

Mathieu Fournier

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Current Appointments

Assistant Professor | HEC Montreal | 05/2014 – Present

Director of HEC Montréal Trading Lab | 09/2016 – Present

Subject Matter Expert in Financial Risk Management | KPMG | 10/2017 – Present

Past Appointments

Industry Related

Quantitative analyst | National Bank FX Trading Desk | 2012

Responsibilities: (1) To work in direct collaboration with FX traders to design currency option pricing models. (2) To implement and estimate the option pricing models developed. (3) To assess each model's performance based on historical option prices. (4) To produce a report describing in detail each model, its assumptions, its estimation, as well as its performance. (5) To make trading recommendations based on (4).

Academic related

Teaching assistant | P. Christoffersen, R. Elkamhi, J. Hull, & A. White | Rotman school of management | 2010 – 05/2014

- Advanced Derivatives Pricing (Master of Mathematical Finance), Application of Derivatives (MBA), Financial Markets (Undergraduate), Fixed Income Derivatives (MBA), Options and Futures (MBA)

Lecturer | Rotman school of management | Fall 2012

- Options and Futures (Undergraduate)

Lecturer | HEC Montréal | Fall 2008

- Introduction to Stochastic Calculus (M.Sc. & Financial Engineering)

Education

Ph.D. in Finance | Rotman School of Management – University of Toronto | 08/2009 – 11/2014

- **Dissertation:** Essays in Volatility Modeling and Option Pricing
- **Advisor:** Peter Christoffersen (Chair) | **Committee:** Redouane Elkamhi, Christian Gouriéroux, Chayawat Ornthanalai and Jason Wei

M.Sc. in Finance | HEC Montréal – Université de Montréal | 08/2007 – 08/2009

- **Thesis:** Option Replication with Transaction costs: An Empirical Comparison of Stochastic Volatility Models and Rebalancing Strategies
- **Advisors:** Pascal François and Lars Stentoft

B.Com. in Finance | John Molson School of Business – Concordia University | 08/2003 – 08/2007

Research Interests

- Empirical and theoretical asset pricing
- Financial modeling of asset returns, volatilities, and return dependence

- Predictable patterns in returns and trading strategy
- Derivatives and risk management
- Financial frictions and market incompleteness

Refereed Research Publications

- ***The factor structure in equity options*** (with P. Christoffersen & K. Jacobs)
 . *The Review of Financial Studies, Volume 31, Issue 2, February 2018.*
- ***A Tractable Framework for option pricing with dynamic market maker inventory and wealth***
 (with K. Jacobs)
 . *The Journal of Financial and Quantitative Analysis. Forthcoming.*
- ***Beta risk in the cross-section of equities*** (with A. Bolorforoosh, P. Christoffersen, & C. Gouriéroux)
 . *The Review of Financial Studies, Conditionally Accepted.*

Working Papers

- ***Option-based estimation of co-skewness and co-kurtosis risk premia*** (with P. Christoffersen, K. Jacobs, & M. Karoui)
 . *The Journal of Financial and Quantitative Analysis. R&R.*
- ***The Low-Minus-High Portfolio and the Factor Zoo*** (with D. Andrei, & J. Cujean)
- ***When the options market disagrees*** (with R. Goyenko & G. Gunnar)

Work in Progress

- ***Variance Risk Premia across Three Derivatives Markets***, (with H. Doshi, J. Ericsson, and S. B. Seo)
- ***The Relative Pricing of Long-Run and Short-Run Betas in the Cross-Section of Stock Returns***, (with A. Jeanneret)
- ***The Economic Value of Modeling Volatilities-Covolatilities via Machine Learning***, (with V. Grégoire)
- ***A Deep Learning Approach to Option Valuation with Friction and Liquidity Measures***, (with P. Orłowski and J. Pilault)

Seminars and Conference Proceedings

The factor structure in equity options (* denotes co-authors' presentations)

- European Finance Association, (Lugano, Suisse), 2014.
- Sixth Annual SoFiE Conference, (Singapore, Singapore), 2013*.
- University of Chicago, Booth, (Chicago, US), 2013*.
- New York University, NYU, (New York, US), 2013*.
- University of Maryland, (Washington, US), 2013*.
- University of Lausanne, EPFL, (Lausanne, Suisse), 2013*.
- Zurich University, (Zurich, Suisse), 2013*.
- Miami University, (Miami, US), 2013*.
- IFSID Conference on Structured Products and Derivatives (Montréal, Canada), 2012*.
- Northern Finance Association, (Niagara Falls, Canada), 2012.
- Optionmetrics Users Conference (New York, US), 2012.

- Getulio Vargas Foundation, (Rio de Janeiro, Brésil), 2012*.
- Laval University, (Québec, Canada), 2012.
- IFM2 Mathematical Finance Days (Montréal, Canada), 2011.

A Tractable Framework for Option Pricing with Dynamic Market Maker Inventory and Wealth

- American Finance Association, (San Francisco, US), 2016.
- Swiss Finance Institute HEC Lausanne, (Lausanne, Suisse), 2014.
- University of Toronto, Rotman, (Toronto, Canada), 2014.
- HEC Montréal, (Montréal, Canada), 2014.
- Bank of Canada, (Ottawa, Canada), 2014.
- Northern Finance Association, (Ottawa, Canada), 2014.
- IFM2 Mathematical Finance Days (Montréal, Canada), 2013.
- IFSID Conference on Structured Products and Derivatives (Montréal, Canada), 2013.

Option-based estimation of co-skewness and co-kurtosis risk premia

- American Finance Association, (Boston, US), 2015*.
- Seventh Annual SoFiE Conference, (Toronto, Canada), 2014*.
- Northern Finance Association, (Lake Louise Canada), 2014.
- Bank of Canada, (Ottawa, Canada), 2014*.

When the options market disagrees

- Northern Finance Association, (Mont-Tremblant, Canada), 2016.
- The Financial Intermediation Research Society FIRS, (Lisbon, Portugal), 2016*.
- Midwest Finance Association, (Atlanta, US), 2016*.
- IFSID Conference on Structured Products and Derivatives, (Montréal, Canada), 2015*.

Beta Risk in the Cross-Section of Equities

- Eurofidai (Paris, France), 2018.
- European Finance Association (Warsaw, Poland), 2018.
- 10th SoFiE Conference, (New York, US), 2017.
- Swiss Finance Institute, (Lausanne, Switzerland), 2017.
- OptionMetrics User Conference, (New York, US), 2016.
- University of Toronto - Rotman, (Toronto, Canada), 2016.
- McGill University, (Montréal, Canada), 2016.

The low-minus-high portfolio and the factor zoo

- American Finance Association, (San Diego, US), 2020*.
- Northern Finance Association, (Vancouver, Canada), 2019.
- Baruch College, (New York, US), 2019*.
- Bank of Canada, (Ottawa, Canada), 2019*.
- McGill University, (Montreal, Canada), 2019*.
- Tilburg University, (Tilburg, Nederland), 2019*.
- Deutsche Bundesbank, (Frankfurt, Germany), 2019*.
- Goethe University, (Frankfurt, Germany), 2019*.

Honors & Awards

HEC-McGill 2018 Winter Conference

- Best Discussion Award

Rotman School of Management

- Capital Market Graduate Fellowship PhD (2010, 2011, and 2012)

HEC Montréal

- Summa Cum Laude – Highest GPA of Graduating Class (2009)
- Best Finance M.Sc. Thesis Award (2009)
- Excellence Scholarship (2008)
- Graduate Honour List (2008)
- Great Distinction Scholarship: M.Sc. & PhD Program (2008)

John Molson School of Business

- Undergraduate Distinction (2007)
- Beta Gamma Sigma Member (2007)

Conference Discussions

Higher-Moment Risk. (N. J. Gormsen & C. S. Jensen).

- American Finance Association, (San Diego, US), 2020.

Self-fulfilling Asset Prices. (A. Zentefis).

- HEC-McGill Winter Conference (Sunshine, Canada), 2019.

The pricing kernel is U-shaped. (T. Sichert).

- American Finance Association, (Atlanta, US), 2019.

Market maker inventory, bid/ask spreads, and the computation of option implied risk measures. (B. Eraker & D. Osterrieder)

- HEC-McGill Winter Conference (Sunshine Village, Canada), 2018.
- Best Discussion Award.

Systematic Liquidity and Leverage. (B. Kahraman & H. Tookes)

- HEC-McGill Winter Conference (Ferne, Canada), 2017.

Hiding behind Writing: Communication in the Offering Process of Mortgage-Backed Securities. (H. H. Zhang, F. Zhao & X. Zhao)

- 27th Conference on financial economics and accounting CFEA (Toronto, Canada), 2016.

The price of the smile and variance risk premia. (P. Gruber, C. Tebaldi & F. Trojani)

- European Finance Association (Oslo, Norway), 2016.

Why do option returns change sign from day to night? (D. Muravyev & N. Xuechuan)

- IFSID Conference on Structured Products and Derivatives, (Montréal, Canada), 2015.

The term structure of CDS spreads and sovereign credit risk. (P. Augustin)

- Northern Finance Association (Ottawa, Canada), 2014.

Mortgage risk and the yield curve. (A. Malkhozov, P. Mueller, A. Vedolin, & G. Venter)

- IFSID Conference on Structured Products and Derivatives, (Montréal, Canada), 2012.

Refereeing Activities

The Journal of Finance, The Review of Financial Studies, Review of Finance, Review of Asset Pricing Studies, Journal of Financial Econometrics, Journal of Financial Markets, Journal of Business and Finance, Journal of Credit Risk, North American Journal of Economics and Finance.

Scientific Committees

CDI, EFA, & NFA conferences.

Other Information

Citizenship: French, **Permanent Resident of Canada,** **Languages:** French (Mother Tongue), English (Fluent)

M.Sc. Student Supervision

- **Aldriche-Chirlet Moussavou:** The modeling of convenience yield in the commodity market.
- **Yan Geng:** Equity risks and the cross-section of stock returns.
- **Gabriel Bédard:** Implementation of liquidity risk assessment measures for fixed income strategies.
- **Jihane Guennouni:** Implementation of monitoring analytics for private placement portfolios.
- **Dominic Bouchard:** The Pricing, replication, and hedging of TSX-VIX Futures using stochastic volatility models.
- **Rémi Galarneau-Vincent:** The pricing of the yield curve: US high yield corporate yield curve and the sovereign yield curve of emerging countries.
- **Tom Imbernon:** Application of the Heston model for pricing equity derivatives based on Monte-Carlo methods.
- **Alexis Gosselin Masson:** Risk factors and risk premia in equally weighted portfolios of emerging countries.
- **Zhu Yanfang:** Downside risk in Chinese ADRs – Co-supervised with Pascal François.