

Matheus R. Grasselli

BUSINESS ADDRESS	Department of Mathematics, Hamilton Hall 415 1280 Main Street West Hamilton ON L8S 4K1 phone: 905 525 9140 ext 23406 e-mail: grasselli@math.mcmaster.ca
EDUCATIONAL BACKGROUND	King's College London , London, United Kingdom <i>PhD in Mathematics</i> September 1998 – December 2001 <ul style="list-style-type: none">• Thesis title: Classical and Quantum Information Geometry• Supervisor: Raymond F. Streater University of São Paulo , São Paulo, Brazil <i>BSc in Physics (Honors - first class)</i> February 1994 – December 1997
PROFESSIONAL ORGANIZATIONS	Associate Member, London Mathematical Society (elected, 2000) Member, International Association of Mathematical Physics Member, American Mathematical Society Life Member, Bachelier Finance Society Member, Society for Industrial and Applied Mathematics
EMPLOYMENT HISTORY	The Fields Institute , Toronto, Canada Deputy Director January 2012 – June 2016 McMaster University , Hamilton, Canada Department Chair, Mathematics and Statistics July 2018 – present Professor July 2014 – present Acting Director, School of Computational Science and Engineering July 2017 – June 2018 Associate Professor July 2008 – June 2014 Assistant Professor May 2003 – June 2008 Postdoctoral Fellow in Financial Mathematics January 2002 – April 2003
SCHOLARLY AND PROFESSIONAL ACTIVITIES	Associate Editor, Journal of Dynamics and Games December 2017 – present Associate Editor, Journal of Banking and Finance April 2013 – present Associate Editor, Intern. Journal of Theoretical and Applied Finance March 2012 – present Managing Editor, Springer Briefs in Mathematical Finance July 2011 – present Guest Editor for three special issues of the International Journal of Theoretical and Applied Finance in 2011-12. Referee for the following journals: Mathematical Finance, Finance and Stochastics, SIAM Journal on Financial Mathematics, International Journal of Theoretical and Applied Finance, Proceedings of the Royal Society A, Annals of the Institute of Statistical Mathematics, Proceedings of the American Mathematical Society, Applied Mathematical Finance, Quantitative Finance, Journal of Economic Dynamics and Control, Journal of Banking and Finance, Decisions in Economics and Finance, Infinite Dimensional Analysis, Quantum Probability and Related Topics, Canadian Applied Math Quarterly, Journal of Economic Behavior & Organization, Reports on Mathematical Physics, Journal of Futures Markets, Annals of Applied Probability, Management Science, Mathematics and Financial Economics, Optimal Control, Applications and Methods, Stochastics, Journal of Management Mathematics.

External grant reviewer for: National Science and Engineering Research Council of Canada; National Science Foundation (USA); Institute for New Economic Thinking (USA); Swiss National Science Foundation (Switzerland); Ministry of Education, University and Research (Italy); Israel Science Foundation (Israel).

AREAS OF INTEREST

Research: Mathematical finance, Macroeconomics, Utility theory, Game theory, Optimal investment, Interest rate modelling, Computational economics, Information geometry, Quantum information.

Teaching: Calculus, Linear Algebra, Numerical Methods, Financial Mathematics, Quantum Computing.

Consulting: Financial engineering, Derivatives trading, Risk management.

HONOURS

Fields Institute Fellow

2017

Sharcnet Chair in Financial Mathematics

May 2003 – June 2008

COURSES TAUGHT

McMaster: Since 2002 I taught 14 undergraduate courses and 10 graduate courses as part of my regular teaching load at the Mathematics and Statistics Department. In addition, I taught 4 graduate courses on overload for the Finance Area at the DeGroote Business School: Here is a complete list of courses taught since 2002:

Math 2T03 - Numerical Linear Algebra (2002, 2003, 2007)

Math 1K03 - Introductory Calculus for Social Sciences (2002, 2003)

Stats 4D03 - Intermediate Probability (2004)

Math 1M03 - Calculus for Social Sciences (2004, 2005)

Math 3QC03 - Quantum Computing (2008, 2011)

Math 4W03 - Directed Reading - Quantum Computing (2009)

Math 1X03 - Calculus for Math and Stats I (2009)

Math 2X03 - Advanced Calculus (2017)

Math 4NA3 - Numerical Solutions of Differential Equations (2018)

Math 799 - Directed Reading - Financial Mathematics (2003)

Math 772 - Topics in Financial Mathematics (2005, 2006, 2009)

Math 771 - Mathematics of Finance (2006, 2007, 2008)

Math 775 - Portfolio Theory (2008)

Math 773 - Computational Finance (2009)

Math 778 - Applied Computational Finance I (2011)

MFM 703 - Applied Computational Finance I (2018, 2019, 2020)

MFM 713 - Applied Computational Finance II (2019, 2020, 2021)

V703 - Financial Valuation (2005, 2006, 2007)

F772/F773 - Continuous-time Finance/ Empirical methods in Finance (2009)

Outside courses

Stock-flow consistent models and Climate-Economy Modelling, 2 hours, Masterclass on New Approaches to Economic Challenges OECD-NAEC, March 6, 2020.

Finance and Climate Change, 3 hours, IMPA, December 1, 2019.

An introduction to stock-flow consistent models in macroeconomics, 2 hours, Masterclass on New Approaches to Economic Challenges OECD-NAEC, April 17, 2019.

Asset price bubbles: economics, mathematics and statistics, 3 hours invited mini-course, Workshop on 10 Years After the Crises: modelling meets policy making, Fields Institute, Toronto, January 14, 2019.

Introduction to Mathematical Finance, University of California, Santa Barbara, Spring Quarter, 2017.

Advanced Topics in Financial Modeling, University of California, Santa Barbara, Spring Quarter, 2017.

Continuous-time SFC Modelling, 5 hours, Applied SFC Macro-modelling Summer School, Kingston University, August 05, 2016.

Stock-Flow Modelling in a Post Keynesian Framework, 3 hours, Post Keynesian Winter School, Grenoble University, December 08, 2015.

Dynamical Systems and Financial Instability, 3 hours, IMPA, November 29, 2015.

Dynamical Systems and Financial Instability, 3 hours, IMPA, November 30, 2014.

Dynamical Systems and Financial Instability, 3 hours, IMPA, December 01, 2013.

Understanding Financial Crises: a statistical perspective, 3 hours, IMPA, December 08, 2012.

Agent-based models and banking networks, 5 hours, Fifth Summer School in Mathematical Finance at AIMS, Cape Town, February 16-18, 2012.

Understanding Financial Crises: a statistical perspective, 3 hours, IMPA, November 26, 2011.

Asset price bubbles: economics, mathematics and statistics, 4 hours, IMPA, November 28-29, 2010.

Asset price bubbles: economics, mathematics and statistics, 12 hours, Cours Bachelier, Institute Henri Poincaré, Paris, Fall 2010.

Real Options and Game Theory, 2 hours, IMPA, November 25, 2009.

A guided tour to Real Options, 3 hours, IMPA, November 24, 2008.

Introduction to Real Options, 3 hours, IMPA, Rio de Janeiro, October 22, 2007.

CONTRIBUTIONS TO TEACHING PRACTICE

Co-founder of the M-Phimac (Master in Financial Mathematics Program) at the Mathematics and Statistics Department (2007).

Mathematics and Statistics representative in the iSci (Integrated Sciences Honours Program) design committee (2006-2009).

Member of the Mathematics for Engineering Curriculum review committee (2006).

SUPERVISORSHIPS

Postdoctoral Fellows

Weijie Pang

September 2019 – present

Patrick Li

September 2014 – August 2017

Johannes Buchner

January 2014 – December 2015

Adrien Nguyen Huu

September 2012 – August 2013

Huibin Cheng (with T. Hurd and T. Pirvu)	July 2011 – June 2013
Klaas Schultze (with T. Hurd and T. Pirvu)	July 2009 – June 2011
Cesar Gomes Velez (with T. Hurd)	January 2008 – July 2009
Alexey Kuznetsov (with T. Hurd)	July 2004 – June 2006

PhD students

Aghigh Farhadi	September 2020 – present
Yicheng Chen	September 2018 – present
Adam Profetto	September 2016 – present
Bernardo Costa Lima	September 2008 – August 2013
Omneia Ismail	September 2006 – July 2012
Elena Alexandru-Gajura	September 2005 – October 2010
Tsunehiro Tsujimoto, exchange, University of St Andrews	January 2009 – September 2010
Sebastiano Silla, exchange, Università di Pisa	September 2005 – December 2008

Master students

Daniel Presta, McMaster University	September 2019 – present
Luka Milic, McMaster University	September 2019 – present
Emma Holmes, McMaster University	September 2019 – August 2020
Aghigh Farhadi	September 2018 – August 2020
Yicheng Chen	September 2017 – August 2018
Blair Walker	September 2017 – August 2018
Aditya Maheshwari	September 2014 – August 2015
Omar Alejandro Hernández Romo	September 2013 – August 2015
Xiaohui Li	March 2007 – March 2010
Omneia Ismail	September 2005 – August 2006
Lingling Wang	September 2004 – July 2006
Chuang Yi	September 2003 – August 2005

Undergraduate students

Matthew Shimoda, McMaster University	January – April 2020, September 2020 – April 2021
Emma Holmes, McMaster University	September 2018 – August 2019
Daniel Presta, McMaster University	September 2018 – August 2019
Calvin Luo, McMaster University	January – April 2018
Conor Gillespie-Friesen, McMaster University	January – August 2015
Yanhe Huang, Mitacs Globalink, Beihang University	July – September 2014
Michael Gill, McMaster University	May – August 2014, January – April 2015
Flora Tixier(with T. Hurd), exchange, École Polytechnique	April – June 2014
Simon Leguil (with T. Hurd), exchange, École Polytechnique	April – June 2014
Hua Zheng, Mitacs Globalink, Shandong University	July – September 2013
Hao Yin, Mitacs Globalink, Fudan University	June – August 2013
Fields-Mitacs Summer Program	July – August 2013
Group members: Reza Asad (Toronto), William Cook (Cambridge), Xinyu Li (Minnesota), Nathan Tankus (Ottawa), Yihui Tian (Toronto), Kimsy Tor (Manhattam College).	

Hadrien De March (with T. Hurd), exchange, École Polytechnique	April – July 2013
Matthieu Vermersch (with T. Hurd), exchange, École Polytechnique	April – July 2013
Aditya Maheshwari, Mitacs Globalink, IIT Kanpur	May – August 2012
Fields-Mitacs Summer Program	July – August 2012
Group members: Francesc Rullan (Catalunya), Sal Toscano Palmerin (Guanajuato), Zixuan Wang (Wuhan), Camelia Yazdani (UOIT).	
Lionel Cassier (with T. Hurd), exchange, École Polytechnique	May – August 2012
Fields-Mitacs Summer Program	July – August 2011
Group members: Lucas Bentivenha (Universidade Estadual Paulista), Richard Cerezo (Toronto), Eric Hyungvin Ihm (Toronto), Euijun Kim (Toronto), Nikita Reymer (Toronto), Rafael Rocha (Universidade Estadual Paulista).	
Garance Staraci, exchange, Stanford	May – August 2011
Vincent Leclère, exchange, École Polytechnique	May – August 2009
Michael Lukas, NSERC USRA, McMaster	May – August 2007

RESEARCH
FUNDING

Chair Research Stipend, \$35,000 per year, July 2018-June 2023
Fields-CQAM Lab, \$40,000 per year, March 2019-July 2021
NSERC Discovery Grant, \$23,000 per year, April 2014-March 2022.
Institute for New Economic Thinking, \$50,000 per year, April 2013-March 2016.
Global Risk Institute, \$10,000 per year, April 2013-March 2016.
Fields Institute Directorate Research Funds, \$20,000 per year, January 2012-June 2016.
M-prime - Trading and Risk in the Market, \$25,000, April 2011-March 2012.
Mitacs - Trading and Risk in the Market, \$10,000 per year, April 2003-March 2011.
EDF (Electricite de France), Mitacs Industrial matching, \$10000 per year, April 2011-March 2013.
Deutsche Bank, Mitacs Industrial matching, \$5,000, March 2010.
NSERC Discovery Grant, \$19,000 per year, April 2009-March 2014.
Integral Trust, Mitacs Industrial matching, \$5,000, March 2008.
CIBC, Mitacs Industrial matching, \$5,000, March 2005
Sharcnet Graduate Fellowship, \$27,720 , September 2004 - December 2005.
NSERC Discovery Grant, \$12,000 per year, April 2004-March 2009.
Start-up Fund, \$ 65,000, May 2003.

PUBLICATIONS

Peer Reviewed Contributions to Books

- M. R. Grasselli and O. Ismail, *An agent-based computational model for bank formation and interbank networks*, in Handbook on Systemic Risk, J-P Fouque and J. Langsam (eds.), 401-430, Cambridge University Press, 2013.
- M. R. Grasselli, *Infinite Dimensional Quantum Information Geometry*, in Disordered and Complex Systems, ed. A.C.C. Coolen, L. Hughston, P. Sollich, R.F. Streater, American Institute of Physics, 2000.
- M. R. Grasselli and R. F. Streater, *The Uniqueness of the Chentsov Metric*, in Disordered and Complex Systems, ed. A.C.C. Coolen, L. Hughston, P. Sollich, R.F. Streater, American Institute of Physics, 2000.

Peer Reviewed Journal Articles

- M.R. Grasselli, *Monetary policy responses to Covid-19: a comparison with the 2008 crisis and implications for the future of central banking*, to appear in *Review of Political Economy*, 2021.
- T. J. Garrett, M.R. Grasselli, and S. Keen, *Past world economic production constrains current energy demands: Persistent scaling with implications for economic growth and climate change mitigation*, *PLOS ONE* 15(8): e0237672, 2020.
- M. R. Grasselli and A. Lipton, *The Broad Consequences of Narrow Banking*, *International Journal of Theoretical and Applied Finance*, Vol. 22, No. 1, 2019, 1950007 (22 pages).
- G. Giraud and M. R. Grasselli, *The macrodynamics of household debt, growth, and inequality*, *Journal of Economic Behaviour and Organization*, 2019, <https://doi.org/10.1016/j.jebo.2019.03.002>.
- M. R. Grasselli and A. Lipton, *On the Normality of Negative Interest Rates*, *Review of Keynesian Economics*, Vol 7, No 2, 201-219, 2019.
- M. R. Grasselli and P. Li, *A stock-flow consistent macroeconomic model with heterogeneous agents: the master equation approach*, *Journal of Network Theory in Finance*, Vol 4, No 2, 47-87, 2018.
- M. R. Grasselli and A. Maheshwari, *Testing a Goodwin model with general capital accumulation rate*, *Metroeconomica*, Vol. 69, No. 3, 619-643, 2018.
- M. R. Grasselli and A. Nguyen Huu, *Inventory cycles with debt-financed investment*, *Structural Change and Economic Dynamics*, Vol 44, 1-18, 2018.
- M. R. Grasselli and P. Li, *A mean-field approximation to stock-flow consistent agent-based models with state-dependent transition rates*, *Journal of Coupled Systems and Multiscale Dynamics*, Vol 5 (2), 177-196, 2017.
- M. R. Grasselli and A. Maheshwari, *A comment on 'Testing Goodwin: growth cycles in ten OECD countries'*, *Cambridge Journal of Economics*, Vol 41, Issue 6, 1761-1766, November 2017.
- M. R. Grasselli and A. Nguyen Huu, *Inflation and speculation in a dynamic macroeconomic model*, *Journal of Risk and Financial Management*, Vol. 8, 285-310, 2015.
- B. Costa Lima, M. R. Grasselli, X-S Wang and J. Wu, *Destabilizing a stable crisis: government intervention and persistence in macroeconomics*, *Structural Change and Economics Dynamics*, Vol. 30, 30-51, 2014.
- M. R. Grasselli, V. Leclère and M. Ludkovski, *Priority option: the value of being a leader*, *International Journal of Theoretical and Applied Finance*, Vol. 16, No. 1, 1350004 (37 pages), 2013.
- M. R. Grasselli and C. Gómez, *Stock loans in incomplete markets*, *Applied Mathematical Finance*, Vol. 20, No. 2, 118-136, 2013.
- M. R. Grasselli and B. Costa Lima, *An analysis of the Keen model for credit expansion, asset price bubbles and financial fragility*, *Mathematics and Financial Economics*, Vol. 6, No. 3, 191-210, 2012.
- M. R. Grasselli, *Getting real with real options: a utility-based approach for finite-time investment in incomplete markets*, *Journal of Finance, Business, and Accounting*, Vol. 38, No. 5 & 6, 740-764, 2011.
- S. Biagini, M. Frittelli and M. R. Grasselli, *Indifference price for general semimartingales*, *Mathematical Finance*, Vol. 21, No. 3, 423-446, 2011.
- M. R. Grasselli, *Dual connections in nonparametric classical information geometry*, *Annals of the Institute for Statistical Mathematics*, Vol. 62, No. 5, 873-896, 2010.
- M. R. Grasselli and V. Henderson, *Risk Aversion and Block Exercise of Executive Stock Options*, *Journal of Economic Dynamics and Control*, Vol. 33, No. 1, 109-127, 2009.
- M. R. Grasselli and S. Silla, *A policyholder's utility indifference valuation for guaranteed annuity options*, *Mathematical Methods in Economics and Finance*, Vol. 3, No. 2, 61-80, 2008.
- M. R. Grasselli and T. R. Hurd, *Indifference pricing and hedging of volatility derivatives*, *Applied Mathematical Finance*, Vol. 4, No.4, 303-317, 2007.
- M. R. Grasselli and T. R. Hurd, *Wiener Chaos and the Cox-Ingersoll-Ross model*, *Proceedings of the Royal Society A*, Vol. 461, No. 2054, 459-479, 2005.
- M. R. Grasselli, *Duality, monotonicity and the Wigner-Yanase-Dyson metrics*, *Infinite Dimensional Analysis, Quantum Probability and Related Topics*, Vol. 7, No. 2, 215-232, 2004.

M. R. Grasselli and R. F. Streater, *Hydrodynamics in an External Field*, Reports on Mathematical Physics, Vol. 50, No. 1, 13-40, 2002.

M. R. Grasselli and R. F. Streater, *On the Uniqueness of the Chentsov Metric in Quantum Information Geometry*, Infinite Dimensional Analysis, Quantum Probability and Related Topics, Vol. 4, No. 2, 173-182, 2001.

M. R. Grasselli and R. F. Streater, *The Quantum Information Manifold for ε -Bounded Forms*, Reports on Mathematical Physics, Vol. 46, No. 3, 325-335, 2000.

Non-Peer Reviewed Books

M. R. Grasselli and I. Almada, *The Venetian Files: the secret of financial crises*, Mosaic Press, 2019.

M. R. Grasselli and L.P. Hughston (eds.), *Finance at Fields*, World Scientific, 2013.

M. R. Grasselli and D. Pelinovsky, *Numerical Mathematics*, Jones and Bartlett Publishers, Boston, 2008.

Non-Peer Reviewed Contribution to Books

M. R. Grasselli, *Modern central banking: conventional and unconventional measures from 2008 to Covid-19*, in *The Financial System, New Approaches to Economic Challenges*, Hynes, W., P. Love and A. Stuart (eds.), OECD Publishing, Paris 2020.

Non-Peer Reviewed Journal Articles

M. R. Grasselli and T. R. Hurd, *The Fields Institute thematic program on Quantitative Finance: foundations and applications - January to June, 2010*, Quantitative Finance, Vol. 11, No. 1, 21-29, 2011.

Technical Reports and Lecture Notes

M. R. Grasselli and T. Tsujimoto, *Chaotic interest rate calibration*, 33 pages, 2011.

M. R. Grasselli and T. R. Hurd, *Credit Risk and Interest Rate Modeling* (with T. Hurd), 136 pages, 2010.

M. R. Grasselli, *Nonlinearity, correlation and the valuation of employee stock options*, 24 pages, 2005.

M. R. Grasselli and T. R. Hurd, *Malliavin Calculus* (with T. Hurd), 24 pages, 2005.

M. R. Grasselli and T. R. Hurd, *Monte Carlo methods for Exponential Hedging*, 29 pages, 2003.

PRESENTATIONS AT MEETINGS

Since 2002 I was an invited speaker in 56 international conferences and workshops (including 2 Oberwolfach workshops) and gave contributed talks at 10 international conferences (including 6 Bachelier World Congresses). In the same period, I gave 50 invited research seminars at major international universities such as Cambridge, Carnegie Mellon, Columbia, Chicago, École Polytechnique, ETH Zurich, Groningen, IMPA, Imperial College London, Kings College London, UC Santa Barbara, KTH Stockholm, Oxford, Pisa, Princeton, and the Sorbonne, as well as 22 invited research seminars at Canadian institutions, including 6 colloquium talks (McMaster, Western, York, Ryerson) and three talks at the Fields Institute Quantitative Finance Seminar Series.

Here is a complete list of all my talks from 2002 to 2020:

Invited Talks

Monetary policy responses to Covid-19: a comparison with the 2008 crisis and implications for the future of central banking, Research in Options, IMPA, December 2, 2020

Monetary policy responses to Covid-19: a comparison with the 2008 crisis and implications for the future of central banking, Princeton Financial Math Seminar, Nov 11, 2020

The Financial System and the Covid Economy, OECD-NAEC Webinar, September 29, 2020.

Climate Change, Finance, and Macroeconomics: Lets Not Roll the Dice, SIAM/CAIMS Annual Meeting, Toronto, July 10, 2020

Have Central Banks Learned Anything from These Crises?, Review of Political Economy Webinar, May 25, 2020.

Climate Change, Finance, and Macroeconomics, OECD-NAEC Conference on Integrative Economics Paris, March 6, 2020

A Minimal Mathematical Model for Modern Monetary Theory, invited plenary talk, Research in Options IMPA, Rio de Janeiro, December 2, 2019

Climate Change, Finance, and Macroeconomics, McMaster-CNRS Workshop 2019 Grenoble, July 16, 2019.

Climate Change, Finance, and Macroeconomics, FMTC, Cape Town, July 1, 2019.

Climate Change, Finance, and Macroeconomics, CAIMS 2019, Whistler, June 12, 2019.

Banking Networks and the Circuit Theory of Money, SIAM-FME, Toronto, June 6, 2019.

Remarks on the future of central banking: negative rates, narrow banking, climate change, Closing Panel, The Future of Central Banking, Talloires, May 28, 2019.

Three examples of new approaches to macroeconomic modelling, Closing Panel, New Analytical Tools and Techniques for Economic Policy Making OECD-NAEC and Baillie Gifford, Paris, April 16, 2019.

Climate Change, Finance, and Macroeconomics, plenary talk, Research in Options 2018, IMAF Búzios, November 26, 2018.

A Chicago Plan for the 21st century: narrow banking, fiat-backed digital currency and macroeconomics, Stochastic Analysis and Mathematical Finance Seminar Illinois Institute of Technology, Nov 6, 2018.

Macroeconomics for mathematicians, Department of Mathematics Colloquium, Ryerson University October 4, 2018.

Mathematics and new economics thinking, Conference on 10 Years after the failure of Lehman Brothers: What have we learned?, OECD, Paris, September 13-14, 2018.

Banking Networks and the Circuit Theory of Money, CAIMS Annual Meeting 2018 Ryerson University, June 5, 2018.

Banking Networks and the Circuit Theory of Money, Workshop on Mathematical Finance China Academy of Research for Finance (SAIF), Shanghai, May 14, 2018.

Banking Networks and the Circuit Theory of Money, Mathematical Finance Seminar, Imperial College London, April 11, 2018.

Macroeconomics for mathematicians, Department of Mathematics and Statistics Colloquium, February 2, 2018.

On the normality of negative interest rates, Grenoble Post-Keynesian and Institutionalist Conference December 9, 2017.

On the normality of negative interest rates, plenary talk, Research in Options - IMPA Rio de Janeiro, November 27, 2017

On the normality of negative interest rates, Fields Institute Quantitative Finance Seminar September 27, 2017.

Banking Networks and the Circuit Theory of Money, plenary talk, Mathematics in Finance, Kruger National Park, August 11, 2017

Asset Price Bubbles: economics, mathematics and statistics, ACQuFRR/Avior Research Seminar, Cape Town, July 26, 2017.

Understanding Financial Crises - a statistical perspective, ACQuFRR/Avior Research Seminar, Cape Town, July 20, 2017.

An introduction to mathematics for heterodox economists, Summer School: an Introduction to Post-Keynesian Analysis, University of Toronto, June 25, 2017.

Inequality in a monetary dynamic macroeconomic model, CFMAR Conference 2017, University of California, Santa Barbara, May 19, 2017.

Macroeconomic modelling with heterogeneous agents: the master equation approach, CFMAR Seminar, University of California, Santa Barbara, May 15, 2017.

Macroeconomic modelling with heterogeneous agents: the master equation approach, Mathematical Finance Colloquium, USC, Los Angeles April 24, 2017.

Inequality in a monetary dynamic macroeconomic model, FAST Seminar University of Sussex, March 16, 2017.

Inequality in a monetary dynamic macroeconomic model, London Mathematical Finance Seminar, March 9, 2017.

Inventory growth cycles with debt-financed investment, Economics Seminar, Kingston University, March 8, 2017.

Continuous-time SFC Modelling, Mathematics Institute and INET minicourse, Oxford, March 6-7, 2017.

Inequality in a monetary dynamic macroeconomic model, Mathematical and Computational Finance Seminar Oxford, March 2, 2017.

Macroeconomic modelling with heterogeneous agents: the master equation approach, INET Researcher Seminar, Oxford, March 2, 2017.

Continuous-time Stock-Flow Consistent Modelling, Bank of England Seminar, London, February 28, 2017.

Macroeconomic modelling with heterogeneous agents: the master equation approach, Bachelier Colloquium 2017, Metabief, January 20, 2017

Inequality in a monetary dynamic macroeconomic model, plenary talk, Quantitative Methods in Finance, Sydney, December 16, 2016.

Macroeconomic modelling with heterogeneous agents: the master equation approach, plenary talk, Research in Options - IMPA, November 28, 2016.

Inequality in a monetary dynamic macroeconomic model, Seminaire Chaire Énergie et Prospérité, Paris, November 21, 2016.

Inventory growth cycles with debt-financed investment, EPOG Seminar, UniversitéParis Nord, November 18, 2016.

Understanding Financial Crises - a statistical perspective, Conference on Quantitative Methods in Financial Regulation, Stony Brook University, September 10, 2016.

Macroeconomic modelling with heterogeneous agents: the master equation approach, Econophysics Colloquium, ICTP-SAIFR, São Paulo, July 27, 2016.

Inequality and monetary macro-dynamics, Workshop on Inequality, Finance and Secular Stagnation Fields Institute - May 13, 2016.

Inequality in a monetary dynamic macroeconomic model, plenary talk, Research in Options - IMPA, December 2, 2015.

Inflation and speculation in a dynamic macroeconomic model, George Boole Mathematical Sciences Conference, University College Cork, August 27, 2015.

A stock-flow consistent macroeconomic model for asset price bubbles, CAFIN Workshop on Systemic Risk: Networks and Bubbles University of California Santa Cruz, May 29, 2015.

A stock-flow consistent macroeconomic model for asset price bubbles, 5th Workshop on Mathematical Finance and Related Issues, Osaka University Nakanoshima Center, March 17, 2015.

A stock-flow consistent macroeconomic model for asset price bubbles, Research Seminar, Political Economy Group, University of Groningen, January 29, 2015.

A stock-flow consistent macroeconomic model for asset price bubbles, special lecture, 14th Winter School on Mathematical Finance, Lunteren, January 28, 2015.

A Network Analysis of the National Banking Era (1863-1913), YSI Workshop on Economic History - INET, New York January 24, 2015.

A stock-flow consistent macroeconomic model for asset price bubbles, plenary talk, Research in Options Conference, IMPA, Buzios, Brazil, December 1, 2014.

A stock-flow consistent macroeconomic model for asset price bubbles, Mathematical Finance Seminar, Columbia University, October 16, 2014.

Asset price dynamics in stock-flow consistent macroeconomic model, Mathematical Finance Colloquium, University of Southern California, October 6, 2014.

Macroeconomics without banks: the major flaw in financial instability modelling, Global Risk Institute Seminar, Toronto, October 2, 2014.

The macroeconomic consequences of private debt, Forum on Financial Economics after the Global Crisis, AIFMRM, Johannesburg, September 1, 2014.

Asset price dynamics in stock-flow consistent macroeconomic model, plenary talk, Mathematics in Finance, Kruger Park, August 26, 2014.

Bringing Tobin back: asset price dynamics in macroeconomics, Workshop on Mathematics and Economics of Systemic Risk, PIMS, Vancouver, July 28, 2014.

Bringing Tobin back: asset price dynamics and portfolio selection in macroeconomics, Workshop on New Directions in Financial Mathematics, BIRS, Banff, July 7, 2014.

Tobin's portfolio selection in macroeconomics, Workshop on Stochastic Analysis in Finance and Insurance, Oberwolfach, May 7, 2014.

The macroeconomic consequences of private debt, keynote talk, 8th Bachelier Colloquium, Metabief, France, January 16, 2014.

The macroeconomic consequences of private debt, ESRC Seminar, Leicester, UK, January 13, 2014.

Macroeconomics: the final frontier, plenary talk, Advances in Financial Mathematics, Paris, France, January 9, 2014.

An agent-based model for bank formation, bank runs and interbank networks, SharcNet Scientific Computing Seminar, University of Ontario Institute of Technology, November 07, 2013.

Energy, Finance, and Macroeconomics, Fields Institute Focus Program on Commodities, Energy, and Environmental Finance Program Visitor Seminars, August 06, 2013.

Austerity versus deficit spending: the mathematics of government intervention in macroeconomics, University of Massachusetts at Amherst, April 29, 2013.

Mathematics and the recent crisis: what we learned and where are we going from here, Classroom Adventures in Mathematics, University of Toronto, April 27, 2013.

Austerity versus deficit spending: the mathematics of government intervention in macroeconomics, Quantitative Finance Seminars, University of Technology Sydney, Australia, February 21, 2013.

Austerity versus deficit spending: the mathematics of government intervention in macroeconomics, plenary talk, Research in Options Conference, IMPA, Buzios, Brazil, December 10, 2012.

Inquiring the crisis: relationships between mathematical models and the financial world, invited public lecture, MateIncontra, Università degli Studi di Milano, Italy, October 29, 2012.

Modeling Minsky: a dynamical system approach to financial fragility, Symposium on Instabilities in Financial Markets, Scuola Normale Superiore, Pisa, Italy, October 19, 2012.

Extensions of the Keen-Minsky Model for Financial Fragility, University of Western Sydney, Australia, August 03, 2012.

An agent-based model for bank formation, bank runs and interbank networks, Canadian Applied and Industrial Mathematics Society Annual Meeting, Toronto, June 26, 2012.

Extensions of the Keen-Minsky Model for Financial Fragility, IMA Hot Topics Workshop The Mathematics of the New Financial Systems, University of Minnesota, May 18, 2012.

An agent-based model for bank formation, bank runs and interbank networks, Montreal Seminar of Actuarial and Financial Mathematics, Concordia University, April 20, 2012.

A Stochastic Extension of the Keen-Minsky Model for Financial Fragility, Quantitative Finance Seminar, University of Pittsburgh, April 09, 2012.

A Stochastic Extension of the Keen-Minsky Model for Financial Fragility, colloquium talk, Department of Mathematics, York University, Toronto, April 02, 2012.

An agent-based model for bank formation, bank runs and interbank networks, colloquium talk, Department of Mathematics, Ryerson University, Toronto, March 29, 2012.

An agent-based model for bank formation, bank runs and interbank networks, Université d'Evry, France, February 23, 2012.

A dynamical systems model for credit expansion, asset price bubbles and financial fragility, Centre d'Économie de la Sorbonne, Université Paris 1, France, February 22, 2012.

An agent-based model for bank formation, bank runs and interbank networks, Canadian Mathematical Society Winter Meeting, Toronto, December 11, 2011.

A dynamical systems model for credit expansion, asset price bubbles and financial fragility, Research in Options Conference, IMPA, Angra dos Reis, Brazil, November 27, 2011.

A dynamical systems model for credit expansion, asset price bubbles and financial fragility, Quantitative Finance Seminar Series, Fields Institute, Toronto, October 26, 2011.

An agent-based model for bank formation, bank runs and interbank networks, Econophysics Seminars, Instituto de Física Teórica, São Paulo, Brazil, August 31, 2011.

A dynamical systems model for credit expansion, asset price bubbles and financial fragility, Mathematics in Finance Conference, University of Pretoria, Kruger National Park, South Africa, August 25, 2011.

An agent-based model for bank formation, bank runs, and interbank networks, CRFMS Seminar Series, UC Santa Barbara, June 02, 2011.

In Search of the Minsky Moment: Asset Price Bubbles, Credit Dynamics, and Financial Fragility, ORFE, Princeton University, April 04, 2011.

In Search of the Minsky Moment: Asset Price Bubbles, Credit Dynamics, and Financial Fragility, Imperial College London, UK, March 09, 2011.

In Search of the Minsky Moment: Asset Price Bubbles, Credit Dynamics, and Financial Fragility, Workshop on Stochastic Analysis in Finance and Insurance, Mathematisches Forschungsinstitut Oberwolfach, Germany, January 24, 2011.

The priority option: the value of being a leader in complete and incomplete markets, ETH Zurich, Switzerland, December 09, 2010.

Calibration of Chaos Models for Interest Rates, KTH, Stockholm, Sweden, December 06, 2010.

The priority option: the value of being a leader in complete and incomplete markets, Research in Options Conference, IMPA, Angra dos Reis, Brazil, November 29, 2010.

The strategic exercise of options in incomplete markets, Seminaire Chaire FDD et Laboratoire FiME, Institute Henri Poincaré, Paris, November 19, 2010.

Stock loans in incomplete markets, Nomura Seminar Series, University of Oxford, UK, October 29, 2010.

Calibration of Chaos Models for Interest Rates, Imperial College London, UK, October 27, 2010.

Investment under uncertainty and competition in incomplete markets, Seminaire CEPN-LAPA, Université Paris 13, France, October 19, 2010.

Chaotic Interest Rate Model Calibration, Research in Options Conference, IMPA, Buzios, Brazil, November 24, 2009.

Chaotic Interest Rate Model Calibration, Mathematical Finance and Related Topics in Engineering and Economics, University of Kyoto, Japan, August 14, 2009.

After the storm: current perspectives in financial mathematics, Fields Institute Annual General Meeting, Toronto, June 25, 2009.

Chaotic Interest Rate Model Calibration, CRFMS Seminar Series, UC Santa Barbara, May 18, 2009.

Managerial flexibility in incomplete markets and systems of BSDEs, Industrial Optimization Seminar Series, Fields Institute, Toronto, March 03, 2009.

The reflected BSDE approach to real options in incomplete markets, University of Pisa, Italy, December 15, 2008.

Real Options in Incomplete Markets: the reflected BSDE approach, Research in Options Conference, IMPA, Angra dos Reis, Brazil, November 25, 2008.

Indifference pricing for general semimartingales, Stevanovich Center for Finance Seminar Series, University of Chicago, June 06, 2008.

The Investment Game in Incomplete Markets, University of Pisa, Italy, May 23, 2008.

Orlicz spaces in Mathematical Finance, Conference on Mathematical Explorations in Contemporary Statistics, Università di Genova, Sestri Levante, Italy, May 20, 2008.

Market-based solutions to transportation problems, Symposia on Mathematics of Transportation, Fields Institute, Toronto, May 15, 2008.

Indifference Price of Insurance Contracts: stochastic volatility, stochastic interest rates, Actuarial Sciences and Financial Mathematics Seminar Series, Fields Institute, Toronto, February 05, 2008.

Insurance Contracts in Markets with Stochastic Interest Rates, Canadian Mathematical Society Winter Meeting, London, ON, December 10, 2007.

The Investment Game in Incomplete Markets, Research in Options Conference, IMPA, Buzios, Brazil, October 24, 2007.

Combining real options and game theory in incomplete markets, Further Developments in Quantitative Finance, International Centre for Mathematical Sciences, Edinburgh, UK, July 11, 2007.

Hedging insurance contracts in markets with stochastic volatility, Workshop in Financial Engineering for Actuarial Sciences, University of Michigan, Ann Arbor, May 04, 2007.

Games and Options in incomplete markets, colloquium talk, Applied Mathematics Colloquium, University of Western Ontario, November 22, 2006.

Valuing employee options, Mathematics and Finance: from theory to practice, IMPA, Rio de Janeiro, Brazil, November 01, 2006.

Real options and game theory in incomplete markets, Mathematical Methods in Finance Seminars, IMPA, Rio de Janeiro, Brazil, June 28, 2006.

Novos paradigmas na precificação de CDOs e derivativos de crédito no mercado internacional, plenary talk, Seminário Internacional de Finanças, Integral Trust, São Paulo, Brazil, June 21, 2006.

Investment, abandonment, mothballing and reactivation in incomplete markets: a real options approach, Probability Seminars, University of South California, May 26, 2006.

Rational exercise of employee options, Quantitative Finance Seminar Series, Fields Institute, Toronto, March 29, 2006.

Nonlinearity, correlation and the valuation of employee options, Finance Seminars, DeGroot School of Business, McMaster University, March 26, 2006.

An Orlicz space formulation for the optimal hedging problem in general semimartingale markets, Mathematical Methods in Finance Seminars, IMPA, Rio de Janeiro, Brazil, November 21, 2005.

Nonlinearity, correlation and the valuation of employee stock options, MITACS Project Meeting, McMaster University, November 11, 2005.

Valuing employee options, SIAM Conference on Mathematics and Industry, Detroit, October 24, 2005.

Cálculo de Malliavin e Caos de Wiener aplicados à Economia, colloquium talk, Instituto de Física Teórica, São Paulo, Brazil, August 31, 2005.

Novos Paradigmas precificação de CDOs e derivativos de crédito no mercado internacional, plenary talk, Seminário Internacional de Finanças, Integral Trust, São Paulo, Brazil, August 19, 2005.

Regras de preço não-lineares, contratos de volatilidade e exercício ótimo de opções executivas, Universidade Ibmec, São Paulo, Brazil, August 11, 2005.

Open Questions in Quantum Information Geometry, Mathematics Seminars, Imperial College London, UK, June 15, 2005.

Applications of utility-based pricing to stochastic volatility and real options models, Actuarial Mathematics and Statistics Seminars, Heriot-Watt University, Edinburgh, UK June 10, 2005.

Noncommutative Orlicz Spaces in Quantum Information Geometry, Quantum Events Seminar Series, University of Guelph, November 30, 2004.

Dual Connections in Nonparametric Information Geometry, 37th Annual Meeting of the Society for Mathematical Psychology, University of Michigan, Ann Arbor, July 29 - August 1, 2004.

Numerical methods for optimal hedging portfolios, Sharcnnet Annual General Meeting, University of Waterloo, June 24, 2004.

Numerical methods for indifference pricing in stochastic volatility models, Workshop on Semimartingales in Finance, Banff International Research Station, June 5-10, 2004.

Closed form valuation of volatility claims, Quantitative Finance and Insurance Seminars, University of Waterloo, March 31, 2004.

The Wiener Chaos Expansion for the CIR model, Financial Mathematics and Applied Probability Seminars, King's College London, UK, July 1, 2003.

Dynamic portfolio selection with Monte Carlo, contributed talk, MITACS Trade and Finance - Theme Meeting, University of Ottawa, May 7, 2003.

A Monte Carlo method for exponential hedging in semimartingale markets, Mathematics Colloquium Series, McMaster University, February 13, 2003.

Optimal Investment in Incomplete Markets (When the Wealth may Become Negative), Financial Mathematics and Applied Probability Seminars, King's College London, UK, July 15, 2002.

Monotonicity, Duality and Uniqueness of the WYD Metrics, Information Geometry and its Applications, University of Pescara, Italy, July 1-5, 2002.

Contributed talks - peer reviewed

Banking Networks and the Circuit Theory of Money, 10th World Congress of the Bachelier Finance Society Trinity College Dublin, July 20, 2018.

A stock-flow consistent macroeconomic model for asset price bubbles, 9th World Congress of The Bachelier Finance Society New York City, July 18, 2016.

Inequality and monetary macro-dynamics, Grenoble Post-Keynesian Conference Money, Crises and Capitalism December 10, 2015.

Debt dynamics in the Great Moderation and beyond, Canadian Economics Association Meeting, Montreal, June 02, 2013.

The effect of government in a Keen-Minsky Model, International Post Keynesian Conference, University of Missouri at Kansas City, September 29, 2012.

Calibration of Chaos Models for Interest Rates, Sixth World Congress of the Bachelier Finance Society, Toronto, June 25, 2010.

Hedging Insurance Contracts in Incomplete Markets, Mathematics in Finance Conference, University of Pretoria, Kruger National Park, South Africa, September 03, 2008.

Indifference Price of Insurance Contracts: stochastic volatility, stochastic interest rates, Fifth World Congress of the Bachelier Finance Society, London, UK, July 18, 2008.

Indifference Price for General Semimartingales, Fourth World Congress of the Bachelier Finance Society, Tokyo, August 19, 2006.

Wiener chaos and the Cox-Ingersoll-Ross model, Third World Congress of the Bachelier Finance Society, Chicago, July 21-24, 2004.

Contributed talks - non-peer reviewed

On the optimal exercise policy for executive stock options, Developments in Quantitative Finance, Isaac Newton Institute, University of Cambridge, UK, June 16, 2005.

Indifference pricing in two factor models: new results for stochastic volatility, Developments in Quantitative Finance, Isaac Newton Institute, University of Cambridge, May 25, 2005.

Indifference pricing for reciprocal affine stochastic volatility models, AIMS/Phimac Seminars, McMaster University, January 13, 2004.

Partial Differential Equations in Mathematical Finance, Thematic Program in Partial Differential Equations, Fields Institute, Toronto, November 19, 2003.

ADMINISTRATIVE RESPONSIBILITIES

Leader, Fields-CQAM Lab on Systemic Risk Analytics (2018-2021).

Director of the Centre for Financial Industries of the Fields Institute (2017-2020).

Chair of the Meetings Committee, Bachelier Finance Society (2013-2018).

Elected Member of the Council of the Bachelier Finance Society (2014-2018).

Chair of the IT Committee, Fields Institute (2012-2016).

Chair of the Fields Institute Fellows Selection Committee, Fields Institute (2012-2016).

Member of the Website Advisory Committee, Math and Stats (2012-2013).

Member of the Forward with Integrity Internationalization Task Force (2012).

Member of the Tenure and Promotion Committee, Math and Stats (2009-2010).

Member of the Undergraduate Committee, Math and Stats (2007-2009).

Member of the Publicity and Liaison Committee, Math and Stats (2006-2007).

Faculty of Science representative in the DeGroote School of Business (2005-2008).

Member of the Graduate Committee, Math and Stats (2003-2008).

Member of the Applied Math Comprehensive Exam Committee (2003-2005).

OTHER
RESPONSIBILITIES

Principal organizer of the Fields Institute Thematic Program on Quantitative Finance: Foundations and Applications, which took place in Toronto from January - June, 2010. The other members of the organizing committee are Y. Ait-Sahalia (Princeton), V. Henderson (Oxford Man Institute), T. Hurd (McMaster), M. Rindisbacher (Toronto) and D. Rosen (R2 Financial Technologies)

Organizer or co-organizer of several events including:

- Bachelier Society One World Seminar Series (online, 2020 to present)
- Quantitative Finance Seminar Series (Fields Institute, 2007 to present)
- Bootcamp on Machine Learning for Finance (Fields Institute, September 26 - 27, 2019)
- 10 Years After the Crisis: modelling meets policy making (Fields Institute, January 14-16, 2019)
- Fields-GRI Mini-symposium on Systemic Risk (Fields Institute, May 22, 2018)
- Quantitative Finance Retrospective Workshop (Fields Institute, October 27-30, 2013)
- Workshop on Mathematics for New Economic Thinking (Fields Institute, October 31- November 2, 2013)
- Sojourns in Nonlinear Economics 2013 (Fields Institute, October 21-22, 2013)
- Sojourns in Nonlinear Economics 2012 (Fields Institute, June 5 - July 3, 2012)
- Industrial-Academic Workshop on Risk and Optimization in Finance (Fields Institute, October 3-4, 2011)
- Credit Risk session for the 13th INFORMS Applied Probability Conference (Ottawa, July, 2005)
- Fields-Mitacs-Sharcnet Quantitative Finance Conference on Credit Risk (Western, November, 2005)
- Project Meeting for Modelling Trading and Risk in the Market MITACS (McMaster, November, 2005)

Principal organizer of the Workshop on Quantum Information Geometry and Quantum Computing, held at McMaster and the Fields Institute in May, 2004. The other members of the organizing committee were M. B. Ruskai (Tufts) and D. Lidar (USC).