

CORE Newsletter

by Jean J. Gabszewicz
1st of April, 2011

Tranche de vie at CORE...

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Today, we are the first of April. This date not only marks the first day of the best or the least bad meteorological period in Belgium but it also invites to enjoy life by allowing children to stick little paper-fishes in the back of their parents and friends. It was a tradition at CORE to celebrate this "Fish Day" by pulling the leg of other members.

Making jokes was not the only side-activity of CORE researchers besides research. They were also practising several sports. For instance, Werner Hildenbrand was an extremely good tennis player. To make sure he was the best at CORE, he created a special tennis tournament in order to confirm unambiguously his supremacy. One should not forget that Werner's nickname was "Der Kaiser". It had been invented a long time ago by Robert Deschamps, during a seminar when Werner was sitting in the first row of the seminar room, surrounded by Wilhelm Neufeind and Dieter Sondermann. Then, Robert all of a sudden said "Have you seen the Kaiser installed between his two Kronprinzen?". The boss Jacques Drèze was among one of the most serious challengers of Werner on the tennis court but, in spite of his efforts, he did not succeed to beat Werner in his special tournament! Happily he consoled himself when he learnt that Jean-Philippe Vial's spouse, Marinette had assigned him the first Prize of Elegance. She even said that Jacques' style when serving was as beautiful as "the love dance performed by an exotic bird"! Claude d'Aspremont and the author of these lines were not such good players. Once, they were opposed to Yves Zenou, another famous CORE tennis courts' hero. As one of the very select club of the 5% best French tennis players, he was absolutely unbeatable by any CORE member

when playing in a single. So Claude and I tried once to beat him playing together against him, but we were promptly eliminated. Then we proposed him a more serious handicap than playing alone against two players: he should play against us turning his back to the net... Unfortunately, in spite of this handicap, he won 6-0!

Also volley-ball was a success story for a CORE team whose members were playing twice a week during several years. The heroes of this team were Jean-François Richard and Claude d'Aspremont. The latter was so excited by this sport that he ended up breaking his foot during an epic match. Finally, ping-pong also was a very fashionable activity at some point. It was so popular that the ping-pong table was regularly substituted in the meeting room to the CORE board meeting table.

The above description could cause the reader to believe that CORE was a place where the pleasures of life were more important than their main reason for being together: doing research. But it was not the case! Surprisingly, it was even the contrary. While one would expect such a clique of jolly chaps spending most of their time with rather futile activities, some were in fact, at the same time, exploring the secrets of General Equilibrium Theory, while others were devoting most of their interest to Econometrics or to the arcana of Operations Research.

When remembering all these anecdotes and short stories about life at CORE, I feel nostalgic. It seems that research today cannot accommodate such a mixture of pleasure and seriousness at work. Probably, this is due to the competition among researchers which developed so harshly during the last decades.

But, be sure: the side activities described above were creating a solid cement among CORE members and an exceptional atmosphere of friendship and solidarity. In my opinion they played a crucial role in boosting CORE's research at the level of excellence.



Optimization, with applications!



Mathieu Van Vyve has been a member of CORE since 2009. His main area of research is mixed-integer programming, with applications to supply chain management and electricity markets.

Numerous problems in production and transportation planning are naturally modelled as mixed-integer linear optimization problems. The most important aspect of this kind of mathematical models is that the same problem can be formulated in many different ways, and that some formulations are probably stronger than others. The classical approach to improve such formulations has been to add constraints (i.e. cutting planes) to the model. The emphasis in Mathieu's PhD thesis in 2003 has been on achieving the same with extended formulations, or the addition of both new constraints and variables. The main benefit is that the total number

of variables and constraints of the resulting models is dramatically reduced, allowing to avoid non-trivial (both from a theoretical and software implementation point of view) cut separation. Furthermore, it could be showed that only a fraction of these additional variables and constraints are usually sufficient to obtain a formulation nearly as strong as the complete one. This approach has proved very efficient for solving some hard multi-item production planning problems, and remains the best computational approach today.

The topic of extended formulation has gained much attention from the scientific community in the last five years and Mathieu is still pursuing this line of research applied to transportation problems.

Prior to joining CORE, Mathieu has been working in private companies, notably in the power industry. In this context, Mathieu has been the lead developer of COSMOS, the algorithm behind the new day-ahead electricity market gathering France, Belgium, The Netherlands and Germany, which handles 15% of the electricity consumed in these countries and has been running smoothly every day since last November. This market is non-convex because some buy or sell orders are required to be entirely accepted or rejected. This leads COSMOS to solve a large Mixed-Integer Quadratic Program with complicating complementarity constraints. These constraints arise from the need to ensure that published market prices are coherent with the outcome of this non-convex market. COSMOS is a branch-and-bound algorithm. The complicating constraints are not part of the initial model, but are algorithmically enforced by adding locally valid cuts during the enumeration process. COSMOS is currently the only algorithm that can efficiently solve this type of problem to optimality. Moreover it scales easily to more price areas and can deal with various electricity network models. COSMOS will serve as the basis for the new algorithm that will cover a much wider geographical area including Scandinavia, Spain and Italy.

Together with Olivier Pereira from the CRYPTO group at the Polytechnic School of Louvain and Sébastien Brunet from the SPIRAL lab of University of Liège, Mathieu has just started a research project to study optimization using encrypted data. The setting involves different parties willing to compute some global information without revealing some of the necessary input data that they hold, even to a third party. Possible applications are:

- Several companies want to know how well they pay their employees in comparison with their competitors, but without revealing the salaries to each other. The only public output of the computation should be the ranking of the companies.
- A producer and several retailers want to optimize the production and inventory without disclosing their internal cost structure. The public output is the production plan.
- Traders will participate in an organized exchange only at the condition that the limit prices of their orders are not disclosed, even to the market organizer. Only the executed volume and the market clearing price is to be publicly announced at the end of the computations.

All these problems can be solved in theory using Secure Multiparty Computation. The goal of the project is to produce a library of practically efficient implementations of this technique. Abdelrahman Aly is starting his PhD at CORE working on the topic. The project is funded by the Walloon Region.

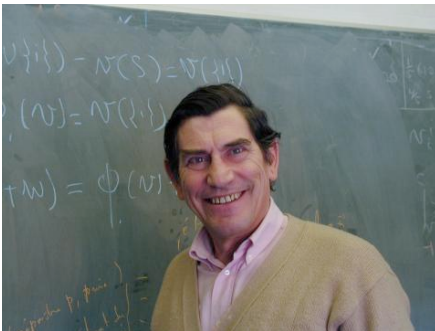
In honour of Claude d'Aspremont and Jean-François Mertens

On June 23-25, there will be a conference at CORE in honour of Claude d'Aspremont and Jean-François Mertens. Both of them will retire from their ordinary professorship positions at the end of 2011, to become emeritus professors. Useless to say, Claude and Jean-François have been (and still are) pillars of CORE.



Claude graduated from Stanford in 1973. He wrote a dissertation on «The bargaining set concept for cooperative games without side payments.» His supervisor was Bob Wilson. At the time economists were realizing how helpful game theory could be, Claude contributed to the development of game-theoretical models of competition and industrial relationships. His most cited papers are «Cooperative and non-cooperative R&D in duopoly with spillovers» (1988), with Alexis Jacquemin, and «On Hotelling's stability in competition» (1979), with Jean Gabszewicz and Jacques Thisse. Claude is also the author of several papers in mechanism design, mainly written with Louis-André Gérard-Varet. In particular, «Incentives and incomplete information,» (1979) in which they introduced the celebrated d'Aspremont-Gérard-Varet mechanisms, generalized the Vickrey-Clarke-Groves mechanisms

to the case of partial information. Claude has early been interested in social choice theory. With Louis Gevers among others, he analyzed at length the informational basis of social choice, and gave several justifications to welfarism and to several welfarist social ordering functions. Claude joined CORE in 1977. He has been a research director in 1995-1998, and a president in 2006-2010.



Jean-François graduated from UCL in 1970 and joined CORE in 1971. He wrote a dissertation in measure theory under the supervision of José Paris. He soon got interested in game theory and made fundamental contributions to both cooperative and non-cooperative game theory. Among those contributions, his most cited papers are «On the strategic stability of equilibria» (1986), with Elon Kohlberg, in which they axiomatize the famous stable equilibrium correspondence, and «Formulation of Bayesian analysis in games with incomplete information» (1985), with Shmuel Zamir, in which they give a formal model of Harsanyi's hierarchies of beliefs. Jean-François also wrote papers on stochastic games (some of which with Abraham Neyman), repeated games and the value of non-cooperative games. In his main contribution to social choice, Jean-François, together with Amrita Dhillon, has characterized relative

utilitarianism, that is, utilitarianism when the range of individual vNM utility functions is confined in the $[0,1]$ interval. Jean-François has also written on the game-theoretic approaches to general equilibrium, and, more recently, on equity in dynamical general equilibrium models. Notice that Claude and Jean-François have one research paper together, with Alexis Jacquemin, on «A measure of aggregate power in organizations» (1987).

To celebrate Claude's and Jean-François' careers and their contribution to the development of CORE, the organizers have contacted some of their closest colleagues for a conference on «Choices, games and economic organizations». As could be expected, a large number of them accepted to come and present a paper. The resulting three day conference will gather coauthors, colleagues and former students at CORE.

The preliminary program can be found at <http://www.uclouvain.be/en-351155.html>. Everybody is welcome to attend. Registration is mandatory (see website for information).

Forthcoming Scientific Events...

3rd IMMAQ Lecture on «Equity of Opportunity in Health»

Louvain-la-Neuve, May 11, 2011



The third IMMAQ Lecture of this year will take place on May 11. Andrew Jones (University of York) will talk about “Equality of Opportunity in health”. He will focus on the impact of educational attainment and of school quality on health and health-related behaviour later in life and on the role of quality

of schooling as a source of inequality of opportunity in health. He will interpret these empirical findings within a normative framework, grounded on John Roemer’s model of equality of opportunity.

This lecture takes place in the Salle du Sénat Académique (Halles Universitaires), Place de l’Université, 1, 1348-Louvain-la-Neuve.

More information can be found on the CORE website.

Equity in Health

Louvain-la-Neuve, May 12-13, 2011



On Thursday, May 12 and Friday, May 13, CORE and SHERPPA (Gent) will organize a workshop on “Equity in Health” within the PAI-IUAP Program. The speakers include Teresa Bago d’Uva (Erasmus University Rotterdam), Marc Fleurbaey (CERSES & CORE), Pilar Garcia Gomes (Erasmus University Rotterdam), Pierre-Yves Geoffard (PSE), Florence Jusot (IRDES, Paris), Marie-Louise Leroux (CORE), Maarten Lindeboom (Tinbergen Institute), Tom McGuire (Harvard), Owen O’Donnell (University of Macedonia), Pierre Pestieau (CORE), Pedro Rosa Dias (York), Alain Trannoy (Marseille), Sandy Tubeuf

(Leeds), Giacomo Valletta (Maastricht), Dirk Van de gaer (SHERPPA, Gent), Eddy van Doorslaer (Erasmus University), and Tom Van Ourti (Erasmus University Rotterdam). The detailed program can be found on the CORE website.

Participation is free, but registration is mandatory.

Please contact catherine.germain@uclouvain.be

Workshop in Honor of Werner Hildenbrand

Louvain-la-Neuve, May 20-21, 2011



Werner Hildenbrand was professor at the University of Louvain from 1968 to 1976. He is now professor emeritus of the University of Bonn. As a member of CORE, he has had a deep and lasting influence on the development of research in economic theory. CORE is organizing a 2-day workshop in his honor on the 20th and 21th of May 2011.

The program consists of two round table discussions on topics that have retained his attention over the years, *General Equilibrium* and *Aggregation*, two interrelated topics that are highly relevant for macroeconomic modeling. Two prominent economists will be in charge of the animation of each round table:

- Jacques Drèze and Heraklis Polemarchakis for General Equilibrium
- Jean-Michel Grandmont and Alan Kirman for Aggregation

Forthcoming Scientific Events...

2011 ECOPE Summer School on «Market Failure and Market Design»

Louvain-la-Neuve, May 23-26, 2011



Here is an update of the 2011 ECOPE summer school that will take place at CORE on May 23-36.

The titles of **Douglas Bernheim**'s lectures are: 1. Poverty and Self-Control; 2. Applied Behavioral Welfare Economics: The Good, the Bad, and the Ugly and 3. Revealed Preference without Choice.

The titles of **Vincent Crawford**'s lectures are: 1. Strategic Thinking; 2. Level-k Auctions and 3. Efficient Mechanisms for Level-k Bilateral Trading.

The titles of **Parag Pathak**'s lectures are: 1. Markets with Indivisibilities; 2. Student Assignment Problem; and 3. Recent Developments.

Keynote lectures will take place in the mornings. There will be contributed sessions in the afternoons. We expect up to 42 young speakers. We look forward to this major event for CORE and the whole community of PhD students and young researchers in Belgium.

Interdisciplinary Workshop on «Econometric and Statistical Modelling of Multivariate Time Series»

Louvain-la-Neuve, May 25-27, 2011



On May 25-27, CORE and ISBA organize an international workshop on multivariate time series, where substantial questions of a common interest in econometrics and statistics will be addressed. The meeting is organized in the frame of a research program of five years that is funded by UCL. The funding is allocated through a competitive process encompassing all disciplines. A group of econometricians and statisticians got such a grant for the period 2007-2012.

The particular topics that are covered by the meeting are:

- Multivariate volatility models
- High Frequency data
- Extreme value modelling
- Dimension reduction and Factor Models
- Time-varying parameter models and structural changes
- Forecasting

We are happy to have Rob Engle (New York University Stern School of Business), co-winner of the Nobel price in economics in 2003, as guest speaker.

Conference in Honor of Claude d'Aspremont and Jean-François Mertens

Louvain-la-Neuve, June 23-25, 2011



On June 23-25, there will be a conference at CORE in honour of Claude d'Aspremont and Jean-François Mertens. Both of them will retire from their ordinary professorship positions at the end of 2011, to become emeritus professors. To celebrate their careers and their contribution to the development of CORE, the conference

on «Choices, games and economic organizations» will gather coauthors, colleagues and former students at CORE (see p.3). The preliminary program can be found at <http://www.uclouvain.be/en-351155.html>. Everybody is welcome to attend. Registration is mandatory (see website for information).

Forthcoming Scientific Events

Conference in Honor of Etienne Loute

Brussels, September 6, 2011



To celebrate Etienne Loute's 65th birthday and to thank him for his numerous and varied contributions to the Facultés universitaires Saint Louis and CORE, a meeting on "Large-

Scale Optimization" will be held at FUSL on the afternoon of Tuesday, September 6th 2011. The speakers will be Markku Kallio (Aalto University, Finland), Robert Fourer (Northwestern University, USA), Erling Andersen (Mosek) and Yuri Nesterov (CORE, UCL). The conference will be followed by a dinner in his honor.

More information will be available soon on the CORE website.

Agenda from May to June 2011



Seminars

ECONOMETRICS

May 4, 2011 (*Joint with LSM Finance*)

Alexis CELLIER, Université Paris-Est

The impact of corporate social responsibility rating announcements on European stock prices

May 11, 2011

Alain MONFORT, CREST

Default, liquidity and crises: an econometric framework.

ECONOMIC THEORY

May 2, 2011

Olivier GOSSNER, Paris School of Economics

The robustness of incomplete codes in repeated games.

May 9, 2011

Humberto LLAVADOR, Universitat Pompeu Fabra

North-South convergence and the allocation of CO₂ emissions.

May 30, 2011

Peter NEARY, University of Oxford

Selection effects with heterogeneous firms.

June 6, 2011

David ULPH, University of St Andrews

MATHEMATICAL PROGRAMMING

May 3, 2011

Sébastien VAN BELLEGEM, CORE & Toulouse School of Economics

On some optimization problems in econometrics.

May 10, 2011

Frédéric BONNANS, INRIA

Energy contracts management by stochastic programming techniques.

May 17, 2011

Philippe CHEVALIER, UCL-LSM & CORE

May 24, 2011

Anders SKAJAA, Technical University of Denmark

On implementing a homogeneous interior-point algorithm for non-symmetric conic optimization.

May 31, 2011

Sébastien SAGER, University of Heidelberg

Nonlinear mixed-integer optimal control: applications and methods.

June 7, 2011

Peter RICHTARIK, University of Edinburgh

From sparse principal component analysis to compressed sensing: computing sparse approximations to extreme eigenvectors.

TRADE & ECONOMIC GEOGRAPHY

May 31, 2011

Marius THERIAULT, Université de Laval, Canada

Assessing the effect of accessibility to urban amenities in the location rent. Searching for market segmentation of preferences.

June 1, 2011

Eric DELMELLE, University of North Carolina

Solving a multi-period school location problem with capacity constraints using tabu search.

June 14, 2011

Grégory VANDENBULCKE, CORE

A Bayesian approach to modelling the risk of having a bicycle accident - The case of Brussels (Belgium).

Past Scientific Events...

Public Economics Day on «Optimal Taxation»

Louvain-la-Neuve, February 14, 2011

On February 14, about 40 public economists attended the Workshop on “Optimal Taxation” that was organized within the framework of the PAI-IUAP Program involving CORE and IRES (Université catholique de Louvain), CES (K.U.Leuven), SHERPPA (Universiteit Gent), ECARES (Université Libre de Bruxelles) and GEOQ (Facultés Universitaires Notre-Dame de la Paix, Namur).

The speakers were M-L. Leroux (CORE), L. Simula (Uppsala University), C. Ghirelli (Ghent University), F. Bierbrauer (Max Planck Institute) and J. Spinnewyn (London School of Economics). It is the intention to keep the Public Economics Network alive and kicking in the following years.

GAPEM

Louvain-la-Neuve, March 3, 2011

GAPEM, the Group for Analysis of Performance in Economics and Management, founded in 2003, organizes researchers in Belgium, Northern France and the Netherlands interested in non-parametric and parametric efficiency models, both in methodological and applied work. The group is principally organized around the axis IFRESI-Lille 3 and UCL/CORE and LSM. GAPEM

held a workshop March 11, 2011 with an invited contribution from the CORE visitor Humberto Bréa (Universitat Autònoma de Barcelona) on "Expectations with Unrealistic Optimism" and talks from GAPEM members Adel Hatami-Marbini (CORE) and Per Agrell, (CORE). The interactive workshop included a planning for upcoming events in GAPEM.

V CORE/Maastricht Workshop on «Advances in Collective Choice»

Maastricht, April 15, 2011

Economists from CORE and from the economics department of the Maastricht University consolidate the tradition of the annual workshop on advances in collective choice.

Surrounded by an unlikely sunny weather, Maastricht was the perfect scenario for presentations and discussions about latest research on the topic. Kristof Bosmans (Maastricht University) presented a paper on "Distribution-sensitivity of rank-dependent poverty measures"; Erik Schokkaert (our CORE research director) introduced the topic of "Behavioral fair social choice". A spice of computational and experimental social choice were brought by the external invited speakers. Vincent Conitzer (Duke University) gave a talk about “Solving Complete-Information Voting Games by Backward

Induction” and Bertil Tungodden (NHH, Norwegian School of Economics and Business Administration) introduced us to "Entitlements vs needs: An international fairness experiment".

This workshop represents also the opportunity for young researchers of the two institutes to present and discuss their work. This year, Irem Bozbay (PhD student at Maastricht University) presented her work on “Judgment aggregation in search for the truth”; Paolo Piacquadio (CORE PhD student) presented a paper about “A multidimensional approach to intergenerational justice”.

A special thank goes to the local organizers, Hans Peters and Giacomo Valletta (former PhD student at CORE); they succeeded in making the workshop very satisfying and assured a pleasant stay in Maastricht.

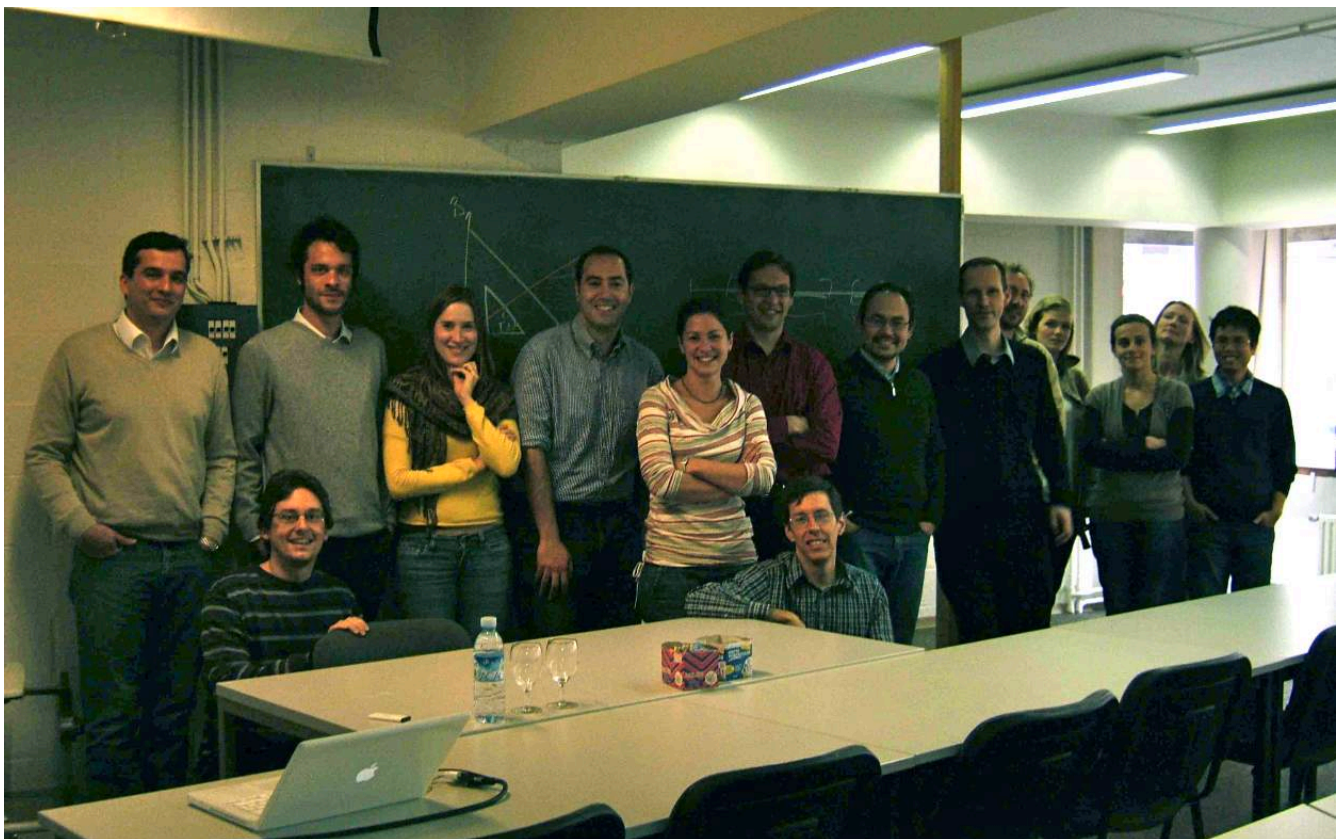
Past Scientific Events

Blackboard Workshop in Political Economics

Louvain-la-Neuve, April 28, 2011

CORE has welcomed two researchers in political economics in April-May: Arnaud Dellis (U. of Laval) and Francesco Sobbrío (IMT, Lucca). Taking advantage of their visit, CORE organized a 'Blackboard workshop on political economics' on April 28, 2011. In addition to our visitors, there were three speakers from Belgian

universities: Micael Castanheira (ECARES, ULB), Gani Aldashev (FUNDP, Namur) and Margherita Negri (CORE). To promote discussions and interactions, speakers have been asked to forget about their slides and make blackboard presentations.



From left to right: Fernando Ruiz (RMA), Paolo Piacquadio (CORE), Marco Giani (ECARES), Eve Ramaekers (CORE), Francesco Sobbrío (IMT, Lucca), Margherita Negri (CORE), Micael Castanheira (ECARES), François Maniquet (CORE), Gani Aldashev (FUNDP, Namur), Arnaud Dellis (U. Laval), Benoit Crutzen (Erasmus School of Economics, Rotterdam), Lotte Avaere (KULeuven), Marie-Louise Leroux (CORE), Claudia Hupkau (CORE) and Nguyen Thank Dao (CORE).

Do not hesitate to consult our website for all updated information:

<http://www.uclouvain.be/en-core.html>

They visited us for a few days or a few weeks between January and April 2011...

- Jorge Amaya, Universidad de Chile
- Humberto Brea, Universitat Autònoma de Barcelona
- Arritokieta Chamorro, University of the Basque Country
- Arnaud Dellis, Laval University
- Pierre Frankhauser, Université de Franche Comté
- Johanna Goertz, Guelph University
- Jonathan Hamilton, University of Florida
- Massoud Jenabi, Amirkabir University of Technology, Iran
- Sergey Kokovin, Novosibirsk State University
- Alexander Meister, Rostock University
- Guy Meunier, Ecole Polytechnique
- Enrico Minelli, Università di Brescia
- Ion Necoara, Univ. politecnica Bucharest
- Giorgia Oggioni, Università di Brescia
- Yoshiaki Ohasawa, University of Tsukuba
- Mathieu Parenti, Université de Paris 1
- Filippo Pompili, University of Perugia
- Vladimir Protasov, Moscow State University
- Giuseppe Pulina, University of Sassari
- Dany Ralph, Judge Business School, Cambridge
- Aldo Rustichini, University of Minnesota
- Francesco Sobbrino, IMT Lucca
- Cécile Tannier, Université de Franche-Comté
- Ornella Tarola, Università «La Sapienza», Roma
- Dirk Olivier Theis, Otto-von-Guericke & Magdeburg University
- Golbon Zakeri, University of Auckland
- Evgeny Zhelobodko, Novosibirsk State University

Annual Jamboree of the European Doctoral Program

Between March 17th and 19th 2011, six of our economics PhD students (Stéphane Bouché, Maia Gejadze, Salome Gvetadze, Claudia Hupkau, Margherita Negri and Paolo Piacquadio) attended the annual meeting of the European Doctoral Program in Quantitative Economics (EDP) in Bonn. The EDP is a multi-university doctoral program initiated in 1979 aimed at providing PhD students access to a network of some of the top economics departments in Europe, encouraging the exchange of students and offering the possibility of joint supervision by faculty members of different partner universities. More than 60 PhD students from the six partner universities in Louvain (UCL), London (LSE), Bonn (BGSE), Paris (PSE), Barcelona (UPF) and Florence (EUI) attended this year's jamboree.

The goal of the meeting is to give young researchers close to completion of their PhD an opportunity to present their work to a diverse audience of junior researchers and faculty members. Students learn about the latest research activities at the respective universities, get advice on their own research and make contacts for possible future exchange stays or even post-doc positions. This year, senior faculty members from Bonn, Barcelona and Louvain attended the event and chaired the sessions.

The program included seminars held by Armin Falk ("Determinants and Consequences of Risk Attitudes"), Benny Moldovanu ("Computer Tomography and Mechanism Design") and Gernot Müller ("Timing fiscal

retrenchment in the wake of deep recessions"). A total of 24 presentations were held by PhD students in parallel sessions, covering fields from Finance, International Macroeconomics, Experimental Economics, Public Economics and International Trade and Labor Economics.

According to the American Heritage Dictionary of the English Language, the word "jamboree" also means "noisy celebration". The organizers, indeed, did not fail to provide good entertainment to the visitors, and invited all guests to a traditional German brewery on the first evening of the meeting. Urs Schweizer, Fellow of the European Economic Association and director of the BGSE, joined the students and other members of faculty at this occasion. In his address he reminded of the long tradition of the program and its many prominent former members, including Helmut Cremer, Pierre Dehez, Massimo Motta and Vincent Vannetelbosch.

The hosting of the EDP meeting rotates annually. Last year University Pompeu Fabra organized the event in Barcelona, and next year, it will be held at the European University Institute in Florence. The last time the event took place in Louvain-la-Neuve was in November 2006, and it will come back "home" in 2013. We are already looking forward to having some of the brightest young researchers in quantitative economics presenting their work at UCL.

Prizes & Awards

ERC Advanced Investigator Grant

We gratefully congratulate François Maniquet who has been awarded an ERC Advanced Investigator Grant on Poverty, Resource Equality, and Social Policies for five years. The research project includes a part on multi-dimensional poverty measurement and a part on optimal taxation. Regarding multi-dimensional poverty measurement, the original idea is to use individual preferences to aggregate the different dimensions of poverty (for instance, income, health, housing, social status). This requires to estimate the relationship between socio-demographic characteristics and preferences. This can be done either by using satisfaction surveys or choice data. Regarding optimal taxation, the idea is to combine ethical principles of equality of opportunities and the ethical view that the material well-being of people should be above some threshold.

The ERC Advanced Investigator Grant (ERC Advanced Grant) funding scheme targets researchers who have already established themselves as independent research leaders in their own right. ERC Advanced Grants allow exceptional established research leaders in any field of science, engineering and scholarship to pursue frontier research of their choice.

They aim to encourage risk-taking and interdisciplinarity, and support pioneering frontier research projects. The ERC grant should allow François Maniquet to hire three doctoral students and two post-doc fellows.

THESES

- On February 18, 2011 - **Nicolas Gillis**
Nonnegative matrix factorization: complexity, algorithms and applications
 Docteur en Sciences de l'Ingénieur, Université catholique de Louvain under the supervision of François Glineur.
Current position (from September 2011):
 Post-doc at University of Waterloo (Canada).



François Maniquet in front of the Citadel of Namur, his home town.



Publications...

Reprints...

Environmental economics	2270	Bréchet, Th. and P. Picard. The price of silence: markets for noise licenses and airports. <i>International Economic Review</i> 51(4), 1097-1125, 2010.
	2275	Durand-Lasserre, O., A. Pierru and Y. Smeers. Uncertain long-run emission targets, CO ₂ price and global energy transition: a general equilibrium approach. <i>Energy Policy</i> 38(9), 5108-5122, 2010.
	2276	Bréchet, Th., F. Gerard and H. Tulkens. Efficiency vs. stability in climate coalitions: a conceptual and computational appraisal. <i>The Energy Journal</i> 32(1), 49-75, 2011.
Game theory	2279	Moreno-Ternero, J. A coalitional procedure leading to a family of bankruptcy rules. <i>Operations Research Letters</i> 39(1), 1-3, 2011.
	2283	Laslier, J-F. and F. Maniquet. Classical electoral competition under approval voting. Chapter 17 in J.-F. Laslier and M.R. Sanver (eds.), <i>Handbook on Approval Voting</i> , Studies in Choice and Welfare, Heidelberg, Springer, 415-429, 2010.
Industrial organization	2259	Boccard, N. and X. Wauthy. Ensuring quality provision through capacity regulation under price competition. <i>The B.E. Journal of Theoretical Economics</i> 10(1) (Topics), Article 47.
Macroeconomic policies	2271	de la Croix, D. and M. Lubrano. The tradeoff between growth and redistribution: ELIE in an overlapping generations model. Chapter 11 in C. Gamel and M. Lubrano (eds.), <i>Macrojustice. A Pluridisciplinary Appraisal of Kolm's Theory</i> , Heidelberg, Springer, 307-339, 2010.
Mathematical finance	2260	de Maere d'Aertrycke, G. and Y. Smeers. The valuation of power futures based on optimal dispatch. <i>The Journal of Energy Markets</i> 3(3), 27-50, 2010.
Microeconomic theory	2272	Denuit, M., L. Eeckhoudt and M. Menegatti. Correlated risks, bivariate utility and optimal choices. <i>Economic Theory</i> 46(1), 39-54, 2011.
Optimization methods and operations research	2256	Conforti, M., L. Wolsey and G. Zambelli. Projecting an extended formulation for mixed-integer covers on bipartite graphs. <i>Mathematics of Operations Research</i> 35(3), 603-623, 2010.
	2258	Hatami-Marbini, A. and M. Tavana. An extension of the linear programming method with fuzzy parameters. <i>International Journal of Mathematics in Operational Research</i> 3(1), 44-55, 2011.
	2263	Saati, S., Hatami-Marbini, A. and M. Tavana. Data envelopment analysis: an efficient duo linear programming approach. <i>International Journal of Productivity and Quality Management</i> 7(1), 90-103, 2011.
	2274	Gillis, N. and R. Plemmons. Dimensionality reduction, classification, and spectral mixture analysis using non-negative underapproximation. <i>Optimal Engineering</i> , article 027001, 50(2), 2011.
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Econometric theory	2011/3	Bauwens, L., G. Koop, D. Korobilis and J. Rombouts. A comparison of forecasting procedures for macroeconomic series: the contribution of structural break models.
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	2011/13	Bauwens, L., A. Dufays and J. Rombouts. Marginal likelihood for Markov-switching and change point GARCH models.
Econometrics of financial markets	2011/11	Bauwens, L., Ch. Hafner and D. Pierret. Multivariate volatility modeling of electricity futures.
Environmental economics	2010/86	Bréchet, Th. and P. Picard. The economics of airport noise: how to manage markets for noise licenses.
Game theory	2011/7	Kirchsteiger, G., M. Mantovani, A. Mauleon and V. Vannetelbosch. Myopic or farsighted? An experiment on network formation.
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	2011/2	Devolder, O., F. Glineur and Y. Nesterov. First-order methods of smooth convex optimization with inexact oracle.

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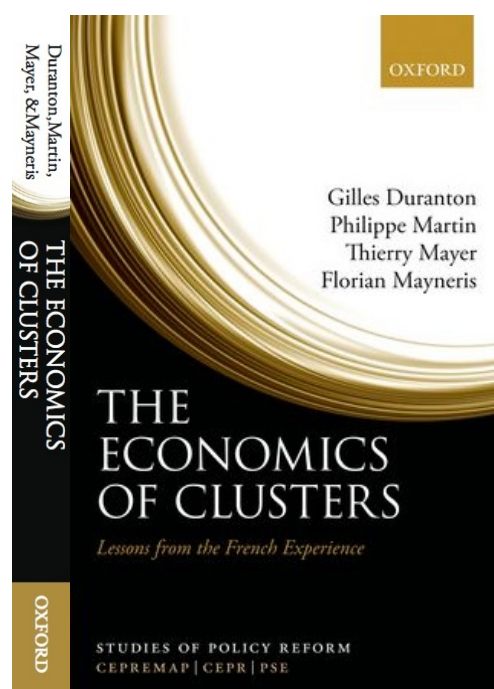
Discussion Papers

Public and welfare economics	2010/81	Hindriks, J., M. Vershelde, G. Rayp and K. Schoors. School tracking, social segregation and educational opportunity: evidence from Belgium.
	2010/82	Hindriks, J., M. Vershelde, G. Rayp and K. Schoors. School autonomy and educational performance: within-country evidence.
	2010/84	Agrell, P. and A. Gautier. A theory of soft capture.
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Trade and economic geography	2011/8	Mayneris, F. and S. Poncet. Export performance of Chinese domestic firms: the role of foreign export spillovers.
	2011/12	Thisse, J. Geographical economics: a historical perspective.

Book

The Economics of Clusters – Lessons from the French experience

Industry clusters have long fascinated economists and geographers alike, the most renowned being Silicon Valley, which is seen by many as the blueprint for regional development, innovation, and growth. Since the 1980's, clusters have also become an important tool of industrial policies over the world. Gilles Duranton (University of Toronto), Philippe Martin (Sciences-Po), Thierry Mayer (Sciences-Po) and *Florian Mayneris* (Université catholique de Louvain) come back on the theoretical mechanisms underlying the existence of clusters and on the gains and costs we can expect from clusters policies. Building on an empirical analysis of the French case, they then show that if gains from agglomeration do exist, the case for clusters policies is not so clear. Indeed, French firms internalize well agglomeration economies in their location choices, and the implementation of clusters policies raises political economy issues.



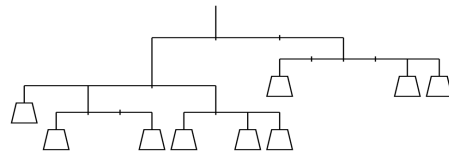
Some friendly news

Belgian Puzzle Championship

Did you know there is such a thing as the “World Puzzle Federation”, an international organization dedicated to puzzles? It follows the Olympic standard, and brings together puzzlers from around the world for the annual World Puzzle Championship. These puzzles, of the mathematical or logical type, include thousands of variations, with well-known examples such as Sudoku or Minesweeper. Speed is a crucial element in these competitions, as all contests are time-limited so that only the very best solvers manage to find all answers in the allotted time.

The Belgian Puzzle Championship recently took place at CORE, sponsored by KESING, publisher of puzzle magazines. A dozen participants competed for more than four and a half hours (with a few breaks) on forty problems of varying difficulty, such as the one below (designed to be

solved in less than four minutes - try your hand at it!)



Assign values 1 to 9 exactly once to the weights in the diagram so that everything balances as shown (beams have negligible weight).

Winner Philippe NIEDERKORN and runner-up Bart LEEMANS will join former champions Sébastien LEROY and Vincent STALON to form this year’s Belgian team, poised to take part to the 2011 Word Puzzle Championship in Hungary. Belgium's best result so far: a third place four years ago in Rio de Janeiro, right behind USA and Japan.



Philippe Niederkorn (the winner) & Bart Leemans (the runner-up)

Sources:

World Puzzle Federation:
<http://www.worldpuzzle.org/> and

Problems:
http://math.berkeley.edu/~a_uroux/frwpc11/



As every year the CORE "International Dinner" has taken place in the seminar room on march 23, 2011 and offered a culinary trip all across the world. As always, each participant has brought a specialty from her or his country (this can be



either an appetizer, main dish, or even dessert) in order to share and try all the dishes. The best meal in the 3 categories has won a price; Asia and Italy were the winners of this culinary and friendly competition.



☞ *Education is a progressive discovery of our own ignorance.*

☞ *L'éducation est la découverte progressive de notre ignorance.*

☞ *La educación es el descubrimiento gradual de nuestra ignorancia.*

William James Durant



CORE is offering research fellowships in economics, operations research and econometrics, starting September 1st, 2012.

How to apply: Applications (Personal data, CV, degrees, current position, research interests with sample papers and name of 3 referees) must be filled through the [website](#), BEFORE November 30, 2011. An automatic mail will be sent to your 3 referees asking them to send a reference letter through the website.

CORE Newsletter will be sent every 4 months.

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