMINAR

- October 5, 2009. Jan EECKHOUT, Universitat Pompeu Fabra, Barcelona, Spain and University of Pennsylvania (PA), USA  
*Assortative learning*
- October 18, 2009. Fabio MARINI, IRES, UCL, Belgium  
*The economic value of virtue*
- October 26, 2009. Cuong LE VAN, Université Paris Panthéon-Sorbonne, France  
*With exhaustible resources, can a developing country escape from the poverty trap?*
- November 2, 2009. Antoine BILLOT, Université Paris Panthéon-Assas, France  
*Case-based decision theory: exponential similarity and the perspective of memory*
- November 16, 2009. Hervé MOULIN, Rice University, Houston (TX), USA  
*Clearing supply and demand under bilateral constraints*
- November 16, 2009. Nizar ALLOUCH, Queen Mary University of London, United Kingdom  
*A competitive equilibrium for a warm glow economy*
- November 23, 2009. Harold HOUBA, Vrije Universiteit Amsterdam and Tinbergen Instituut, Amsterdam, The Netherlands  
*The effects of leniency on maximal cartel pricing*
- December 7, 2009. Valentino DARDANONI, Università di Palermo, Italy  
*Testing for selection effects in insurance markets with unobservable types*  
(Joint with Econometrics Seminar)
- December 14, 2009. Claudio PIGA, Loughborough University, Leicestershire, United Kingdom  
*The circular city with heterogeneous firms*
- December 21, 2009. Annick LARUELLE, Universidad del Pais Vasco, Bilbao, Spain  
*Egalitarianism and utilitarianism in committees of representatives*
- January 11, 2010. Chiara CANTA, Toulouse School of Economics, France  
*A new rationale for cost reimbursement: price regulation with horizontal and vertical differentiation*
- January 18, 2010. Francis BLOCH, Ecole Polytechnique, Paris, France  
*Endogenous formation of alliances in conflicts*
- January 21, 2010. Johannes GIERLINGER, Toulouse School of Economics, France  
*Hedging priors*  
(Joint with Environmental Economics Seminar)

- January 25, 2010. Andrew B. BERNARD, Tuck School of Business at Dartmouth, Hanover (NH), USA  
*Multi-product firms and trade liberalization*  
(Joint with Trade & Economic Geography Seminar)
- January 25, 2010. Konrad MIERENDORF, Universität Bonn, Germany  
*Optimal dynamic mechanism design with deadlines*
- January 25, 2010. Galina ZUDENKOVA, Universidad Carlos III de Madrid, Spain  
*Split-ticket voting: an implicit incentive approach*
- January 26, 2010. Petros MILIONIS, Brown University, Providence (RI), USA  
*Innovation-based growth & long-run economic development*
- February 1, 2010. Chantal MARLATS, Université Paris Panthéon-Sorbonne, France  
*A folk theorem for stochastic games with finite horizon*
- February 1, 2010. Aristotelis BOUKOURAS, University of Warwick, United Kingdom  
*Contract law and development*
- February 1, 2010. Adrien VIGIER, University of Cambridge, United Kingdom  
*Robust networks*
- February 8, 2010. Eckhard JANEBA, Universität Mannheim, Germany  
*City competition for the creative class*
- February 15, 2010. Pierre PICARD, Ecole Polytechnique de Paris, France  
*Participating insurance contracts and the Rothschild-Stiglitz equilibrium puzzle*
- February 25, 2010. Bert WILLEMS, TILEC and CentER, Universiteit Tilburg, The Netherlands  
*Exclusivity contracts, insurance, and financial market foreclosure*  
(Joint with Mathematical Programming Seminar and Electrabel)
- February 25, 2010. Golbon ZAKERI, University of Auckland, New Zealand  
*Swapping generators' assets: market salvation or wishful thinking*  
(Joint with Mathematical Programming Seminar and Electrabel)
- March 1, 2010. Fabrizio GERMANO, Universitat Pompeu Fabra, Barcelona, Spain  
*On commercial media bias*
- March 8, 2010. Roger GUESNERIE, Collège de France and Paris School of Economics, France  
*The precautionary principle for environmental protection: ecological intuition versus economic "reason"*  
(Joint with Environmental Economics Seminar)
- March 15, 2010. Christian GHIGLINO, University of Essex, United Kingdom  
*Strategic information transmission in networks*
- March 29, 2010. Alexia FÜRNKRANZ-PRSKAWETZ, Technische Universität Wien, Austria  
*Externalities in a life-cycle model with endogenous survival*
- April 19, 2010. Florian MAYNERIS, CORE, UCL, Belgium  
*Entry on export markets, credit constraints, and firm-level productivity growth*
- April 26, 2010. Theodoros DIASAKOS, Collegio Carlo Alberto, Moncalieri, Italy  
*Optimal myopia – an axiomatic approach to bounded rationality*



- May 3, 2010. Olivier TERCIEUX, Paris School of Economics, France  
*Subgame-perfect implementation under value perturbations and the hold-up problem*
- May 10, 2010. Jean-Charles ROCHET, Toulouse School of Economics, France  
*Reforming capitalism*
- May 10, 2010. Nicolas CARAYOL, Université de Bordeaux IV, France  
*Dominance relations when quantity and quality matter. An application to the ranking of US research universities*
- May 17, 2010. Gerhard SORGER, Technische Universität Wien, Austria  
*Intergenerational equity and stationarity*
- May 31, 2010. Cees WITHAGEN, Vrije Universiteit Amsterdam and Tinbergen Instituut, Amsterdam, The Netherlands  
*Is there really a green paradox ?*
- June 7, 2010. Marc FLEURBAEY, CERSES, Université Paris Descartes, France and CORE, UCL, Belgium  
*Assessing risky social situations*
- June 14, 2010. Marc BOURREAU, Telecom ParisTech, France  
*Size of R&D and degree of cooperation in product development*

## ▪ MATHEMATICAL PROGRAMMING SEMINAR

- October 13, 2009. Kent ANDERSEN, Universität Magdeburg, Germany  
*Polyhedral relaxations of mixed integer sets and zero-coefficient cut*
- October 20, 2009. Robert CHARES, CORE, UCL, Belgium  
*Variable reduction for interior-point methods using partial minimization*
- October 27, 2009. Jan BRINKHUIS, Erasmus Universiteit Rotterdam, The Netherlands  
*Convex duality and calculus: reduction to cones*
- October 30, 2009. Kees ROOS, Technische Universiteit Delft, The Netherlands  
*Computing safe dike heights at minimal costs*
- November 17, 2009. Kristiaan KERSTENS, IESEG School of Management, Lille, France  
*The convexity axiom revisited: non-parametric fitness testing*
- November 24, 2009. Hakan UMIT, Louvain School of Management, UCL, Belgium  
*Oblivious OSPF routing with weight optimization under polyhedral demand uncertainty*
- December 1, 2009. Yves SMEERS, CORE, UCL, Belgium  
*A stochastic multiperiod equilibrium model in generation capacity expansion with plant (or firm) specific discount rates*
- December 8, 2009. Agostinho AGRA, Universidade de Aveiro, Portugal  
*Closing the gap in mixed integer programs: a polyhedral description and an application*
- December 15, 2009. Bernard FORTZ, Université Libre de Bruxelles, Brussels and CORE, UCL, Belgium  
*The stochastic knapsack problem with Gaussian weights*

- February 25, 2010. Bert WILLEMS, TILEC and CentER, Universiteit Tilburg, The Netherlands  
*Exclusivity contracts, insurance and financial market foreclosure*  
(Joint with Economic Theory Seminar and Electrabel)
- February 25, 2010. Golbon ZAKERI, University of Auckland, New Zealand  
*Swapping generators' assets: market salvation or wishful thinking*  
(Joint with Economic Theory Seminar and Electrabel)
- March 2, 2010. Philippe TOINT, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium  
*Inexact ranges-space Krylov solvers for linear systems arising from inverse problems*
- March 23, 2010. Stan VAN HOESEL, Universiteit Maastricht, The Netherlands  
*Pricing in networks, an update*
- April 20, 2010. François GLINEUR, CORE & INMA, UCL, Belgium  
*Quadratic approximation of some convex optimization problems using the arithmetic-geometric mean iteration*
- April 27, 2010. Frauke LIERS, Universität zu Köln, Germany  
*Combinatorial optimization in theoretical physics*
- May 11, 2010. Wilco VAN DEN HEUVEL, Erasmus Universiteit Rotterdam, The Netherlands  
*Coordination mechanisms in a two-level supply chain with lot-sizing cost structures*
- May 17, 2010. Sanjeeb DASH, IBM T.J. Watson Research Center, Yorktown Heights (NY), USA  
*Two dimensional lattice-free cuts and asymmetric disjunctions for mixed-integer polyhedra*
- May 18, 2010. Daniel BIENSTOCK, Columbia University, New York (NY), USA  
*A new algorithm for solving LP-relaxations of precedence constrained capacitated scheduling problems*
- June 1, 2010. Rüdiger STEPHAN, CORE, UCL, Belgium  
*Extended formulations in connection with trees and T-joins*

## ▪ TRADE AND ECONOMIC GEOGRAPHY SEMINAR

- October 15, 2009. Ragnhild BALSVIK, Norwegian School of Economics, Bergen, Norway  
*Spillovers from labour mobility*  
(Joint with IRES Research Seminar)
- October 20, 2009. Salome GVETADZE, CORE, UCL, Belgium  
*Public goods' attractiveness and migrations*
- October 22, 2009. Mariya TETERYATNIKOVA, European University Institute, Firenze, Italy  
*R&D in the network of international trade: multilateral versus regional trade agreements*  
(Joint with IRES Research Seminar)
- November 3, 2009. Florian MAYNERIS, CORE, UCL, Belgium  
*Spatial concentration and firm-level productivity in France*
- November 10, 2009. Julien MARTIN, CREST-INSEE and Paris School of Economics, France  
*Spatial price discrimination on international markets*

- November 19, 2009. Jean-François MAYSTADT, CORE, UCL, Belgium  
*Winners and losers among a refugee-hosting population*
- December 8, 2009. Juan CARLUCCIO, Paris School of Economics, France  
*Wage bargaining and the boundaries of the multinational firm*
- December 15, 2009. Anthony BRIANT, Paris School of Economics, France  
*Product complexity, quality of institutions and the pro-trade effect of immigrants*
- January 25, 2010. Andrew B. BERNARD, Tuck School of Business at Dartmouth, Hanover (NH), USA  
*Multi-product firms and trade liberalization*  
(Joint with Economic Theory Seminar)
- February 2, 2010. Ian GORDON, London School of Economics, United Kingdom  
*Price and non-price spatial competition*
- February 23, 2010. Frédéric DOCQUIER, IRES, UCL, Belgium  
*Do brain drain and poverty result from coordination failures?*
- March 16, 2010. Serena FATICA, Katholieke Universiteit Leuven, Belgium  
*Taxation and the quality of institutions: asymmetric effects on FDI*
- March 30, 2010. Steven BRAKMAN, Rijksuniversiteit Groningen, The Netherlands  
*Cross-border mergers and acquisitions: on revealed comparative advantage and merger waves*
- March 31, 2010. Theresa BELTRAMO, University of Berkeley (CA), USA  
*How have European bilateral trade costs changed from 1988-2006*
- April 20, 2010. Denise PUMAIN, Université Paris Panthéon-Sorbonne, France  
*Scaling laws in urban systems: from physics to geography*
- May 25, 2010. Davide CASTELLANI, Università di Perugia, Italy  
*Foreign investments and productivity in European regions*
- June 15, 2010. Stéphane TUROLLA, Institut National de la Recherche Agronomique, Rennes, France  
*Spatial competition in the French supermarket industry*

## ▪ ENVIRONMENTAL ECONOMICS SEMINAR

- November 19, 2009. Eric LAMBIN and Patrick MEYFROIDT, GEOG, UCL, Belgium  
*From deforestation to reforestation in the tropics: how green is REDD?*
- December 12, 2009. Stéphane ZUBER, CORE, UCL, Belgium  
*Climate change and inequality*
- January 21, 2010. Johannes GIERLINGER, Oxford University, United Kingdom  
*Hedging priors*  
(Joint with Economic Theory Seminar)

- March 8, 2010. Roger GUESNERIE, Collège de France and Paris School of Economics, France  
*The precautionary principle for environmental protection: ecological intuition versus economic "reason"*  
(Joint with Economic Theory Seminar)
- April 1, 2010. Katheline SCHUBERT, Université Paris Panthéon-Sorbonne, France  
*Pour la taxe carbone: la politique économique face à la menace climatique*
- April 22, 2010. Olivier DURANT-LASSERVE, CORE, UCL, Belgium  
*Subglobal climate change policy and regional competitiveness*
- April 29, 2010. Julien THÉNIER, ORDECSYS, Chêne-Bougeries, Switzerland, Thibault ZEIMES, and Stéphane ZUBER, CORE, UCL, Belgium  
*The benefits of cooperation under uncertainty: the case of climate change*
- May 6, 2010. Alain HAURIE, Université de Genève and ORDECSYS, Chêne-Bougeries, Switzerland  
*L'incertitude dans les modèle économie-climat*
- June 10, 2010. Thomas BAUDIN, CORE, UCL, Belgium  
*Optimal extraction path of an exhaustible resource with endogenous demographics*

## ▪ ECORE, JOINT CORE-ECARES SEMINAR

ECORE federates two research centers: CORE, Université catholique de Louvain and ECARES, Université Libre de Bruxelles, Brussels. The creation of such a scientific association integrates the research activities and the doctoral programs of both institutions. It promotes their position on the international scene in the fields of economics, finance, operations research, econometrics, and statistics.

- October 1, 2009. James HAMILTON, University of California, San Diego (CA), USA  
*The propagation of regional recessions*  
(Joint ECORE-KUL Seminar)
- October 19, 2009. Robert KOLLMANN, ECARES, Université Libre de Bruxelles, Brussels, Belgium  
*International portfolios, capital accumulation, and foreign asset dynamics*
- November 30, 2009. Claude D'ASPREMONT, CORE, UCL, Belgium  
*Household behavior and individual autonomy*
- February 22, 2010. Paola CONCONI, ECARES, Université Libre de Bruxelles, Brussels, Belgium  
*Trade policy and firm boundaries*
- March 22, 2010. Pierre PESTIEAU, Université de Liège and CORE, UCL, Belgium  
*A framework for long-term care analysis*

## ▪ SOCIAL AND WELFARE SEMINAR

- February 22, 2010. Elena MOLIS, Facultés Universitaires Saint-Louis, Brussels, Belgium and CORE, UCL, Belgium  
*Exchange of indivisible goods and indifferences: the top trading absorbing sub mechanism*

- March 1, 2010. Dirk VAN DE GAER, Universiteit Gent, Belgium and CORE, UCL, Belgium  
*Income mobility measurement*
- March 8, 2010. Erwin OOGHE, Katholieke Universiteit Leuven, Belgium  
*Poverty rankings with cardinal and ordinal attributes*
- March 15, 2010. Paolo BRUNORI, Università degli Studi di Bari "Aldo Moro", Italy  
*Equality of educational opportunity*
- March 29, 2010. Thomas BAUDIN, CORE, UCL, Belgium  
*Optimal trade-off between quality and quantity with uncertain child survival*
- April 26, 2010. Tom TRUYTS, Katholieke Universiteit Leuven, Belgium and CORE, UCL, Belgium  
*Big fishes in small ponds: network formation with relative concerns*
- April 26, 2010. Julio DAVILA, CORE, UCL, Belgium  
*On the fiscal treatment of life expectancy related choices*
- May 10, 2010. Hiroshi UNO, CORE, UCL, Belgium  
*Nested potential games and their properties*
- May 31, 2010. Christelle SAPATA, CORE, UCL, Belgium  
*Who are the worst-off when preferences matter ?*
- June 7, 2010. Marie-Louise LEROUX, CORE, UCL, Belgium  
*Optimal income taxation with labour-enhancing health expenditures*
- June 14, 2010. Margherita NEGRI, CORE, UCL, Belgium  
*Endogenous party formation with membership costs: an explanation for policy divergence*
- June 21, 2010. Simon FAN, Lingnan University Hong Kong, People's Republic of China  
*Differential fertility, inequality, and intergenerational mobility under private versus public education*



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## DOCTORAL TRAINING

- COMPLETED Ph.D. DISSERTATIONS
- Ph.D. PROJECTS IN PROGRESS
- EUROPEAN DOCTORAL PROGRAM IN QUANTITATIVE ECONOMICS
- DOCTORAL WORKSHOPS





## ■ COMPLETED PH.D. DISSERTATIONS

Six doctoral students at CORE successfully defended their Doctoral Dissertation:

- On September 22, 2009. Fausto GALLI, *Essays in the econometrics of dynamic duration models with application to tick by tick financial data*. Docteur en Sciences Economiques et de Gestion, Université catholique de Louvain under the supervision of Luc BAUWENS.  
Current job: Università di Sassari, Italy
- On September 30, 2009 Alfonso VALDESOGO ROBLES, *Multivariate volatility models using copulas*. Docteur en Sciences Economiques et de Gestion, Université catholique de Louvain under the supervision of Luc BAUWENS and Andreas HEINEN.  
Current job: Université du Luxembourg, Luxembourg
- On October 30, 2009. Robert CHARES, *Cones and interior-point algorithms for structured convex optimization involving powers and exponentials*. Docteur en Sciences de l'Ingénieur, Université catholique de Louvain under the supervision of François GLINEUR  
Current job: BELSIM S.A., Awans, Belgium
- On December 12, 2010. Maria Eugenia SANIN VAZQUEZ, *Market design in tradable emission permits*. Docteur en Sciences Economiques et de Gestion, Université catholique de Louvain under the supervision of Thierry BRÉCHET and Estelle CANTILLON (ECARES, Université Libre de Bruxelles, Brussels).  
Current job: Ecole Polytechnique, Paris, France
- On June 8, 2010. Giacomo VALLETTA, *Three essays on social choice and public economics*. Docteur en Sciences Economiques et de Gestion, Université catholique de Louvain under the supervision of François MANIQUET.  
Current job: Maastricht Universiteit, The Netherlands
- On August 23, 2010. Jean-François MAYSTADT, *Conflict and forced migration*. Docteur en Sciences Economiques et de Gestion, Université catholique de Louvain under the supervision of Jacques-François THISSE.  
Current job: International Food Policy Research Institute, Washington (DC), USA

## ■ PH.D. PROJECTS IN PROGRESS

Carlotta BALESTRA

Title: Essays on environmental economics in an OLG model

Supervisor: Thierry BRÉCHET

Started: 2006

Doctoral School : Graduate School in Economics, UCL, Belgium

Anton BELYAKOV

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Title: On the exchange dynamics of limited production factor

Supervisor: Raouf BOUCEKKINE

Started: 2008

Doctoral School : Graduate School in Systems, Optimization, Control, and Networks (SOCN), UCL, Belgium

Quentin BOTTON

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Title: Survival network design problem with hop-constraints

Supervisor: Bernard FORTZ

Started: 2004

Doctoral School : Doctoral School of Management, UCL, Belgium

Stéphane BOUCHÉ

---

Title: Growth and sustainable development

Supervisors: Julio DAVILA

Started: 2009

Doctoral School : Graduate School in Economics, UCL, Belgium

Filippo CALCIANO

---

Title: Rationality, correlation and communication in games

Supervisors: Pierre DEHEZ and Jean-François MERTENS

Started: 2005

Doctoral School : Graduate School in Economics, UCL, Belgium (European Doctoral Program)

Jean-François CARPANTIER

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Title: Applied Econometrics in commodities

Supervisor: Luc BAUWENS

Started: 2007

Doctoral School : Graduate School in Economics, UCL, Belgium (European Doctoral Program)

Nguyen Thang DAO

---

Title: On the environmental externalities in the overlapping generation framework

Supervisor: Julio Davila

Started: 2009

Doctoral School : Graduate School in Economics, UCL, Belgium

Gauthier DE MAERE D'AERTRYCKE

---

Title: The formation of prices in restructured electricity market

Supervisor: Yves SMEERS

Started: 2007

Doctoral School : Graduate School in Systems, Optimization, Control, and Networks (SOCN), UCL, Belgium

Rafaël DE MELO

---

Title: Algorithms for production planning problems

Supervisor: Laurence WOLSEY

Started: 2007

Doctoral School : Graduate School in Systems, Optimization, Control, and Networks (SOCN), UCL, Belgium

Olivier DEVOLDER

---

Title: Infinite-dimensional structured convex optimization

Supervisor: François GLINEUR and Yurii NESTEROV

Started: 2009

Doctoral School : Graduate School in Systems, Optimization, Control, and Networks (SOCN), UCL, Belgium

Arnaud DUFAYS

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Title: Time series econometrics: Markov switching GARCH modellings

Supervisor: Luc Bauwens

Started: 2009

Doctoral School : Graduate School of Economics, UCL, Belgium

Olivier DURAND-LASSERVE

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Title: Stochastic long-term scenarios for energy markets

Supervisor: Yves SMEERS

Started: 2007

Doctoral School : Graduate School of Economics, UCL, Belgium

Emmanuele FORLANI

---

Title: Service sector market conduct: effects and interactions with manufacturing firms

Supervisor: Hylke VANDENBUSSCHE

Started: 2006

Doctoral School : Graduate School of Economics, UCL, Belgium

Joachim GAHUNGU

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Title: Real options and system dynamics: two approaches to explain boom and bust cycles

Supervisor: Yves SMEERS

Started: 2007

Doctoral School : Graduate School in Systems, Optimization, Control, and Networks (SOCN), UCL, Belgium

Maia GEJADZE

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Title: The exit decision from venture capital investment

Supervisor: Pierre GIOT

Started: 2008

Doctoral School : Graduate School of Economics, UCL, Belgium

Nicolas GILLIS

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Title: Nonnegative matrix factorization

Supervisor: François GLINEUR

Started: 2007

Doctoral School : Graduate School in Systems, Optimization, Control, and Networks (SOCN), UCL, Belgium

Gilles GRANDJEAN

---

Title: Essays on coalitional rationality

Supervisors: Vincent VANNETELBOSCH and Ana MAULEON

Started: 2004

Doctoral School : Graduate School of Economics, UCL, Belgium

Salome GVETADZE

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Title: Public goods and migration

Supervisor: Jean JASKOLD GABSZEWICZ and Jacques-François THISSE

Started: 2008

Doctoral School : Graduate School of Economics, UCL, Belgium

Adel HATAMI-MARBINI

---

Title: Management of shared resources

Supervisor: Per AGRELL

Started: 2009

Doctoral School : Doctoral School of Management, UCL, Belgium

Tanguy ISAAC

---

Title: Information revelation in markets with pairwise meetings. Intergenerational equity

Supervisor: Raouf BOUCEKKINE

Started: 2005

Doctoral School : Graduate School of Economics, UCL, Belgium

Mathias LORENZ

---

Title: Regulatory competition and harmonization

Supervisor: Per AGRELL

Started: 2004

Doctoral School : Doctoral School of Management, UCL, Belgium

Sylvette LY

---

Title: Environmental innovations and firms

Supervisor: Thierry BRÉCHET

Started: 2007

Doctoral School : Doctoral School of Management, UCL, Belgium

Marco MARINUCCI

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Title: Topics on R&D cooperation among firms

Supervisors: Paul BELLEFLAMME and Vincent VANNETELBOSCH

Started: 2005

Doctoral School : Graduate School of Economics, UCL, Belgium

Bénédicte MEERT

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Title: Geographical approach of Brain Drain: descriptive and prescriptive study of the link between country size and Brain Drain's effects

Supervisors: Frédéric DOCQUIER and Jacques-François THISSE

Started: 2009

Doctoral School : Graduate School of Economics, UCL, Belgium

Tanja MLINAR

---

Title: Stochastic models to the shared resources in supply chains

Supervisor: Philippe CHEVALIER

Started: 2008

Doctoral School : Graduate School of Management, UCL, Belgium

Deniz NEBIOGLU

---

Title: Do expectations matter?

Supervisors: Raf WOUTERS and Jean HINDRIKS

Started: 2007

Doctoral School : Graduate School of Economics, UCL, Belgium

Margherita NEGRI

---

Title: Party competition

Supervisor: François Maniquet

Started: 2009

Doctoral School : Graduate School of Economics, UCL, Belgium

Paolo Giovanni PIACQUADIO

---

Title: Welfare economics in a dynamic context

Supervisors: Raouf BOUCEKKINE and François MANIQUET

Started: 2008

Doctoral School : Graduate School of Economics, UCL, Belgium

Dzianis ROZHYN

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Title: Energy-capital substitution in Ukraine (evidence from stochastic frontier)  
Supervisor: Jean HINDRIKS  
Started: 2007  
Doctoral School : Graduate School of Economics, UCL, Belgium

Besik SAMKHARADZE

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Title: Volatility spillovers in European stock markets: A multivariate GARCH analysis  
Supervisor: Luc BAUWENS  
Started: 2008  
Doctoral School : Graduate School of Economics, UCL, Belgium

Grégory VANDENBULCKE

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Title: Spatial analysis of computer cycling and accident risks for cyclists  
Supervisor: Isabelle THOMAS  
Started: 2008  
Doctoral School : Ecole Doctorale en Sciences Géographiques, UCL, Belgium

Jean-Christophe VAN DEN SCHRIECK

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Title: Multi-skill call centers: optimization of the staffing and routing based on the Hayward approximation  
Supervisor: Philippe CHEVALIER  
Started: 2005  
Doctoral School : Doctoral School of Management, UCL, Belgium

## ■ EUROPEAN DOCTORAL PROGRAM IN QUANTITATIVE ECONOMICS

The **EUROPEAN DOCTORAL PROGRAM IN QUANTITATIVE ECONOMICS** is a joint project of CORE, Université catholique de Louvain, Belgium, with the Universitat Pompeu Fabra, Barcelona, Spain, the Rheinische Friedrich-Wilhelms-Universität Bonn, Germany, the London School of Economics, United Kingdom, the Ecole des Hautes Etudes en Sciences Sociales, France, the European University Institute in Florence, Italy, and as an associate member, the University of Tel Aviv, Israël. Students in the program complete all the requirements for a doctorate in one of the participating universities. In addition, they spend at least one full academic year, typically their second year in the program, in one of the other universities.

The program started in 1977. Seven students obtained their certificate during the academic year 2009-2010. Forty-nine students are currently enrolled.

The annual jamboree was organized by Universitat Pompeu Fabra, Barcelona on March 19-20, 2010 and attended by forty-eight doctoral students and several academics from the partner universities.

## PROGRAMME

MARCH 19, 2010

### ▪ LECTURE 1

Jaume VENTURA, Universitat Pompeu Fabra, Barcelona

*Economic growth with bubbles*

### ▪ SESSION 1: LABOR ECONOMICS – CHAIR : GHAZALA AZMAT, UNIVERSITAT POMPEU FABRA, BARCELONA, SPAIN

Gregor SCHWERHOFF, Bonn Graduate School of Economics, Germany

*Household bargaining over parental leave and labor market participation*

Stefan SEILER, London School of Economics, United Kingdom

*The effect of patient choice: evidence from recent NHS reforms*

### ▪ SESSION 2: EMPIRICAL FINANCE – CHAIR : JAVIER GOMEZ BISCARRI, UNIVERSIDAD DE NAVARRA, PAMPLONA, SPAIN

Jean-François CARPANTIER, CORE, UCL, Belgium

*Measuring the impact of commodity prices on real effective exchange rates: a panel cointegration approach*

Besik SAMKHARADZE, CORE, UCL, Belgium

*Volatility spillovers in European stock markets: a multivariate GARCH analysis*

Maia GEJADZE, CORE, UCL, Belgium

*Exit decisions from venture capital investments using competing risks model with time varying covariates*

### ▪ SESSION 3: PUBLIC ECONOMICS – CHAIR : GABRIELLE FACK, UNIVERSITAT POMPEU FABRA, BARCELONA, SPAIN

Elodie TOURNIER, Paris School of Economics, France

*The non take-up of social benefits in France: a microsimulation approach*

Hélène BLAKE, Paris School of Economics, France

*Senior activity rate, retirement incentives, and labor relations*

Salome GVETADZE, CORE, UCL, Belgium

*Migrations, public goods and taxes*

### ▪ SESSION 4: FINANCE – CHAIR : OMIROS PAPASPILIOPOULOS, UNIVERSITAT POMPEU FABRA, BARCELONA, SPAIN

Jean Edouard COLLIARD, Paris School of Economics, France

*The choice of over-optimistic internal risk models as regulatory arbitrage*

Mouhamadou SY, Paris School of Economics, France

*Carry trade and return crash risk*

Ulrich HOMM, Bonn Graduate School of Economics, Germany

*Testing for speculative bubbles in stock markets. A comparison of alternative methods*

▪ **SESSION 5: APPLIED MICROECONOMICS – CHAIR : STEPHEN HANSEN, UNIVERSITAT POMPEU FABRA, BARCELONA, SPAIN**

Rafael AIGNER, Bonn Graduate School of Economics, Germany

*Investing your vote – the emergence of small parties*

Alexandre GODZINSKI, Paris School of Economics, France

*The moral hazard effect in car insurance: empirical evidence from Ireland*

▪ **SESSION 6: ECONOMETRICS – CHAIR : KRISTOFFER NIMARK, UNIVERSITAT POMPEU FABRA, BARCELONA, SPAIN**

Edwin GONI, European University Institute, Firenze, Italy

*R&D and development. An instrumented semiparametrical approach*

Michal MARKUN, European University Institute, Firenze, Italy

*The choice of prior for forecasting with Bayesian VARs*

▪ **LECTURE 2**

Ghazala AZMAT, Universitat Pompeu Fabra, Barcelona, Spain

*The importance of relative performance feedback information*

**MARCH 20, 2010**

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▪ **LECTURE 3**

Gino GANCIA, Universitat Pompeu Fabra, Barcelona, Spain

*Politicians, uncertainty and reforms*

▪ **SESSION 7: INTERNATIONAL – CHAIR : GINO GANCIA, UNIVERSITAT POMPEU FABRA, BARCELONA, SPAIN**

Mehdi SENOUCI, Paris School of Economics, France

*Oil prices, the 'exorbitant privilege' and international adjustment: 2002-2008*

Andrea ARIU, IRES, UCL, Belgium

*Trade in services: IT and task content*

Christian VIEGELAHN, CORE, UCL, Belgium

*Indian antidumping policy and its impact on the markups of domestic firms*

Robert ZYMEK, Universitat Pompeu Fabra, Barcelona, Spain

*Financial globalisation and the growth of world manufacturing trade*

▪ **SESSION 8: MICROECONOMICS – CHAIR : FABRIZIO GERMANO, UNIVERSITAT POMPEU FABRA, BARCELONA, SPAIN**

Gilles GRANDJEAN, CORE, UCL, Belgium

*Risk-sharing networks and farsighted stability*

Christian SEEL, Bonn Graduate School of Economics, Germany

*Gambling in dynamic contests*

Konrad BURCHARDI, London School of Economics, United Kingdom

*Out of your mind: estimating the level-k model*



## ■ DOCTORAL WORKSHOPS

The doctoral workshops provide a research forum where the members of the Doctoral Program in Economics at UCL and KUL have the opportunity to present part of their completed or ongoing research.

### PROGRAMME

MAY 27, 2010

#### ■ MICROECONOMIC THEORY I

**CHAIR : WOUTER VERGOTE, FACULTÉS UNIVERSITAIRES SAINT-LOUIS, BRUSSELS, BELGIUM**

Daniela TELLONE, Facultés Universitaires Saint-Louis, Bruxelles, Belgium

*Competition between higher education institutions in the presence of congestion effects*

Paolo PIACQUADIO, CORE, UCL, Belgium

*Efficiency and no-envy in dynamic resource allocation*

Alice DUHAUT, ECARES, Université Libre de Bruxelles, Brussels, Belgium

*Network effects in scientific communities*

Margherita NEGRI, CORE, UCL, Belgium

*Endogenous party formation with membership costs: an explanation for divergence of policy platforms*

#### ■ LABOUR ECONOMICS I

**CHAIR: MURIEL DEJEMEPPE, IRES, UCL, BELGIUM**

Sofia PESSOA E COSTA, IRES, UCL, Belgium

*Bounding the impact of a training programme on wages in the presence of sample selection*

Ana Maria DIAZ ESCOBAR, IRES, UCL, Belgium

*Local human capital and local urban employment in Colombia*

Marco PECORARO, Université de Neuchâtel, Switzerland and ECON, UCL, Belgium

*Estimating the wage effects of overeducation among Swiss graduates*

#### ■ MICROECONOMIC THEORY II

**CHAIR: JULIO DAVILA, CORE, UCL, BELGIUM**

Dominique CHARLOT, Facultés Universitaires Saint-Louis, Bruxelles, Belgium

*Moral motivations in games*

Marco MANTOVANI, CORE, UCL, Belgium

*Myopic or farsighted? An experiment on network formation*

Tanguy ISAAC, IRES and CORE, UCL, Belgium

*Intergenerational fairness in OLG model without utility comparability*

Rytis BAGDZIUNAS, IRES, UCL, Belgium  
*Complex dynamics in evolutionary game theory*

▪ **LABOUR ECONOMICS II**

**CHAIR: BRUNO VAN DER LINDEN, IRES, UCL, BELGIUM**

Bert WILLEKENS, Katholieke Universiteit Leuven, Belgium  
*Aspects of competition in the online job search market*

Paola Liliana MONTERO LEDEZMA, IRES, UCL, Belgium  
*Workers' mobility and labour market institutions*

▪ **ECONOMETRICS**

**CHAIR: LUC BAUWENS, CORE, UCL, BELGIUM**

Besik SAMKHARADZE, CORE, UCL, Belgium  
*The inverse leverage effect for commodities: does modeling asymmetries improve the time varying optimal hedge ratio?*

Bruno DE BACKER, IRES, UCL, Belgium  
*Detecting and predicting forecast breakdowns*

Arnaud DUFAYS, CORE, UCL, Belgium  
*Markov switching GARCH model*

▪ **APPLIED ECONOMETRICS**

**CHAIR: ILKE VAN BEVEREN, KATHOLIEKE UNIVERSITEIT LEUVEN, BELGIUM**

Tim GOESAERT, Katholieke Universiteit Leuven, Belgium  
*Mobile firms and taxes: neighbours matter most. Corporate taxation and FDI in a Belgian multinational context*

Aminata SISSOKO, IRES, UCL, Belgium  
*R&D subsidies and firm-level productivity: evidence from France*

Christian VIEGELAHN, CORE, UCL, Belgium  
*Indian antidumping policy and its impact on the markups of domestic firms*

Ewout VERRIEST, Katholieke Universiteit Leuven, Belgium  
*Intertemporal collective consumption decisions: a revealed preference analysis*

▪ **INDUSTRIAL ORGANIZATION**

**CHAIR: HÉLÈNE LATZER, IRES, UCL, BELGIUM**

Marco MARINUCCI, CORE, UCL, Belgium  
*Decreasing returns to scale in R&D networks*

Lorenzo CLEMENTI, ECARES, Université Libre de Bruxelles, Brussels, Belgium  
*Vertically integrating firms' matching in bilateral oligopoly*

Renaud FOUCART, Université Libre de Bruxelles, Belgium

*Horizontal diversity as a game of matching*

Daria ONORI, IRES, UCL, Belgium

*Competition and growth: reinterpreting their relationship*

## MAY 28, 2010

### ■ ECONOMIC GEOGRAPHY

CHAIR : FLORIAN MAYNERIS, CORE, UCL, BELGIUM

Francesco DI COMITE, IRES, UCL, Belgium

*Heterogeneous consumers and product differentiation in a monopolistic competition model*

Liqu ZHAO, Katholieke Universiteit Leuven, Belgium

*Is the production in agglomerated region more flexible? Firm-level evidence from Belgium*

Bénédicte MEERT, CORE, UCL, Belgium

*Rural-to-urban migration and the takeoff of developing countries*

### ■ POPULATION ECONOMICS

CHAIR: FABIO MARIANI, UNIVERSITÉ PARIS PANTHÉON-SORBONNE, FRANCE

Bastien CHABÉ-FERRET, IRES, UCL, Belgium

*Fertility differentials: does discrimination matter*

Paula EUGENIA GOBBI, IRES, UCL, Belgium

*A model of voluntary childlessness*

Paolo MELINDI GHIDI, IRES, UCL, Belgium

*A model of population dynamics with discrimination*

### ■ HEALTH ECONOMICS

CHAIR: WILLIAM PARIENTE, IRES, UCL, BELGIUM

Clemens HUBER, Wirtschaftsuniversität Wien, Austria

*Safety culture and errors in intensive care*

Chrysovalantis VASILAKIS, IRES, UCL, Belgium

*Social economic impact of AIDS accounting for intergenerational transmission, productivity and fertility*

Olivier STERCK, IRES, UCL, Belgium

*HIV expected transmission rate and condom use*

### ■ MACROECONOMICS I

CHAIR: MARIA DEL CARMEN CAMOCHO PÉREZ, IRES, UCL, BELGIUM

Pierre PECHER, IRES, UCL, Belgium

*Social conflict and subsistence*

Fabien NGENDAKURIYO, IRES, UCL, Belgium

*Technological change and subsistence farmer: a two-stage optimal control approach*

▪ **ENVIRONMENTAL ECONOMICS**

**CHAIR: THOMAS BAUDIN, CORE, UCL, BELGIUM**

Stéphane BOUCHÉ, CORE, UCL, Belgium

*Growth and environmental quality maintenance through endogenous technological change*

Olivier DURAND-LASSERVE, CORE, UCL, Belgium

*Subglobal climate change policy and regional competitiveness*

Nguyen Thang DAO, CORE, UCL, Belgium

*Overlapping generations economy, environmental externalities, and taxation*

▪ **MACROECONOMICS II**

**CHAIR: LUCA PENSIEROSO, IRES, UCL, BELGIUM**

Deniz NEBIOGLU, CORE, UCL, Belgium

*Do the productivity growth trend changes matter?*

Alberto COCO, IRES, UCL, Belgium

*Optimal monetary policy with heterogeneous expectations and Bayesian learning*

Maia GEJADZE, CORE, UCL, Belgium

*Stage financing strategies and exit decisions from venture capital investments*

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## MEETINGS HELD AT CORE OR CO-ORGANIZED BY CORE MEMBERS

- BFG'09: 14th BELGIAN-FRENCH-GERMAN CONFERENCE ON OPTIMIZATION
- IAP DAY
- POLITICAL ECONOMY AND THE ENVIRONMENT
- COLLECTIVE CHOICE AND ECONOMIC DESIGN IN HONOUR OF PROFESSOR FRANS SPINNEWYN
- 1<sup>ST</sup> VALENCIA-LOUVAIN WORKSHOP ON GAME THEORY AND ECONOMIC BEHAVIOR
- INTERNATIONAL WORKSHOP ON SUPPLY CHAIN MODELS FOR SHARED RESOURCE MANAGEMENT
- OVERLAPPING GENERATIONS DAYS
- FAIRNESS, EQUALITY OF OPPORTUNITY AND PUBLIC ECONOMICS
- A JOURNEY THROUGH MICROECONOMICS, A CONFERENCE IN HONOUR OF JACQUES THISSE
- 2<sup>ND</sup> VALENCIA-LOUVAIN WORKSHOP ON GAME THEORY AND ECONOMIC BEHAVIOR
- RECENT ADVANCES IN ENERGY ECONOMICS, A CONFERENCE IN HONOUR OF YVES SMEERS



## ▪ BFG'09: 14<sup>TH</sup> BELGIAN-FRENCH-GERMAN CONFERENCE ON OPTIMIZATION

This conference was the 14<sup>th</sup> of the series of French-German meetings which started in Oberwolfach in 1980. This time, it was organized jointly with Belgian optimizers, and took place in Leuven. The conference consisted of 12 invited plenary talks but also of parallel contributed sessions, mini-symposia, and a poster session.

### PROGRAMME

#### SEPTEMBER 14, 2009

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- **ARKADI NEMIROVSKI, GEORGIA INSTITUTE OF TECHNOLOGY (GA), USA**  
*Convex stochastic and large-scale deterministic programming*
- **DOMINIKUS NOLL, CRED, UNIVERSITÉ PAUL SABATIER, TOULOUSE, FRANCE**  
*Feedback control via nonlinear optimization*

#### SEPTEMBER 15, 2009

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- **ROBERTO COMINETTI, UNIVERSIDAD DE CHILE, CHILE**  
*Equilibrium and learning in traffic network games*
- **MIRJAM DUER, RIJKSUNIVERSITEIT GRONINGEN, THE NETHERLANDS**  
*Copositive programming*
- **LAURENCE WOLSEY, CORE, UCL, BELGIUM**  
*Tight mixed integer programming formulations*

#### SEPTEMBER 16, 2009

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- **MARTINE LABBE, UNIVERSITÉ LIBRE DE BRUXELLES, BRUSSELS, BELGIUM**  
*Combinatorial optimization for problems in medicine*
- **SEBASTIEN SAGER, RUPRECHT-KARLS-UNIVERSITÄT HEIDELBERG, GERMANY**  
*Trends in nonlinear mixed-integer optimal control*

#### SEPTEMBER 17, 2009

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- **KARL KUNISCH, KARL-FRANZENS-UNIVERSITÄT GRAZ, AUSTRIA**  
*Semi-smooth Newton and path following methods for infinite dimensional non-differentiable optimization problems*
- **SAMIR ADLY, UNIVERSITÉ DE LIMOGES, FRANCE**  
*Nonsmooth dynamical systems: an overview*

- TAMAS TERLAKY, LEHIGH UNIVERSITY, BETHLEHEM (PA), USA

*Linear optimization and extensions: three decades of polynomial time algorithms*

## SEPTEMBER 18, 2009

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- VOLKER SCHULZ, UNIVERSITÄT TRIER, GERMANY

*Efficient shape optimization for certain and uncertain aerodynamic design*

- PIERRE-ANTOINE ABSIL, INMA,UCL, BELGIUM

*Optimization on manifolds: an overview of techniques and applications*

## ▪ IAP-DAY

organized by CORE (Université catholique de Louvain), CES (Katholieke Universiteit Leuven), ECARES (Université libre de Bruxelles, Brussels), GEQO (Facultés Universitaires Notre-Dame de la Paix, Namur), IRES (Université catholique de Louvain), and SHERPPA (Universiteit Gent). This workshop took place at Katholieke Universiteit Leuven.

## PROGRAMME

### OCTOBER 21, 2009

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- SESSION I – EQUILIBRIUM AND CONTRACTS

Overview by Raouf BOUCEKKINE, CORE and IRES, UCL, Belgium

Petros SEKERIS, GEQO, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium  
*Guns and butter revisited: the role of deterrence*

Paolo PIACQUADIO, CORE, UCL, Belgium  
*Egalitarianism in dynamic models: an impossibility result*

Luca PENSIEROSO, IRES, UCL, Belgium  
*Real business cycle models of the great depression*

Gauthier DE MAERE D'AERTRYCKE, CORE, UCL, Belgium  
*Power financial market modeling*

Joost VANDENBOSSCHE, SHERPPA, Universiteit Gent, Belgium  
*Network formation with heterogeneous agents and absolute friction*

- SESSION II – SOCIAL EVALUATION AND PUBLIC GOVERNANCE

Overview by Dirk VAN DE GAER, SHERPPA, Universiteit Gent, Belgium

Marijn VERSCHELDE, SHERPPA, Universiteit Gent, Belgium  
*Ability tracking and inequality of opportunity in schooling: evidence from Belgium*



Erwin OOGHE, CES, Katholieke Universiteit Leuven, Belgium

*School accountability: (how) can we reward schools to avoid cream-skimming*

Matteo BARIGOZZI, ECARES, Université Libre de Bruxelles, Brussels, Belgium

*Immigrant's legal status, permanence in the destination country and the distribution of consumption expenditure*

Paolo MELINDI GHIDI, IRES, UCL, Belgium

*A model of ideological transmission with endogenous paternalism*

▪ **SESSION III – INTERNATIONAL ECONOMICS AND FINANCE**

Overview by Philippe WEIL, ECARES, Université Libre de Bruxelles, Brussels, Belgium

Francesca MONTI, ECARES, Université Libre de Bruxelles, Brussels, Belgium

*Incorporating conjunctural analysis in structural models*

Deniz ERDEMLIOGLU, GEQO, Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium

*Macro factors in UK excess bond returns: principal components and factor-model approach*

Giulia PICCILLO, CES, Katholieke Universiteit Leuven, Belgium

*Stock prices and exchange rates: heterogeneous agents at work*

▪ **POLITICAL ECONOMY AND THE ENVIRONMENT**

organized by Thierry BRÉCHET and Jean HINDRIKS, CORE, UCL, Belgium and Alain AYONG LE KAMA and Stéphane LAMBRECHT, EQUIPPE, Université de Lille 1, France and sponsored by CORE, EQUIPPE and Chair Lhoist Berghmans in Environmental Economics and Management

## PROGRAMME

OCTOBER 22, 2009

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▪ **SESSION I – CHAIR: THIERRY BRÉCHET, CORE, UCL, BELGIUM**

Juan Carlos ALTAMIRANO-CABRERA, Ecole Polytechnique Fédérale de Lausanne, Switzerland

*The influence of political pressure groups on the stability of international climate agreements*

**DISCUSSANT** : Julien HANOTEAU, Euromed Management & GEM IEP, Paris, France

Ulrich J. WAGNER, Universidad Carlos III, Madrid, Spain

*Estimating strategic complementarities in a dynamic game of timing: the case of the Montreal protocol*

**DISCUSSANT** : Juan Carlos ALTAMIRANO-CABRERA, Ecole Polytechnique Fédérale de Lausanne, Switzerland

Leo WAGLER, Friedrich Schiller University Jena, Germany

*Minimum participation rules with heterogeneous countries*

**DISCUSSANT** : Henry TULKENS, CORE, UCL, Belgium

▪ **SESSION II – CHAIR: HENRY TULKENS, CORE, UCL, BELGIUM**

Zili YANG, State University of New York at Binghamton (NY), USA

*Balancing contemporary fairness and historical justice: an 'Envy-free' proposal for GHG migrations*

**DISCUSSANT** : Leo WANGLER, Friedrich Schiller University Jena, Germany

Ruben DURANTE, Brown University, Providence (RI), USA

*Climate variability, risk sharing, and the economic origins of social trust: evidence from Europe: 1500-2000*

**DISCUSSANT** : Stéphane ZUBER, CORE, UCL, Belgium

▪ **SESSION III – CHAIR: STÉPHANE LAMBRECHET, EQUIPPE, UNIVERSITÉ LILLE I**

Mouez FODHA, Université Paris Panthéon-Sorbonne, France

*Environmental tax and the distribution of income among heterogeneous workers*

**DISCUSSANT** : Thomas BAUDIN, CORE, UCL, Belgium

Kirill BORISSOV, St Petersburg Institute for Economics and Mathematics, Russia

*Median voter environmental maintenance*

▪ **SESSION IV – CHAIR: ALAIN AYONG LE KAMA, EQUIPPE, UNIVERSITÉ LILLE I**

Shu YANG, Università Cattolica Del Sacro Cuore, Italy

*An adverse selection model applied to environmental regulation*

**DISCUSSANT** : Simon DE JAEGER, Hogeschool-Universiteit Brussel, Belgium

Simon DE JAEGER, Hogeschool-Universiteit Brussel, Belgium

*Waste demand in the context of waste-price mimicking and waste tourism: a case study of Flemish municipalities*

**DISCUSSANT** : Mouez FODHA, Université Paris Panthéon-Sorbonne, France

Joris MORBEE, Katholieke Universiteit Leuven, Belgium

*Political economy of resource taxation in petroleum-producing countries*

**DISCUSSANT** : Shu YANG, Università Cattolica Del Sacro Cuore, Italy

▪ **COLLECTIVE CHOICE AND ECONOMIC DESIGN IN HONOUR OF FRANS SPINNEWYN**

organized in Leuven by Luc LAUWERS, Katholieke Universiteit Leuven, Belgium, Ana MAULEON and Wouter VERGOTE, Facultés Universitaires Saint-Louis, Brussels, Belgium, Eve RAMAEKERS, Vincent VANNETELBOSCH, and Stéphane ZUBER, CORE, Université catholique de Louvain, Belgium.

## PROGRAMME

### NOVEMBER 9, 2009

- Luc LAUWERS, Katholieke Universiteit Leuven, Belgium  
*Sequential bilateral communication with three alternatives*
- Gabrielle DEMANGE, Paris School of Economics, France  
*Competition in quality of higher education: the impact of students' mobility*
- Hans PETERS, Universiteit Maastricht, The Netherlands  
*Nash consistent representations of effectivity functions*
- Çağatay KAYI, Universiteit Maastricht, The Netherlands  
*Allocation rules on networks*
- Rabah AMIR, University of Arizona, Tucson (AR), USA  
*Supermodular stochastic games*
- Myrna WOODERS, Vanderbilt University, Nashville (TN), USA  
*Conformity and stereotyping in social groups*
- Françoise FORGES, Université Paris-Dauphine, France  
*Core stable bidding rings*
- Mathias DEWATRIPONT, ECARES, Université Libre de Bruxelles, Brussels, Belgium  
*Rational crowd-pleasing and democratic accountability*
- Ariel RUBINSTEIN, Tel Aviv University, Israël and New York University (NY), USA  
*Some thoughts on choice theory and neuroeconomics*

### NOVEMBER 10, 2009

- P. Jean-Jacques HERINGS, Universiteit Maastricht, The Netherlands  
*Cooperation under incomplete contracting*
- Francis BLOCH, Ecole Polytechnique, Paris, France  
*Dynamic assignment of durable goods*
- Stéphane ZUBER, CORE, UCL, Belgium  
*Harsanyi's theorem without the sure-thing principle*
- Johannes SPINNEWYN, London School of Economics, United Kingdom  
*Revising claims and resisting ultimatums in bargaining problems*
- Patrick REY, Toulouse School of Economics, France  
*Mobile call termination revisited*
- James MALCOMSON, Oxford University, United Kingdom  
*Relational incentive contracts with persistent private information*

## ■ 1<sup>ST</sup> VALENCIA-LOUVAIN WORKSHOP ON GAME THEORY AND ECONOMIC BEHAVIOR

organized by José SEMPERE-MONERRIS, ERI-CES, Universitat de Valencia, Spain and Vincent VANNETELBOSCH, CORE, Université catholique de Louvain, Belgium. The conference was held at Universitat de Valencia and was sponsored by Generalitat Valenciana-Programa Prometoe and ERI-CES, Universitat de Valencia, Spain.

### PROGRAMME

DECEMBER 1, 2009

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#### ■ SESSION I

Wouter VERGOTE, CEREC, Facultés Universitaires Saint-Louis, Brussels, Belgium

*Endogenous network formation in patent contests and its role as a barrier to entry*

Rafael MONER-COLONQUES, ERI-CES, Universitat de Valencia, Spain

*An experimental study on firms' incentives to internationalization*

#### ■ SESSION II

Jean-François CAULIER, CEREC, Facultés Universitaires Saint-Louis, Brussels, Belgium

*Coalition network games*

Emilio CALVO, ERI-CES, Universitat de Valencia, Spain

*Bargaining in cooperative games: risk of breakdown versus discount factor; the equal split and the Shapley value*

#### ■ SESSION III

Gonzalo OLCINA, ERI-CES, Universitat de Valencia, Spain

*Trust and punishment*

Gilles GRANDJEAN, CORE, UCL, Belgium

*Risk sharing networks and farsighted stability*

## ■ INTERNATIONAL WORKSHOP ON SUPPLY CHAIN MODELS FOR SHARED RESOURCE MANAGEMENT

organized by Per J. AGRELL and Philippe CHEVALIER, CORE, UCL, Belgium. The event was sponsored by ARC (Managing Shared Resources in Supply Chains). The workshop was held at Facultés Universitaires Saint-Louis, Brussels, Belgium.

## PROGRAMME

### JANUARY 21, 2010

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- Sudip BHATTACHARJEE, University of Connecticut, Storrs (CT), USA  
*Closed loop supply chains: a systems dynamics model for analyzing sustainable business policies for shared partners in a chain*
- Alfonso PEDRAZA WASSENHOVE, INSEAD, Fontainebleau, France  
*Resource sharing in humanitarian logistics*
- Per AGRELL, CORE, UCL, Belgium  
*Investment incentives, coordination and contracts for shared resources*
- Lien PERDU, Katholieke Universiteit Leuven, Campus Kortrijk, Belgium  
*The stochastic lot sizing problem from a financial perspective*
- Gabrielle MURATORE, Technische Universiteit Eindhoven, The Netherlands  
*Coordinating supply chains: a bilevel programming approach*
- Andrew J. MILLER, Université de Bordeaux, France  
*Local cuts and two-period convex hull closures for big bucket lot-sizing problems*
- Laurence WOLSEY, CORE, UCL, Belgium  
*Mixed integer programming models with multiple machines, sites and shared set-ups*
- Robert SHUMSKY, Tuck School of Business at Dartmouth, Hanover (NH), USA  
*Revenue management models for airline alliances*
- Carles SITOMPUL, Universiteit Gent, Belgium  
*A hierarchical approach for robust planning in supply chains*
- Pierre SEMAL, Louvain School of Management, UCL, Belgium  
*Design of networks for reusable logistic containers*

### JANUARY 22, 2010

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- Harish KRISHNAN, University of British Columbia, Canada  
*Operational collaboration among competitors*
- Philippe CHEVALIER and Ying WEI, CORE, UCL, Belgium  
*Coordinating capacity investments in joint ventures*
- Paul BELLEFLAMME, CORE, UCL, Belgium  
*Managing inter-and intra-group externalities on two-sided platforms*
- Jean-François AUDY, Université Laval, Québec, Canada  
*Coordination in collaborative logistics*
- Frank KARSTEN, Technische Universiteit Eindhoven, The Netherlands  
*Spare parts inventory pooling games*

- Stefan MINNER, Universität Wien, Austria  
*A multi-agent framework for coordinating pooled inventories in distribution systems*
- Nasuh BUYUKKARAMIKLI, Technische Universiteit Eindhoven, The Netherlands  
*Periodic capacity management under a lead-time performance constraint*

## ▪ OVERLAPPING GENERATIONS DAYS. DYNAMIC MACROECONOMICS: POPULATION, ENVIRONMENT AND SUSTAINABILITY

organized by Thomas BAUDIN, CORE, UCL, BELGIUM and David DE LA CROIX, IRES and CORE, UCL, BELGIUM and sponsored by the ARC Project on Sustainability, the Belgian Science Policy, the Chair Lhoist Berghmans in Environmental Economics and Management, CORE and IRES, Université catholique de Louvain, Belgium.

### PROGRAMME

#### MARCH 16, 2010

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- **SESSION I : OPTIMAL POLICY – CHAIR: ALESSANDRO SOMMACAL, UNIVERSITA DEGLI STUDI DI VERONA, ITALY**  
Grégory PONTIÈRE, Paris School of Economics, France  
*How powerful is demography? The serendipity theorem revisited*  
**DISCUSSANT** : Bertrand WIGNIOLLE, Paris School of Economics, France  
  
Guillaume COMMENGE, Paris School of Economics, France  
*Sustainability and population changes: welfare criteria comparison through its measurement*  
**DISCUSSANT** : Olivier STERCK, IRES, UCL, Belgium  
  
Paolo PIACQUADIO, CORE, UCL, Belgium  
*Growth under no-envy*  
**DISCUSSANT** : Thomas SEEGMULLER, GREQAM, Marseille, France  
  
Thomas BAUDIN, CORE, UCL, Belgium  
*Optimal trade-off between quality and quantity under uncertain child survival*  
**DISCUSSANT** : Grégory PONTIÈRE, Paris School of Economics, France

#### MARCH 17, 2010

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- **SESSION II: DIVORCE AND CRIME – CHAIR: BERTRAND WIGNIOLLE, Paris School of Economics, France**  
Victor HILLER, Université Paris Panthéon-Assas, France  
*Divorce decisions, divorce laws and social norms*  
**DISCUSSANT** : Paolo MELINDI GHIDI, IRES, UCL, Belgium  
  
Fabio MARIANI, IRES, UCL, Belgium  
*Exporting criminals ?*  
**DISCUSSANT** : Radek STEFANSKI, Oxford University, United Kingdom

- **SESSION III: FAMILY AND TECHNOLOGICAL CHANGES – CHAIR: THOMAS SEEGMULLER, GREQAM, MARSEILLE, FRANCE**  
 Alessandro SOMMACAL, Università degli Studi di Verona, Italy  
*Technological change and the family structure: from the pater familias to the old chap*  
 DISCUSSANT : Wolfgang KUHLE, Universität Mannheim, Germany  
  
 Alice SCHOONBROODT, University of Southampton, United Kingdom  
*The fertility response to shocks in dynastic models*  
 DISCUSSANT : Thomas BAUDIN, CORE, UCL, Belgium
  
- **SESSION IV: ENVIRONMENT – CHAIR: THIERRY BRÉCHET, CORE, UCL, BELGIUM**  
 Natacha RAFFIN, Paris School of Economics, France  
*Education and the political economy of environmental protection*  
 DISCUSSANT : Bénédicte MEERT, FNRS & CORE, UCL, Belgium  
  
 Radek STEFANSKI, Oxford University, United Kingdom  
*Structural transformation and pollution*  
 DISCUSSANT : Thierry BRÉCHET, CORE, UCL, Belgium  
  
 Carlotta BALESTRA, CORE, UCL, Belgium  
*Property rights with biological spillovers: when Hardin meets Meade*  
 DISCUSSANT : Katheline SCHUBERT, Paris School of Economics, France  
  
 Thomas SEEGMULLER, GREQAM, Marseille, France  
*Environmental tax policy and public debt stabilization*  
 DISCUSSANT : Luca PENSIEROSO, IRES, UCL, Belgium

### MARCH 18, 2010

- **SESSION V: FERTILITY AND DEMOGRAPHIC CHANGES I – CHAIR: HYPOLYTE D'ALBIS, UNIVERSITÉ DE MONTPELLIER III, FRANCE**  
 Paula GOBBI, IRES, UCL, Belgium  
*A model of voluntary childlessness*  
 DISCUSSANT : Hippolyte D'ALBIS, Université de Montpellier III, France  
  
 Bastien CHABÉ-FERRET, IRES, UCL, Belgium  
*Fertility differential, discrimination, and the behaviour of minorities*  
 DISCUSSANT : Pascal BELAN, Université Cergy-Pontoise, France
  
- **SESSION VI: FERTILITY AND DEMOGRAPHIC CHANGES II – CHAIR: JAVIER OLIVERA, KATHOLIEKE UNIVERSITEIT LEUVEN, BELGIUM**  
 Alexander LUDWIG, Universität zu Köln, Germany  
*Demographic change, human capital and welfare*  
 DISCUSSANT : Frédéric DOCQUIER, FNRS & IRES, UCL, Belgium  
  
 Katheline SCHUBERT, Paris School of Economics, France  
*Demo-economic equilibria when childbearing age is endogenous*  
 DISCUSSANT : David DE LA CROIX, IRES, UCL, Belgium

▪ **SESSION VII: DEBT, PENSIONS AND RETIREMENT – CHAIR: ALEXANDER LUDWIG, UNIVERSITÄT ZU KÖLN, GERMANY**

Pascal BELAN, Université Cergy-Pontoise, France

*Voting on public pensions with endogenous child-to-parent altruism*

DISCUSSANT : Fabio MARIANI, IRES, UCL, Belgium

Wolfgang KUHLE, Universität Mannheim, Germany

*The optimum structure for government debt*

DISCUSSANT : Alessandro SOMMACAL, Università degli Studi di Verona, Italy

Hippolyte D'ALBIS, Université de Montpellier III, France

*Mortality transition and differential incentives for early retirement*

DISCUSSANT : Alexander LUDWIG, Universität zu Köln, Germany

▪ **FAIRNESS, EQUALITY OF OPPORTUNITY AND PUBLIC ECONOMICS**

organized by Erik SCHOKKAERT (CES, Katholieke Universiteit Leuven and CORE, UCL, Belgium), Marc FLEURBAEY (CERSES, Université Paris Descartes, France), François MANIQUET (CORE, UCL, Belgium), and Dirk VAN DE GAER (SHERPA, Universiteit Gent) and sponsored by the Communauté Française de Belgique, the European Commission (EST programme), the Politique Scientifique Fédérale, and CORE, Université catholique de Louvain, Belgium.

## PROGRAMME

**APRIL 9, 2010**

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▪ **SESSION I – CHAIR: ERIK SCHOKKAERT, KATHOLIEKE UNIVERSITEIT LEUVEN AND CORE, UCL, BELGIUM**

Marc FLEURBAEY, CERSES, Université Paris Descartes, France

*Ex-ante and ex-post equality of opportunity*

Paolo PIACQUADIO, CORE, UCL, Belgium

*Efficiency and no-envy in dynamic resource allocation*

Juan MORENO-TERNERO, Universidad de Malaga, Spain

*A common ground for resource and welfare egalitarianism*

▪ **SESSION II – CHAIR: FRANÇOIS MANIQUET, CORE, UCL, BELGIUM**

Vito PERAGINE, Università degli Studi di Bari, Italy

*Long term income and opportunity inequality*

Erwin OOGHE, CES, Katholieke Universiteit Leuven, Belgium

*Optimal taxation with partial control: theory and evidence*

Dirk VAN DE GAER, SHERPA, Universiteit Gent, Belgium

*A comparison of optimal tax policies when compensation and responsibility matter*



André DECOSTER, Katholieke Universiteit Leuven, Belgium  
*Empirical welfare analysis in random utility models of labour supply*

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## APRIL 10, 2010

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### ▪ SESSION III – CHAIR: JEAN HINDRIKS, CORE, UCL, BELGIUM

Francisco FERREIRA, World Bank, Washington (DC), USA  
*Measuring inequality of opportunity with imperfect data: the case of Turkey*

Valentino DARDANONI, Università di Palermo, Italy  
*Intergenerational education mobility*

Alain TRANNOY, GREQAM-IDEP, Marseille, France  
*Dworkin is right*

Frank COWELL, London School of Economics, United Kingdom  
*The tyranny of aggregation versus the tyranny of non-aggregation: an empirical investigation*

### ▪ SESSION IV – CHAIR: CLAUDE D'ASPREMONT, CORE, UCL, BELGIUM

Christelle SAPATA, Universitat Autònoma de Barcelona, Spain and CORE, UCL, Belgium  
*Comparing frameworks in measuring inequality of opportunity*

John ROEMER, Yale University, New Haven (CT), USA  
*On the representation of responsibility-egalitarian rules*

Hervé MOULIN, Rice University, Houston (TX), USA  
*Impartial award of a prize*

## ▪ A JOURNEY THROUGH MICROECONOMICS. A TRIBUTE TO JACQUES THISSE

organized by Paul BELLEFLAMME, Claude D'ASPREMONT, Dominique PEETERS, Vincent VANNETELBOSCH (CORE, UCL, Belgium), Erik SCHOKKAERT (CES, Katholieke Universiteit Leuven and CORE, UCL, Belgium), and Hylke VANDENBUSSCHE (CORE and IRES, UCL, Belgium) and sponsored by the Communauté Française de Belgique, the European Commission (EST programme), the Fondation CORE, the Politique Scientifique Fédérale, and IMMAQ, Université catholique de Louvain, Belgium.

## PROGRAMME

### MAY 11, 2010

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- **SESSION I – CHAIR: JAMES FRIEDMAN, UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL (NC), USA**  
Pierre PICARD, Université du Luxembourg, Luxembourg and CORE, UCL, Belgium  
*Self-organized cities*  
DISCUSSANT : Etienne WASMER, Sciences-Po, Paris, France  
  
Kristian BEHRENS, Université du Québec, Montréal, Canada  
*Trade, wages, and productivity*  
DISCUSSANT : Joe THARAKAN, Université de Liège and CORE, UCL, Belgium  
  
Gioardano MION, London School of Economics, United Kingdom  
*Trade crisis? What trade crisis ?*  
DISCUSSANT : Antonio TEIXEIRA, European Commission, Brussels, Belgium  
  
Gianmarco OTTAVIANO, Università di Bologna, Italy  
*Market size, competition, and the product mix of exporters*  
DISCUSSANT : Susana PERALTA, Universidade Nova de Lisboa, Portugal  
  
Elhanan HELPMAN, Harvard University, Cambridge (MA), USA  
*Income distribution, product quality, and international trade and investment*

### MAY 12, 2010

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- **SESSION II – CHAIR: RODOLPHE DOS SANTOS FERREIRA, UNIVERSITÉ DE STRASBOURG, FRANCE**  
Yves ZENOU, Stockholms Universitet, Sweden  
*Juvenile delinquency and conformism*  
DISCUSSANT : Antoine BILLOT, Université Paris Panthéon-Assas, France  
  
Masahisa FUJITA, Research Institute of Economy, Trade and Industry and Konan University, Japan  
*The dynamics of knowledge diversity and economic growth*  
DISCUSSANT : Florian MAYNERIS, CORE, UCL, Belgium  
  
Gilles DURANTON, Université de Toronto, Canada  
*Productive cities: sorting, selection and agglomeration*  
DISCUSSANT : Diego PUGA, Madrid Institute for Advanced Studies, Madrid, Spain
- **SESSION III – CHAIR: PIERRE HANSEN, HEC, MONTRÉAL, CANADA AND ECOLE POLYTECHNIQUE, PARIS, FRANCE**  
Simon ANDERSON, University of Virginia, Charlottesville (VA), USA  
*Magazine content*  
DISCUSSANT : Malgorzata KNAUFF, Warsaw School of Economics, Poland  
  
Jean GABSZEWICZ, CORE, UCL, Belgium  
*Nesting vertical and horizontal product differentiation*  
DISCUSSANT : Jonathan HAMILTON, University of Florida, Gainesville (FL), USA

Heiko CARLE, Université Libre de Bruxelles, Brussels, Belgium  
*Ownership and control in differentiated product markets*  
 DISCUSSANT : Joana RESENDE, Universidade do Porto, Portugal

## ■ 2<sup>ND</sup> VALENCIA-LOUVAIN WORKSHOP ON GAME THEORY AND ECONOMIC BEHAVIOR

organized by José SEMPERE-MONERRIS, ERI-CES, Universitat de Valencia, Spain and Vincent VANNETELBOSCH, CORE, Université catholique de Louvain, Belgium. The conference was held at CORE and was sponsored by Politique Scientifique Fédérale and Generalitat Valenciana-Programa Prometoe and ERI-CES, Universitat de Valencia, Spain.

### PROGRAMME

MAY 27, 2010

#### ■ SESSION I

Ana MAULEON, CEREC, Facultés Universitaires Saint-Louis, Brussels, and CORE, UCL, Belgium  
*Von Neumann-Morgenstern farsightedly stable sets in two-sided matching*

Fernando VEGA-REDONDO, European University Institute, Firenze, Italy  
*Institutions and globalization: a social network approach*

#### ■ SESSION II

Dunia LOPEZ-PINTADO, Universidad Pablo de Olavide, Spain  
*Influence networks*

Vicente CALABUIG, ERI-CES, Universitat de Valencia, Spain  
*Collective action, punishment and the evolution of preferences*

#### ■ SESSION III

Sanjeev GOYAL, Cambridge University, United Kingdom  
*Robust networks*

Jose SEMPERE-MONERIS, ERI-CES, Universitat de Valencia, Spain  
*Price differentials among brands in retail distribution: product quality and service quality*

Santiago RUBIO, ERI-CES, Universitat de Valencia, Spain  
*The effect of investment in R&D on the participation in international environmental agreements: technological agreements versus emission agreements*

## ■ RECENT ADVANCES IN ENERGY ECONOMICS. A CONFERENCE IN HONOUR OF YVES SMEERS

organized by Per AGRELL, Claude D'ASPREMONT, Mathieu VAN VYVE, Laurence WOLSEY (CORE, UCL, Belgium), Andreas EHRENMANN (GdF Suez, Brussels, Belgium), and Erik SCHOKKAERT (CES, Katholieke Universiteit Leuven and CORE, UCL, Belgium) and sponsored by the Communauté Française de Belgique (ARC), the Fondation CORE, GdF Suez, and IMMAQ, Université catholique de Louvain, Belgium.

### PROGRAMME

JUNE 17, 2010

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- **SESSION I – CHAIR: JEAN-PIERRE PONSSARD, ECOLE POLYTECHNIQUE DE PARIS, FRANCE**  
William HOGAN, Harvard University, Cambridge (MA), USA  
*Smarter pricing for electricity grids*  
  
Mathieu VAN VYVE, CORE, UCL, Belgium  
*The impact of network modelling on prices in power markets*
- **SESSION II – CHAIR: JEAN-MICHEL GLACHANT, EUROPEAN UNIVERSITY INSTITUTE, FIRENZE, ITALY**  
Jacqueline BOUCHER, GdF Suez, Brussels, Belgium  
*From theory to practice in the energy field*  
  
Danny RALPH, Cambridge University, United Kingdom  
*The "invisible hand" for risk averse investment in electricity generation*

JUNE 18, 2010

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- **SESSION III – CHAIR: ANDRÉ BIHAIN, GdF SUEZ, LOUVAIN-LA-NEUVE, BELGIUM**  
Golbon ZAKERI, University of Auckland, New Zealand  
*Swapping generator assets: impacts on wholesale and retail markets*  
  
Stef PROOST, Katholieke Universiteit Leuven, Belgium  
*Nuclear market power: tax or liberalize*
- **SESSION IV – CHAIR: MARC STUBBE, TRACTEBEL ENGINEERING, BRUSSELS, BELGIUM**  
Benjamin HOBBS, John Hopkins University, Baltimore (MA), USA  
*Who in the supply chain should be responsible for carbon reductions? A complementary based analysis of source-vs load-based trading proposals*  
  
Per AGRELL, CORE, UCL, Belgium  
*Network regulation in a low-carbon world*

▪ **SESSION V – CHAIR: CLAUDE D'ASPREMONT, CORE, UCL, BELGIUM**

Jean-Pierre HANSEN, GdF Suez, Brussels, Belgium

*Where there is much light, the shadows are deepest*

Kurt JÖRNSTEN, Norwegian School of Economics and Business Administration, Bergen, Norway

*Equilibrium prices in market with non-convexities*

▪ **SESSION VI – CHAIR: VINCENT BLONDEL, INMA, UCL, BELGIUM**

Fred MURPHY, Temple University, Philadelphia (PA), USA

*What does oligopoly theory really tell us about market power in electricity markets?*



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## **INVITED SEMINARS**





The following seminars were presented by CORE members during the academic year 2009-2010.

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**PER AGRELL**

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- *Network regulation under climate change policy*  
Florence School of Regulation Academic Roundtable 2010, European University Institute, Firenze, Italy (May 2010)
- *Smart grids: is there a need for public intervention?*  
Bruegel Smart Grid Brainstorming, Brussels, Belgium (July 2010)

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**THOMAS BAUDIN**

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- *Family policies: what does the standard endogenous fertility model tell us?*  
IRES Research Seminar, UCL, Belgium (October 2009)
- *Religion and fertility: the French connection*  
Midi de la Recherche, Centre de Recherche en Démographies et Sociétés, UCL, Belgium (March 2010)
- *Dinks, dewks & Co.*  
Macroeconomic Lunch Seminar, IRES, UCL, Belgium (May 2010)

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**LUC BAUWENS**

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- *On marginal likelihood computation in change-point models*  
Nuffield College, Oxford, United Kingdom (October 2009)
- *Evaluating the forecasting performance of structural break models*  
GREQAM, Marseille, France (June 2010)  
Seminari Presso l'Area Ricerca Economica e Relazioni Internazionali, Bank of Italy, Roma, Italy (July 2010)  
Università degli Studi di Salerno, Italy (July 2010)

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**PAUL BELLEFLAMME**

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- *Comment favoriser la création et la diffusion de technologies environnementales? Une grille de lecture économique*  
Intellectual Property & Sustainable Development, Brussels, Belgium (December 2009)
- *L'économie du gratuit*  
Ecole Pratique des Hautes Etudes Commerciales (EPHEC), Louvain-la-Neuve and Woluwé, Belgium (March 2010)
- *Platform competition and seller investment incentives*  
DG Competition, Brussels, Belgium (May 2010)
- *Asymmetric information and investment in quality*  
Centre d'Economie Industrielle (CERNA), Mines ParisTech, France (May 2010)

- *Crowdfunding: an industrial organization perspective*  
Digital Business Models, Paris, France (June 2010)

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**THIERRY BRÉCHET**

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- *Family altruism with renewable resource and population growth*  
IREGE, IMUS, Université de Savoie, Annecy, France (December 2009)
- *Can education be good for both growth and the environment?*  
Department of Economics, Université de Nantes, France (March 2010)
- *The oil peak debate: an economic analysis*  
Department of Economics, European University at St Petersburg, Russia (April 2010)

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**PHILIPPE CHEVALIER**

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- *Coordinating capacity investments for joint ventures*  
Chinese University of Hong Kong, People's Republic of China (March 2010)

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**CLAUDE D'ASPREMONT**

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- *Household behaviour and individual autonomy*  
School of Economics and Finance, University of St Andrews, Scotland (October 2009)
- *Competition with varying toughness and innovation*  
Scottish Institute for Research in Economics, Edinburgh University, Scotland (October 2009)  
Department of Operations Research and Financial Engineering, Princeton University (NJ), USA  
(May 2010)
- *Invited lectures in microeconomics*  
Palacki University, Olomouc, Czech Republic (December 2009 and March 2010)

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**JULIO DAVILA**

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- *On the fiscal treatment of life-expectancy choices*  
Department of Economics, University of Exeter, United Kingdom (February 2010)  
Department of Economics, Universidad Carlos III de Madrid, Spain (April 2010)  
Tinbergen Institute, Amsterdam, The Netherlands (May 2010)

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**KOEN DECANQ**

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- *Has the world moved forward ? A robust multidimensional evaluation*  
Universiteit Antwerpen, Belgium (October 2009)
- *Measuring inequality in human development: some reflections*  
Technical Consultation Human Development Measurement, Rabat, Morocco (January 2010)
- *Global inequality: what do we measure? What do we know?*  
Universiteit Antwerpen, Belgium (October 2009)

- *Copula-based orderings of multivariate dependence*

Università di Verona, Italy (June 2010)

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**PIERRE DEHEZ**

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- *Cooperative provision of indivisible public goods*

Department of Economics, Università di Pisa, Italy (April 2010)

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**DAVID DE LA CROIX**

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- *An incentive mechanism to break the low-skill immigration deadlock*

Universität Mannheim, Germany (September 2009)

- *Do brain drain and poverty result from coordination failures?*

Université du Luxembourg, Luxembourg (March 2010)

Universitat de Barcelona, Spain (June 2010)

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**EMANUELE FORLANI**

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- *Firms' liquidity constraints and export activity*

Research Seminar OFCE-Skema, Université Nice Sophie Anthipolis, France (May 2010)

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**JOACHIM GAHUNGU**

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- *On multi asset optimal stopping and an heuristic principle of smooth fit*

Stochastic Analysis Seminar, Center for Mathematics for Applications, Oslo, Norway (January 2010)

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**NICOLAS GILLIS**

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- *New variants of nonnegative matrix factorization for sparsity improvement and maximum biclique finding*

Department of Computer Science, Wake Forest University, Winston-Salem (NC), USA (November 2009)

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**KOEN JOCHMANS**

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- *An adjusted profile likelihood for non-stationary panel data models with fixed effects*

CeMMAP, University College London, United Kingdom (May 2010)

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**ALEJANDRO LAMAS**

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- *Geospatial tools applied to urban solid waste collection system design*

Faculty of Organizational Sciences, University of Belgrade, Serbia (December 2009)

**MARIE-LOUISE LEROUX**

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- *Voting on pensions: sex and marriage*  
Universidad EAFIT, Medellin, Colombia (March 2010)  
Universidad de Los Andes, Bogota, Columbia (April 2010)

**FRANÇOIS MANIQUET**

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- *A study of strategic voting under proportional representation*  
Northwestern University, Evanston (IL), USA (November 2009)  
University of Guelph, Canada (November 2009)  
Rice University, Houston (TX) (December 2009)

**FLORIAN MAYNERIS**

---

- *Entry on export markets, credit constraints and firm-level productivity growth*  
Université Paris-Sud, France (April 2010)
- *Public support to clusters in France: A firm-level study of French 'Local Productive Systems'*  
Universitat Autònoma de Barcelona, Spain (2010)

**TANJA MLINAR**

---

- *Revenue management and shared resources in supply chains*  
Faculty of Organizational Sciences, University of Belgrade, Serbia (December 2009)

**JUAN D. MORENO-TERNERO**

---

- *The political economy of health care finance*  
HEC, Université de Lausanne, Switzerland (April 2010)

**YURI NESTEROV**

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- *Random coordinate descent methods*  
ESyE Department Seminar, Georgia Tech, Atlanta (GA), USA (April 2010)

**DOMINIQUE PEETERS**

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- *Pégrinations périurbaines*  
UMR Espace 6012 CNRS, Université d'Avignon et des Pays du Vaucluse, France (December 2009)
- *Locating fire stations in Belgium: an integrated GIS approach*  
Department of Planning and Regional Development, University of Thessaly, Volos, Greece (January 2010)

- *S-GHOST city: self-generating housing, open space and transportation in a city*  
Department of Planning and Regional Development, University of Thessaly, Volos, Greece  
(January 2010)  
Centro de Modeamiento Matematico, Universidade de Chile, Santiago de Chile, Chile (March 2010)

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#### PIERRE PESTIEAU

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- *Social and private LTC insurance with variable altruism*  
Paris School of Economics, France (September 2009)  
University of Florida, Gainesville (FL), USA (November 2009)
- *Unequal wages for equal utilities*  
Université Laval, Canada (October 2009)  
Université du Québec, Montréal, Canada (October 2009)
- *Myopia, redistribution and pension*  
Universidade de Vigo, Spain (December 2009)  
Université du Luxembourg, Luxembourg (March 2010)
- *Analyse économique de l'assurance dépendance*  
Midi de la Recherche, UCL, Belgium (March 2010)
- *European welfare states. Performance and convergence*  
Séminaire de l'IRES, UCL, Belgium (March 2010)
- *The incidence and cost of a uniform pension in Latin America*  
Ateliers Retraites, Bordeaux, France (March 2010)

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#### ALAIN PHOLO BALA

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- *Definition of limits of agglomeration and basic spatial units: a state of the art*  
Ecole Normale Supérieure de Cachan, France (March 2010)
- *Do rent-seeking and interregional transfers contribute to urban primacy in Sub-Saharan Africa?*  
African Population & Health Research Center, Nairobi, Kenya (January 2010)

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#### ERIK SCHOKKAERT

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- *Equivalent income and the economic evaluation of health care*  
Erasmus Universiteit Rotterdam, The Netherlands (September 2009)
- *Why empirical social choice?*  
CERSES, Université Paris-Descartes, France (January 2010)
- *Responsibility and causality*  
GREQAM, Marseille, France (May 2010)

## LEOPOLD SIMAR

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- *Mesure d'efficacité et innovation en économie de la production*  
Chaire Pierre de Fermat, Région Midi-Pyrénées, Toulouse School of Economics, France  
(November 2009)
- *Regularization of non-parametric frontier estimators*  
Università di Bocconi, Milano, Italy (March 2010)
- *Multivariate tools for data analysis*  
Kiev School of Economics, Kiev, Ukraine (April 2010)

## ISABELLE THOMAS

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- *Modèles de localisation: méthodes et solutions*  
Université du Luxembourg, Luxembourg (December 2009)

## TOM TRUYTS

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- *Signaling and indirect taxation*  
Research Seminar in Economics, Freie Universität Berlin, Germany (November 2009)
- *The Belgian Corn Laws, 1834-1873. An econometric analysis of representatives' voting behaviour*  
Universiteit Antwerp, Belgium (February 2010)

## HENRY TULKENS

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- *Stabilité de l'accord et règles d'allocation initiale des droits d'émission* (commentaire sur le rapport de Jean Tirole "Politique climatique: une nouvelle architecture internationale")  
Ecole Polytechnique, Paris, France (October 2009)
- *Le fédéralisme a-t-il un avenir en Belgique?*  
Institut des Hautes Etudes de Belgique, Brussels, Belgium (March 2010)

## DIRK VAN DE GAER

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- *Upward structural mobility, exchange mobility and subgroup consistent mobility measurement, US-German mobility rankings revisited*  
Université de Strasbourg, France (September 2009)

## HYLKE VANDENBUSSCHE

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- *Antidumping hurts exporters: firm-level evidence from France*  
Darmouth College, Hanover (NH), USA (October 2009)  
Rutgers University (NJ), USA (October 2009)  
Kentucky University, Lexington, United Kingdom (October 2009)

- *Antidumping protection hurts exporters*  
Graduate Institute Geneva, Switzerland (October 2009)  
Erasmus Universiteit Rotterdam, The Netherlands (November 2009)  
ERWIT meeting, CEPR, Roma, Italy (June 2010)

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**VINCENT VANNETELBOSCH**

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- *Connections among farsighted agents*  
Department of Economic Analysis II, Universidad del Pais Vasco, Bilbao, Spain (November, 2009)

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**MATHIEU VAN VYVE**

---

- *The impact of network modeling on prices in power markets*  
Institut Montefiore, Université de Liège, Belgium (May 2010)

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**WOUTER VERGOTE**

---

- *Endogenous network formation and endogenous efforts in a patent contest*  
Facultés Universitaires Notre-Dame de la Paix, Namur, Belgium (November 2009)

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**YING WEI**

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- *Measuring the variability in supply chains with the peakedness: model and application to FMCG*  
School of Management, Sun Yat-Sen University, Guangzhou, People's Republic of China (January 2010)  
IESEG School of Management, Lille, France (April 2010)

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**LAURENCE WOLSEY**

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- *Valid inequalities for 2 rwo MIPS: an introduction*  
Mathematical Programming Study Group, London School of Economics, United Kingdom (February 2010)
- *Simple MIPS and lot-sizing: new results and old favorites*  
Institute for Systems and Computer Engineering, Universidade do Porto, Portugal (May 2010)
- *Extended Formulations I and II*  
Universidade de Aveiro, Portugal (May 2010)





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**ACADEMIC VISITS OF CORE  
MEMBERS**



Academic visits by CORE members to other institutions

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**LUC BAUWENS**

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HEC Montréal, Canada (February 2010)

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**THIERRY BRÉCHET**

---

European University of St Petersburg, Russia (September 2009 and April 2010)

Université de Savoie, Annecy, France (December 2009)

Université de Nantes, France (March 2010)

MIT Global Change Forum, Arlington, Washington (DC), USA (March 2010)

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**PHILIPPE CHEVALIER**

---

Chinese University of Hong Kong, People's Republic of China (February-March 2010)

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**JULIO DAVILA**

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Kyoto Institute of Economic Research, University of Kyoto, Japan (March-April 2010)

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**PIERRE DEHEZ**

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Department of Economics, Università di Pisa, Italy (January and April 2010)

Université de Nancy, France (regularly during the academic year 2009-2010)

Université de Strasbourg, France (regularly during the academic year 2009-2010)

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**DAVID DE LA CROIX**

---

University of California, Los Angeles (CA), USA (December 2009)

Universitat de Barcelona and Universitat Autònoma de Barcelona, Spain (June 2010)

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**JACQUES DRÈZE**

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Ministry Human Resource Development, New Delhi, India (June 2010)

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**NICOLAS GILLIS**

---

Wake Forest University, Winston-Salem (NC), USA (August-December 2009)

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**YASSINE LEFOUILI**

---

Universidad Rey Juan Carlos, Madrid, Spain (January 2010)

**MARIE-LOUISE LEROUX**

---

Paris School of Economics, France (November 2009)

Centre de Recherche Sens, Ethique, Société (CERSES), Université Paris Descartes, France  
(November 2009)

Toulouse School of Economics, France (September and November 2009)

Universidad del Rosario, Bogota, Columbia (February-May 2010)

**ETIENNE LOUTE**

---

Université Catholique de Bukavu, République Démocratique du Congo (September 2009 and April 2010)

Université du Burundi, Bujumbura, Burundi (September and November 2009, March and April 2010)

**FRANÇOIS MANIQUET**

---

Kellogg School of Management, Northwestern University, Evanston (IL), USA (September to December 2009)

University of Warwick, United Kingdom (January and February 2010)

**ANA MAULEON**

---

Universidad del Pais Vasco, Bilbao, Spain (November 2009)

Universitat de Valencia, Spain (November-December 2009)

**ELENA MOLIS**

---

University of Oxford, United Kingdom (December 2009 and March 2010)

Universidad del Pais Vasco, Bilbao, Spain (June 2010)

**YURII NESTEROV**

---

Georgia Tech, Atlanta (GA), USA (January-March 2010)

**DOMINIQUE PEETERS**

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Université d'Avignon, France (December 2009)

University of Thessaly, Volos, Greece (January 2010)

THEMA, Université de Franche-Comté, Besançon, France (April-May 2010)

CESAER/INRA, Dijon, France (May 2010)

**SUSANA PERALTA**

---

Université d'Aix-Marseille, France (June 2010)

**PIERRE PESTIEAU**

---

World Bank, Washington (DC), USA (September-November 2009)  
Center for Economic Studies, München, Germany (November 2009)  
Institut d'Economie Industrielle, Toulouse, France (January and February 2010)  
University of Illinois, Urbana-Champaign (IL), USA (April 2010)

**PAOLO GIOVANNI PIACQUADIO**

---

Università degli Studi Roma la Sapienza, Italy (February 2010)

**PIERRE PICARD**

---

Université du Québec, Montréal, Canada (October 2009)  
University of Tokyo, Japan (October 2009)  
University of Sendai, Japan (October 2009)  
Université de Toulouse I Capitole, France (January 2010)

**EVE RAMAEKERS**

---

University of Warwick, United Kingdom (October-November 2009)  
Universitat Autònoma de Barcelona, Spain (November-December 2009)

**LÉOPOLD SIMAR**

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Chaire d'Excellence Pierre de Fermat, Région Midi-Pyrénées: Université de Toulouse I Capitole, France (September and November 2009)  
Agence Nationale de la Recherche (ANR), GREMAQ, Toulouse School of Economics, France (February 2010)  
Kiev School of Economics, Kiev, Ukraine (April 2010)  
INRA-GREMAQ, Toulouse School of Economics, France (May 2010)  
Clemson University (SC), USA (June 2010)

**YVES SMEERS**

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Institut Français du Pétrole, Paris, France (March 2010)  
Universität Nürnberg, Germany (January and March 2010)  
GdF Suez, Paris, France (January, April and June 2010)  
IFP School, Paris, France (May 2010)

**JACQUES THISSE**

---

New Economic School, Moscow, Russia (September 2009)

**ISABELLE THOMAS**

---

Institut Universitaire de France, Paris, France (March 2010)

Belgian Pavillon, Shanghai, China (June 2010)

**VINCENT VANNETELBOSCH**

---

Universidad del Pais Vasco, Bilbao, Spain (November 2009)

Universitat de Valencia, Spain (November-December 2009)

**STÉPHANE ZUBER**

---

Toulouse School of Economics, France (November 2009)

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**CONFERENCES ATTENDED  
BY CORE MEMBERS**





CORE members attended the following conferences and most presented a paper

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**PER AGRELL**

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Smart EU Energy Policy Workshop on Security of Supply, Fondazione Eni Enrico Mattei, Milano, Italy (September 2009)  
 Workshop on Energy and Environment, Universitat de Girona, Spain (October 2009)  
 Wilton Park Conference "A Smart EU Energy Policy" (WP 1009), Wilton Park, United Kingdom (December 2009)  
 16<sup>th</sup> International Working Conference on Production Economics, Innsbruck, Austria (March 2010)  
 FSR Annual Conference: Incentive Regulation of Utilities – 25 years Down the Line. Florence School of Regulation, European University Institute, Firenze, Italy (May 2010)  
 North American Productivity Workshop (NAPW 2010), Rice University, Houston (June 2010)  
 CRESSE International Conference on Regulation and Competition, Chania, Greece (July 2010)

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**CARLOTTA BALESTRA**

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Doctoral Conference of ADRES (Association for the Development in Economics and Statistics), Lyon, France (January 2010)  
 Royal Economic Society PhD Presentation Meeting & Job Market, City University, London (January 2010)  
 4<sup>th</sup> World Congress of Environmental and Resource Economists (WCERE), Montréal, Canada (June-July 2010)

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**THOMAS BAUDIN**

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Journées Dynamiques, Lille, France (December 2009)  
 Chair Transition Démographique Workshop "Demographic Perspectives: How to Measure and Deal with Uncertainty?", Paris, France (October 2009)  
 AARC Days on Sustainability, Chaire Hoover, UCL, Belgium (May 2010)  
 Journées Louis-André Gérard-Varet #9, Institut d'Economie Publique, Marseille, France (June 2010)

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**LUC BAUWENS**

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3<sup>rd</sup> International Conference on Computational and Financial Econometrics (CEF'09), Limassol, Cyprus (October 2009) (member of the program committee)  
 20<sup>th</sup> (EC)<sup>2</sup>-Conference "Real Time Econometrics", Aarhus University, Denmark (December 2009)  
 Workshop "Measurement and Evaluation of Academic Research Performance: Policy Implications", Universidade do Minho, Braga, Portugal (June 2010)  
 The Rimini Conference in Economics and Finance (RCEF), Rimini, Italy (June 2010)

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**PAUL BELLEFLAMME**

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1<sup>st</sup> Valencia-Workshop on Game Theory and Economic Behavior, Valencia, Spain (December 2009)  
 3<sup>ème</sup> Conférence Euro-Africaine en Finance et Economie (VEAFE), Paris School of Economics, France (June 2010)

**ANTON BELYAKOV**

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International Conference "Nonlinear Dynamics, Stability, Identification and Control of Systems and Structure", Università di Roma La Sapienza, Roma, Italy (September 2009)

**RAOUF BOUCEKKINE**

---

Workshop on Energy and Environment, Universitat de Girona, Spain (October 2009)

**THIERRY BRÉCHET**

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3<sup>rd</sup> Belgian Environmental Economics Day, Katholieke Universiteit Leuven, Belgium (February 2010)

30<sup>th</sup> MIT Global Change Forum, Arlington (CA), USA (March 2010)

Seminar for Masters Students in Engineering, Ecole Polytechnique de Louvain, UCL, Belgium (April 2010) (co-organizer)

11<sup>th</sup> Annual Conference of the Association for Public Economic Theory (PET10), Bogaziçi University, Istanbul, Turkey, (June 2010)

4<sup>th</sup> World Congress in Environmental Economics, Montréal, Canada (June 2010)

**CHIARA CANTA**

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Italian Health Economics Association (AIES) 15<sup>th</sup> Annual Conference "The Future of Health Care: Institutional Design, Efficiency, Equity", Torino, Italy (September 2009)

**JEAN-FRANÇOIS CARPANTIER**

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15<sup>th</sup> Spring Meeting of Young Economists (SMYE'10), Luxembourg, Luxembourg (April 2010)

Barcelona Microeconometrics Summer School, Graduate School of Economics, Barcelona, Spain (July 2010)

**GEOFFREY CARUSO**

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15<sup>th</sup> European Colloquium on Theoretical and Quantitative Geography, Maynooth, Ireland, (September 2009)

International Conference: Emergence in Geographical Space: Concepts, Methods and Models, Paris, France, (November 2009)

**PHILIPPE CHEVALIER**

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INFORMS Annual Meeting, San Diego (CA), USA (October 2009)

3<sup>rd</sup> International Conference on Information Systems, Logistics and Supply Chain, Casablanca, Morocco (April 2020)

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**NGUYEN THANG DAO**

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Vietnam Economist Annual Meeting 2010, Van Xuan Technology University, Nghe An, Vietnam (August 2010)

7<sup>th</sup> Asian General Equilibrium Theory Workshop 2010, Institute of Mathematics, Hanoi, Vietnam (August 2010)

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**CLAUDE D'ASPREMONT**

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Parier sur l'incertitude. Journées de Réflexions Interdisciplinaires et Internationales, Facultés Universitaires Saint-Louis, Brussels, Belgium (September 2009)

CRETA-IAS Workshop, University of Warwick, United Kingdom (January 2010)

CRETA-Marie Curie Conference in honour of Peter Hammond, University of Warwick, United Kingdom (March 2010)

Conference in honour of David Encaoua, Paris School of Economics, France (May 2010)

Workshop on Prior-Free Mechanisms, Center for Research in Mathematics, Guanajuato, Mexico (May 2010)

3<sup>ème</sup> Conférence Euro-Africaine en Finance et Economie (CEAFE), Paris School of Economics, France (June 2010) (member of the Organizing Committee)

Household Workshop, Institute for Fiscal Studies, London, United Kingdom (June 2010)

Journées Louis-André Gérard-Varet #9, Institut d'Economie Publique, Marseille, France (June 2010)

11<sup>th</sup> Annual Conference of the Association for Public Economic Theory (PET10), Bogaziçi University, Istanbul, Turkey, June 2010

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**JULIO DAVILA**

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2010 European Workshop on General Equilibrium Theory, Cracow University of Economics, Poland, (June 2010)

2010 Taipei International Conference on Growth, Academia Sinica, Taiwan (June 2010)

11<sup>th</sup> Annual Conference of the Association for Public Economic Theory (PET10), Bogaziçi University, Istanbul, Turkey (June 2010)

10<sup>th</sup> Annual Conference of the Society of the Advancement of Economic Theory, National University of Singapore, Republic of Singapore (August 2010)

25<sup>th</sup> Congress of the European Economic Association, Glasgow, Scotland (August 2010)

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**KAREN DECANCO**

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5<sup>th</sup> Winter School on Inequality and Social Welfare Theory "Inequality in a Dynamic Perspective", Alba di Canazei, Italy (January 2010)

Workshop "Education Policies: Empirics and Design", Katholieke Universiteit Leuven, Belgium (June 2010)

### **KOEN DECANCO**

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5<sup>th</sup> Winter School on Inequality and Social Welfare Theory "Inequality in a Dynamic Perspective", Alba di Canazei, Italy (January 2010)  
Journées Louis-André Gérard-Varet #9, Institut d'Economie Publique, Marseille, France (June 2010)  
ParisTech Journal of Economic Theory Conference on Inequality and Risk, Paris, France (June 2010)  
Social Choice and Welfare Conference, Moscow, Russia (July 2010)

### **PIERRE DEHEZ**

---

Parier sur l'incertitude. Journées de Réflexions Interdisciplinaires et Internationales, Facultés Universitaires Saint-Louis, Brussels, Belgium (September 2009)  
Journées du BETA 2010, Strasbourg, France ( March 2010)  
Journées du BETA 2010, Nancy, France (May 2010)

### **DAVID DE LA CROIX**

---

Conference on Growth and Development, Indian Statistical Institute, New Delhi, India (December 2009)  
14<sup>th</sup> Conference T2M, Université du Maine, Le Mans, France (March 2010)

### **RAFAEL DE MELO**

---

Combinatorial Optimization at Work, Konrad-Zuse-Zentrum für Informationstechnik Berlin, Germany (September-October 2009)  
14<sup>th</sup> International Workshop on Combinatorial Optimization, Aussois, France (January 2010)

### **OLIVIER DEVOLDER**

---

14<sup>th</sup> Belgian-French-German Conference on Optimization, Katholieke Universiteit Leuven, Belgium (September 2009)  
DYSCO Study Day, Leuven, Belgium (November 2009)  
Journées 3ème Cycle FNRS en Programmation Mathématique'10, Blankenberghe, Belgium (March 2010)  
8<sup>th</sup> EUROPT Workshop "Advances in Continuous Optimization", Aveiro, Portugal (July 2010)  
24<sup>th</sup> European Conference on Operational Research (EURO), Lisbon, Portugal (July 2010)

### **JACQUES DRÈZE**

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18<sup>ème</sup> Congrès des Economistes de Langue Française "Quel Etat pour quelles Performances Economiques?", Université Libre de Bruxelles, Brussels, Belgium (November 2009)  
Faut-il Changer le Système Financier? Leçons et Perspectives d'une Crise, ADEL, UCL, Belgium (March 2010)

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**CLAIRE DUJARDIN**

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56<sup>th</sup> North American Meetings of the Regional Science Association International, San Francisco (CA), USA (November 2009)

**MARC FLEURBAEY**

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Journées Louis-André Gérard-Varet #9, Institut d'Economie Publique, Marseille, France (June 2010)

**EMANUELE FORLANI**

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ETSG (European Trade Study Group) 2009 Rome – 11<sup>th</sup> Annual Conference, Università di Roma "Tor Vergata", Italy (September 2009)

24 Jornadas de Economía Industrial, Universidade de Vigo, Spain (September 2009)

34<sup>th</sup> Simposio de la Asociación Española de Economía, Valencia, Spain (December 2009)

Ifo/CESifo & OECD Conference on Regulation: Political Economy, Measurement, and Effects on Performance, Munich, Germany (January 2010)

**JOACHIM GAHUNGU**

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14<sup>th</sup> Annual International Conference on Real Options, Roma, Italy (June 2010)

**AXEL GAUTIER**

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36<sup>th</sup> EARIE (European Association for Research in Industrial Economics) Annual Conference, Ljubljana, Slovenia (September 2009)

6<sup>th</sup> Conference on "Regulation, Competition and Universal Service in the Postal Sector", Institut d'Economie Industrielle, Toulouse School of Economics, France (March 2010)

Workshop on Effective Competition in Network Industries, Justus-Liebig-Universität Giessen, Germany (May 2010)

International Conference on "Contracts, Procurement and Public-Private Agreements", Paris, France (June 2010)

**NICOLAS GILLIS**

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Journées 3<sup>ème</sup> Cycle FNRS en Programmation Mathématique'10, Blankenberghe, Belgium (March 2010)

Interdisciplinary Workshop on Sparsity and Modern Mathematical Methods for High Dimensional Data, Vrije Universiteit Brussel, Brussels, Belgium (April 2010)

Gene Golub SIAM Summer School – International Summer School on Numerical Linear Algebra, Brindisi, Italy (June 2010)

### **FRANÇOIS GLINEUR**

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DYSCO IAP Study Day, Katholieke Universiteit Leuven, Belgium (November 2009)  
20<sup>th</sup> International Symposium of Mathematical Programming (ISMP09), Chicago (IL), USA (August 2009)  
14<sup>th</sup> Belgian-French-German Conference on Optimization, Katholieke Universiteit Leuven, Belgium (September 2009)  
GEO LMI Workshop on the Geometry and Algebra of Linear Matrix Inequalities, LAAS-CNRS, Université de Toulouse, France (November 2009)  
Journées 3<sup>ème</sup> Cycle FNRS en Programmation Mathématique'10, Blankenberghe, Belgium (March 2010)  
DYSCO IAP Study Day, Universiteit Gent, Belgium (May 2010)  
8<sup>th</sup> EUROPT Workshop – Advances in Continuous Optimization, Aveiro, Portugal (July 2010)

### **GILLES GRANDJEAN**

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34<sup>th</sup> Simposio de la Asociacion Espanola de Economia, Valencia, Spain (December 2009)  
Royal Economic Society PhD Presentation Meeting & Job Market, City University, London (January 2010)  
15<sup>th</sup> Coalition Theory Network Workshop, Marseille, France (June 2010)  
11<sup>th</sup> Annual Meeting of the Association for Public Economic Theory, PET 10, Bogaziçi University, Istanbul, Turkey (June 2010)

### **CHRISTIAN HAFNER**

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20<sup>th</sup> (EC)2–Conference "Real Time Econometrics", Aarhus University, Denmark (December 2009)  
Miniworkshop "Semiparametric Modelling of Multivariate Economic Time Series with Changing Dynamics", Oberwolfach, Germany (June 2010)  
Netherlands Econometrics Study Group Meeting, Leuven, Belgium (June 2010)  
Symposium for Computational Finance, National University of Singapore, Republic of Singapore (June 2010)

### **JEAN HINDRIKS**

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18<sup>ème</sup> Congrès des Economistes de Langue Française "Quel Etat pour quelles Performances Economiques?", Université Libre de Bruxelles, Brussels, Belgium (November 2009)  
5<sup>th</sup> Winter School on Inequality and Social Welfare Theory "Inequality in a Dynamic Perspective", Alba di Canazei, Italy (January 2010)  
Workshop "Education Policies: Empirics and Design", Katholieke Universiteit Leuven, Belgium (June 2010)

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**KOEN JOCHMANS**

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Vereniging voor Economie, Universiteit Hasselt, Belgium (September 2009)  
 Annual Meeting of the Netherlands Econometric Study Group, Leuven, Belgium (June 2010)  
 16<sup>th</sup> Conference on Panel Data, Amsterdam, The Netherlands (July 2010)  
 10<sup>th</sup> World Congress of the Econometric Society, Shanghai, People's Republic of China (August 2010)

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**ALEJANDRO LAMAS**

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7<sup>th</sup> CEMS Research Seminar on Supply Chain Management, Riezlern, Austria (January 2010)  
 3<sup>rd</sup> International Conference on Information Systems, Logistics, and Supply Chain, Casablanca, Morocco (April 2010)

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**STÉPHANE LAMBRECHT**

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Workshop "Globalisation, inequality, education, and social downgrading", Université Lille I, Sciences et Technologies, France (January 2010) (member of the organizing committee)  
 4<sup>th</sup> Conference on "Advanced Studies in Economics, Business and Finance", St-Petersburg, Russia (April 2010)

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**YASSINE LEFOUILI**

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Congrès de l'Association Française de Science Economique (AFSE), Paris, France (September 2009)

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**MARIE-LOUISE LEROUX**

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Journées Louis-André Gérard-Varet #9, Institut d'Economie Publique, Marseille, France (June 2010)  
 11<sup>th</sup> Annual Meeting of the Association for Public Economic Theory, PET 10, Bogaziçi University, Istanbul, Turkey  
 International Tax and Public Finance Annual Conference, Uppsala, Sweden (August 2010)

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**SYLVETTE LY**

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EURAM 2010 (European University of Management), Università degli Studi di Roma "Tor Vergata", Italy (May 2010)  
 MEDICI Summer School in Management Studies, Firenze, Italy (June 2010)

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**FRANÇOIS MANIQUET**

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Workshop "Education Policies: Empirics and Design", Katholieke Universiteit Leuven, Belgium (co-organizer) (June 2010)  
 Journées Louis-André Gérard-Varet #9, Institut d'Economie Publique, Marseille, France (June 2010)

**ANA MAULEON**

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ASSET Annual Meeting 2009, Bogaziçi University, Istanbul, Turkey (October 2009)  
Workshop on Matching, Theory, and Mechanism Design, Oxford University, United Kingdom (March 2010)  
11<sup>th</sup> Annual Meeting of the Association for Public Economic Theory, PET 10, Bogaziçi University, Istanbul, Turkey (co-organizer) (June 2010)  
21<sup>st</sup> Stony Brook Summer Institute on Game Theory: The International Conference, Stony Brook (NY), USA (July 2010)

**FLORIAN MAYNERIS**

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Economic Geography and Trade Research Meeting, Darmstadt, Germany (January 2010)  
International DIME Workshop "Firm Selection and Country Competitiveness", Nice, France (March 2010)  
Belgian Trade Economists Workshop, Katholieke Universiteit Leuven, Belgium (May 2010)  
European Research Workshop on International Trade Conference, Rome, Italy (May 2010)  
Workshop on "European Firms in a Global Economy", Roma, Italy (May 2010)  
25<sup>th</sup> European Economic Association Congress, Glasgow, Scotland (August 2010)

**JEAN-FRANÇOIS MAYSTADT**

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34<sup>th</sup> Simposio de la Asociacion Espanola de Economia, Valencia, Spain (December 2009)  
6<sup>th</sup> PhD Presentation Meeting of the Royal Economic Society, City University London (January 2010)  
ESPE 2010: 24<sup>th</sup> Annual Conference of the European Society for Population Economics, Essen Germany (June 2010)

**TANJA MLINAR**

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7<sup>th</sup> CEMS Research Seminar on Supply Chain Management, Riezlern, Austria (January 2010)  
3<sup>rd</sup> International Conference on Information Systems, Logistics, and Supply Chain, Casablanca, Morocco (April 2010)

**ELENA MOLIS**

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Workshop on Matching, Theory and Mechanism Design, Oxford University, United Kingdom (March 2010)  
Roth and Sotomayor: Twenty Years After. An ERID Matching Conference, Duke University, Durham (NC), USA (May 2010)  
11<sup>th</sup> Annual Meeting of the Association for Public Economic Theory, PET 10, Bogaziçi University, Istanbul, Turkey (June 2010)



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**JUAN D. MORENO-TERNERO**

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Workshop on Health, Inequalities, Risk, and Public Policy, Paris, France (September 2009)  
 32<sup>th</sup> Congress of the Italian Society of Audiology and Phoniatrics, Firenze, Italy (October 2009)  
 5<sup>th</sup> Workshop on Social Decisions, Malaga, Spain (November 2009)  
 34<sup>th</sup> Simposio de la Asociacion Espanola de Economia, Valencia, Spain (December 2009)  
 Workshop on Fairness, Equality of Opportunity and Opportunity, and Public Economics, UCL, Belgium (April 2010)  
 10<sup>th</sup> Social Choice and Welfare Meeting, Moscow, Russia (July 2010)  
 13<sup>th</sup> Urrutia-Elejalde Summer School on Economics and Philosophy, San Sebastian, Spain (July 2010)

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**YURI NESTEROV**

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International Conference "Optimization and Applications" (OPTiMA 2009), Petrovac, Montenegro (September 2009)  
 International Congress of Mathematicians 2010, Hyderabad, India (August 2010)

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**DARIA ONORI**

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Spring Graduate School in Economics: "New Challenges for Macroeconomic Policy", Aix-en-Provence, France (May 2010)  
 5<sup>th</sup> Annual International Symposium on Economic Theory, Policy, and Applications, Athens, Greece (July 2010)

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**DOMINIQUE PEETERS**

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16<sup>th</sup> European Colloquium on Theoretical and Quantitative Geography, Maynooth, Ireland, (September 2009)

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**SUSANA PERALTA**

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Workshop on Energy and Environment, Universita di Girona, Italy (October 2009)  
 Competition among Nation States, Wissenschaftszentrum für Sozialforschung, Berlin, Germany (October 2009)  
 Journées Louis-André Gérard-Varet #9, Institut d'Economie Publique, Marseille, France (June 2010)

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**PIERRE PESTIEAU**

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Conference on Tax Systems: Whence and Whither, Malaga, Spain (September 2009)  
 18<sup>ème</sup> Congrès des Economistes de Langue Française "Quel Etat pour quelles Performances Economiques?", Université Libre de Bruxelles, Brussels, Belgium (November 2009)  
 AERC Biannual Research Workshop, Nairobi, Kenya (November-December 2009)  
 International Academic Workshop on Inherited Wealth, Justice, and Equality, Antwerpen, Belgium (March 2010)  
 Canadian Public Economics Group, Québec, Canada (May 2010)

AERC Biannual Research Workshop, Nairobi, Kenya (May-June 2010)

11<sup>th</sup> Annual Meeting of the Association for Public Economic Theory, PET 10, Bogaziçi University, Istanbul, Turkey (June 2010)

International Tax and Public Finance Annual Conference, Uppsala, Sweden (August 2010)

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**ALAIN PHOLO BALA**

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UrbanSim User Meeting and Tutorial, Eidgenössische Technische Hochschule Zürich, Switzerland (May 2010)

SustainCity Intermediate Meeting, Eidgenössische Technische Hochschule Zürich, Switzerland (May 2010)

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**PAOLO GIOVANNI PIACQUADIO**

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10<sup>th</sup> International Meeting of the Society of Social Choice and Welfare, Higher School of Economics, State University, Moscow, Russia (July 2010)

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**PIERRE PICARD**

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North American Meetings of the Regional Science Association International, San Francisco (CA), USA (November 2009)

International Conference on Infrastructure Economics and Development, Toulouse, France (January 2010)

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**EVE RAMAEKERS**

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10<sup>th</sup> International Meeting of the Society of Social Choice and Welfare, Higher School of Economics, State University, Moscow, Russia (July 2010)

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**MARIA EUGENIA SANIN**

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24<sup>th</sup> Jornadas de Economia Industrial, Universidade de Vigo, Spain (September 2009)

36<sup>th</sup> EARIE (European Association for Research in Industrial Economics), Annual Conference, Ljubljana, Slovenia (September 2009)

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**CHRISTELLE SAPATA**

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15<sup>th</sup> Spring Meeting of Young Economists, Luxembourg (April 2010)

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**ERIK SCHOKKAERT**

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Jubileum Conference Social Security in Belgium, Brussels, Belgium (September 2009)

Conference Deutsche Gesellschaft für Gesundheitsökonomik, Halle, Germany (December 2009)

MOVE-workshop "Prospective Payment and Health Care Provision", Barcelona, Spain (November 2009)

18<sup>ème</sup> Congrès des Economistes de Langue Française "Quel Etat pour quelles Performances Economiques?", Université Libre de Bruxelles, Brussels, Belgium (November 2009)

Workshop Risk Adjustment Network, Jerusalem, Israël (December 2009)  
 5<sup>th</sup> Winter School on Inequality and Social Welfare Theory "Inequality in a Dynamic Perspective",  
 Alba di Canazei, Italy (January 2010)  
 Workshop "Economics meets philosophy", Universität Osnabrück, Germany (May 2010)  
 Workshop "Education policies: empirics and design", Katholieke Universiteit Leuven, Belgium  
 (June 2010)  
 CESifo Workshop "Behavioral welfare economics", Venezia, Italy (July 2010)

#### **YVES SMEERS**

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Workshop on Energy and Environment, Universitat de Girona, Spain (October 2009)  
 Atelier de Recherche "Les enjeux de compétitivité des politiques climatiques", Paris, France  
 (October 2009)  
 Journée d'Etudes GREDEG-CNRS, OFCE et Gis LARSEN "Du Marché Electrique Décentralisé à  
 l'Oligopole Vertical. Enjeux pour les Politiques de Concurrence et la Régulation Sectorielle,  
 CNRS-GREDEG, Université de Nice Sophia-Antipolis, France (November 2009)  
 18<sup>ème</sup> Congrès des Economistes de Langue Française "Quel Etat pour quelles Performances  
 Economiques?", Université Libre de Bruxelles, Brussels, Belgium (November 2009)  
 Conference on "Climate-related Catastrophes, Financial Innovations, and Development: One  
 Month before Copenhagen", Ecole Polytechnique de Paris, France (November 2009)  
 International Workshop on Electricity Markets under a New Environment, Shanghai Jiatong  
 University, People's Republic of China (December 2009)  
 IDEI Conference on "The Economics of Energy Markets", Toulouse School of Economics, France  
 (January 2010)  
 Workshop on Electricity Market Design, Geilo, Norway (March 2010)  
 Summer School on "Risk Measurement and Control", Roma, Italy (July 2010)  
 SOCCER10, Symposium on Challenges in Commodity Pricing and Revenue Management,  
 Heidelberg, Germany (July 2010)

#### **RÜDIGER STEPHAN**

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14<sup>th</sup> International Workshop on Combinatorial Optimization, Aussois, France (January 2010)  
 International Symposium on Combinatorial Optimization, Hammamet, Tunisia (March 2010)  
 Symposium Diskrete Mathematik, Vienna, Austria (May 2010)

#### **JACQUES-FRANÇOIS THISSE**

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6<sup>th</sup> Conference on "Regulation, Competition and Universal Service in the Postal Sector", Institut  
 d'Economie Industrielle, Toulouse School of Economics, France (March 2010)  
 50<sup>th</sup> Anniversary European Congress of the Regional Science Association International (ERSA),  
 Jönköping, Sweden (August 2010)

## ISABELLE THOMAS

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- 16<sup>th</sup> ECTQG'09, Maynooth, Ireland (September 2009)  
S4 International Conference "Emergence in Geographical Space: Concepts, Methods, and Models", Paris, France (November 2009)  
SMCS Launch Day "What's the Place for Statistical Consulting and Computation in the Academic World", UCL, Belgium (April 2010)  
50<sup>th</sup> Anniversary European Congress of the Regional Science Association International (ERSA), Jönköping, Sweden (August 2010)

## TOM TRUYTS

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- 5<sup>th</sup> Winter School on Inequality and Social Welfare Theory "Inequality in a Dynamic Perspective", Alba di Canazei, Italy (January 2010)  
15<sup>th</sup> Coalition Theory Network Workshop, Marseille, France (June 2010)  
11<sup>th</sup> Annual Meeting of the Association for Public Economic Theory, PET 10, Bogaziçi University, Istanbul, Turkey (June 2010)  
10<sup>th</sup> European Science Days on Signaling Theory, Steyr, Austria (July 2010)  
10<sup>th</sup> International Meeting of the Society of Social Choice and Welfare, Higher School of Economics, State University, Moscow, Russia (July 2010)

## HENRY TULKENS

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- Coalitions for Climate Cooperation Workshop on Game-Theoretic Analysis of Post 2012 Climate Policy, Fondazione Giorgio Cini, Venezia, Italy (June 2009)  
30<sup>th</sup> MIT Global Change Forum, Arlington (CA), USA (March 2010)

## HIROSHI UNO

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- 1<sup>st</sup> Annual UECE Lisbon Meeting: Game Theory and Applications, Technical University of Lisbon, Portugal (November 2009)  
Kyushu Game Theory Workshop, Kyushu University, Japan (March 2010)  
2<sup>nd</sup> Brazilian Workshop of the Game Theory Society, University of Sao Paulo, Brazil (July-August 2010)

## DIRK VAN DE GAER

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- 5<sup>th</sup> Winter School on Inequality and Social Welfare Theory "Inequality in a Dynamic Perspective", Alba di Canazei, Italy (January 2010)  
2010 Workshop in Public Economics and Growth, Université Paris Panthéon-Sorbonne, France (April 2010)  
11<sup>th</sup> Annual Meeting of the Association for Public Economic Theory, PET 10, Bogaziçi University, Istanbul, Turkey (June 2010)  
10<sup>th</sup> International Meeting of the Society for Social Choice and Welfare, Higher School of Economics, Moscow, Russia (July 2010)

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**GRÉGORY VANDENBULCKE**

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15<sup>th</sup> European Colloquium on Theoretical and Quantitative Geography, Maynooth, Ireland, (September 2009)

**HYLKE VANDENBUSSCHE**

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Belgian Day of International Trade, Katholieke Universiteit Leuven, Belgium (May 2010)  
European Research Workshop on International Trade Conference, Roma, Italy (June 2010)

**LAURENT VAN MALDEREN**

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12<sup>th</sup> World Conference on Transport Research, Lisbon, Portugal (July 2010)  
50<sup>th</sup> Anniversary European Congress of the Regional Science Association International (ERSA), Jönköping, Sweden (August 2010)

**VINCENT VANNETELBOSCH**

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11<sup>th</sup> Annual Meeting of the Association for Public Economic Theory, PET 10, Bogaziçi University, Istanbul, Turkey (co-organizer) (June 2010)  
21<sup>st</sup> Stony Brook Summer Institute on Game Theory: The International Conference, Stony Brook (NY), USA (July 2010)

**MATHIEU VAN VYVE**

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14<sup>th</sup> International Workshop on Combinatorial Optimization, Aussois, France (January 2010)  
International Workshop on Lot-Sizing, Gardanne, France (August 2010)

**WOUTER VERGOTE**

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ETSG (European Trade Study Group) 2009 Rome – 11<sup>th</sup> Annual Conference, Università di Roma "Tor Vergata", Italy (September 2009)

**XAVIER WAUTHY**

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36<sup>th</sup> EARIE (European Association for Research in Industrial Economics), Annual Conference, Ljubljana, Slovenia (September 2009)  
4<sup>ème</sup> Journée d'Economie de la Culture, CNAM, Paris, France (December 2009)  
3<sup>ème</sup> Conférence Euro-Africaine en Finance et Economie (CEAFE), Paris, France (June 2010)

**YING WEI**

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INFORMS Annual Meeting, San Diego (CA), USA (October 2009)  
International Forum on Interface of Marketing and Operations Management, Hong Kong, People's Republic of China (December 2009)  
The First POM-Hong Kong International Conference, Hong Kong, People's Republic of China (December 2009)

International Workshop on Supply Chain models for Shared Resource Management, Brussels, Belgium (January 2010)

Annual Corporate Forum on Supply Chain Management, Center of Excellence in Supply Chain Management, Louvain School of Management, UCL, Belgium (March 2010)

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**LAURENCE WOLSEY**

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14<sup>th</sup> Belgian-French-German Conference on Optimization, Katholieke Universiteit Leuven, Belgium (September 2009)

Conference on Transportation Scheduling and Disruption Handling, Prato, Italy (September 2009)

14<sup>th</sup> International Workshop on Combinatorial Optimization, Aussois, France (January 2010)

International Symposium on Combinatorial Optimization, Hammamet, Tunisia (March 2010)

MPS'10 12<sup>th</sup> International Workshop on Project Management and Scheduling, Tours, France (April 2010)

International Workshop on Lot Sizing (IWLS 2010), Gardanne, France (July 2010)

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**STÉPHANE ZUBER**

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North American Winter Meeting of the Econometric Society, Atlanta (GA), USA (January 2010)

Workshop on Climate Change and Distribution, Oslo, Norway (June 2010)

4<sup>th</sup> World Congress of Environmental and Resource Economists, Montréal, Canada (June 2010)

Journal of Economic Theory Symposium on Inequality and Risk, Paris, France (June 2010)

10<sup>th</sup> International Meeting of the Society of Social Choice and Welfare, Higher School of Economics, State University, Moscow, Russia (July 2010)

# **STATISTICAL APPENDIX**





## PEOPLE

### ■ YEARLY AVERAGES 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
1996-2005	32	43	84	10

### ■ RECENT YEARLY NUMBERS

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

## SCIENTIFIC ACTIVITIES

### ■ YEARLY AVERAGES PER 10 YEAR PERIOD

Period						Seminars			Conferences	Yearly contracts
	Discussion Papers	Books	Published papers	Editorial activities	Theses	Economics	Econometrics	Operations Research		
1966-1975	32	1	24	0	2	26	15	17	0	4
1976-1985	47	1	53	11	2	48	22	24	2	6
1986-1995	62	5	69	30	5	79	25	26	4	13
1996-2005	78	4	105	46	7	94	22	21	5	15

# RECENT YEARLY NUMBERS

Period	Discussion Papers	Books	Published papers	Editorial activities	Theses	Seminars			Conferences	Yearly contracts
						Economics	Econometrics	Operations Research		
2005-2006	118	8	129	45	9	81	30	20	10	12
2006-2007	115	6	133	64	12	79	32	27	7	16
2007-2008	82	1	133	60	8	83	28	19	4	27
2008-2009	84	5	128	68	7	80	35	24	6	38
2009-2010	86	6	172	74	6	78	28	19	11	41

## ■ TOTAL OF THE 42 YEARS

1966-2008	2597	130	4091	1187	200	2846	1011	972	149	498
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All details can be found on the CORE webpage.