# BRUNO FEUNOU

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## EDUCATION

- Ph.D. in Economics, Université de Montréal, Canada, July 2009.
- Ingénieur Statisticien Économiste, ENSEA d'Abidjan, Ivory Coast, June 2003.
- Bachelor's in Mathematics, University of Yaoundé, Cameroon, June 2000.

## FIELDS OF SPECIALIZATION

Financial Economics, Econometrics, Statistics.

## PROFESSIONAL ACTIVITIES

- Visiting Professor, Economic Department, Université de Montréal, Jan 2020-Present.
- Visiting Professor, Finance Department, ESSEC Business School, Winter 2019.
- Research Advisor, Financial Markets Department, Bank of Canada, Sept 2018-Present.
- Principal Researcher, Financial Markets Department, Bank of Canada, April 2016- Aug 2018.
- Senior Analyst, Financial Markets Department, Bank of Canada, June 2011-March 2016.
- Postdoctoral Associate, Duke University, United States, July 2008-May 2011.
- Internship, UN-ECA, Addis Ababa, Ethiopia, Summer 2002.

## ARTICLES IN REFEREED JOURNALS

1. "Tractable Term-Structure Models" with Jean-Sebastien Fontaine, Anh Le and Christian Lundblad. Forthcoming in **Management Science.**
2. "Secular Economic Changes and Bond Yields" with Jean-Sebastien Fontaine. Forthcoming in the **Review of Economics and Statistics.**
3. "Time-varying Crash Risk: The Role of Market Liquidity" with Peter Christoffersen, Yoontae Jeon and Chayawat Ornthanalai. Forthcoming in the **Review of Finance.**
4. "The Term Structures of Expected Quadratic Loss and Gain" with Ricardo Lopez Aliouchkin, Romeo Tedongap and Lai Xu, **Journal of Financial Econometrics**, Volume 18, Issue 3, Summer 2020, Pages 473–501.
5. "Which Model to Forecast the Target Rate?" with Jean-Sebastien Fontaine and Jianjian Jin, **Studies in Nonlinear Dynamics & Econometrics**, Volume 25, Issue 1, February 2021, Article number: 20190005.
6. "Risk-Neutral Moment-Based Estimation of Affine Option Pricing Models" with Cedric Okou, **Journal of Applied Econometrics,** Volume 33, Issue 7, Dec. 2018, Pages 1007-1025.
7. "Good Volatility, Bad Volatility and Option Pricing" with Cedric Okou. **Journal of Financial and Quantitative Analysis,** Vol. 54, No. 1, Feb. 2019, pp. 1-32.
8. "Downside Variance Risk Premium" with Jahan-Parvar Mohammad and Cedric Okou. **Journal of Financial Econometrics**, Volume 16, Issue 3, 1 June 2018, Pages 341–383.
9. "Implied Volatility and Skewness Surface" 2017, with Romeo Tedongap and Jean-Sebastien Fontaine. **Review of Derivatives Research**, Volume 20, Issue 2, Pages 167-202.
10. "Gaussian Term Structure Models and Bond Risk Premia" 2018, with Jean-Sebastien Fontaine. **Management Science**, Volume 64, Issue 3, Pages 1413–1439.
11. "Option Valuation with Observable Volatility and Jump Dynamics" 2015, with Peter Christoffersen and Yoontae Jeon. **Journal of Banking and Finance,** Volume 61, Supplement 2, Pages S101–S120.
12. "Fourier Inversion Formulas for Multiple Assets Option Pricing" 2015, with Ernest Tafolong. **Studies in Nonlinear Dynamics & Econometrics**, Volume 19, Issue 5, Pages 531–559.
13. "Non-Markov Gaussian Term Structure Models: The Case of Inflation," 2014, with Jean-Sebastien Fontaine. **Review of Finance**, 18 (5): 1953-2001.
14. "Which parametric model for conditional skewness?" 2016, with Jahan-Parvar Mohammad and Romeo Tedongap**. European Journal of Finance**, Volume 22, Issue 13, pp. 1237-1271.

15. “Equity Premium and the Maturity Structure of Uncertainty,” 2014, with Jean-Sebastien Fontaine, Abderahim Taamouti and Romeo Tedongap. **Review of Finance** 18 (1): 219-269.
16. “The Economic Value of Realized Volatility: Using High-Frequency Returns for Option Valuation,” 2014, with Peter Christoffersen, Kris Jacobs and Nour Meddahi. **Journal of Financial and Quantitative Analysis,** volume 49, issue 03, pp. 663-697.
17. “A Stochastic Volatility Model with Conditional Skewness,” October 2012, with Romeo Tedongap. **Journal of Business and Economic Statistics**, 30:4, 576-591.
18. “Modeling Market Downside Volatility,” 2013, with Jahan-Parvar Mohammad and Romeo Tedongap. **Review of Finance**, 17(1): 443-481.
19. “Option Valuation with Conditional Heteroskedasticity and Non-Normality,” 2010, with Peter Christoffersen, Redouane Elkamhi, Kris Jacobs. **Review of Financial Studies**. 23: 2139-2183.

## OTHER ARTICLES/POLICY PUBLICATIONS

- “The Secular Decline of Forecasted Interest Rates” 2019, with Jean-Sébastien Fontaine. **Bank of Canada Staff Analytical Note** 1.
- “Does US or Canadian Macro News Drive Canadian Bond Yields?” 2018, with Rodrigo Sekkel and Morvan Nongni Donfack. **Bank of Canada Staff Analytical Note** 38.
- “Markets Look Beyond the Headline,” 2018, with James Kyeong, Raisa Leiderman. **Bank of Canada Staff Analytical Note** 37.
- “The Impacts of Monetary Policy Statements,” 2017, with Corey Garriott, James Kyeong, Raisa Leiderman. **Bank of Canada Staff Analytical Note** 22.
- “Foreign Flows and Their Effects on Government of Canada Yields,” 2015, with Jean-Sébastien Fontaine, James Kyeong, Jesus Sierra. **Bank of Canada Staff Analytical Note** 1.
- “Measuring Uncertainty in Monetary Policy Using Realized and Implied Volatility” spring 2014, with Bo Young Chang. **Bank of Canada Review.**

## WORKING PAPERS

- Long Run Impact of Macro News on Treasury Bond Yields, with Jean-Sebastien Fontaine and Guillaume Roussellet.
- Loss Uncertainty, Gain Uncertainty, and Expected Stock Returns, 2017, with Ricardo Lopez Aliouchkin, Romeo Tedongap and Lai Xu.

## FELLOWSHIPS, SCOLARSHIPS AND AWARDS

- Fellow of the Pan-African Scientific Research Council, 2021-Present.
- Canadian Derivatives Institute (CDI) Grant, Project title: Improving Market Risk Assessment by Dissecting the Variance Risk Premium into Downside and Upside components. Co-Applicant: Cedric Okou. CAD 40,000. 2015
- Honours list of the dean of the faculty of graduate and postdoctoral studies of Montreal University, 2009-2010.
- Research Fellowship, CREST, Paris, France, 2007.
- Research Fellowship, IFM2, Canada, 2006-2008.
- Research Fellowship, Banque Laurentienne, Canada, 2005-2006.
- Ph.D. Fellowship, CIREQ, Université de Montréal, Canada, 2003-2006.
- Scholarship, European Union, ENSEA, Abidjan, Ivory Coast, 2000-2003.
- Scholarship, Ministry of Finance, ISSEA, Yaounde, Cameroon, 1998-2000.
- Fellowship, Ministry of Higher Education, University of Dschang, Cameroon, 1997.

## VISITING

1-Bank of Canada, May 2010. 2-Stockholm School of Economics, May 2009. 3-Toulouse School of Economics, May 2007, May 2009. 4-CREST, Paris, 2007. 5-Imperial College London, 2006. 6-ESSEC Business School, February-March 2019.

## PROFESSIONAL SERVICE AND ADMINISTRATIVE EXPERIENCE

- Member of the scientific committee of the Canadian Derivatives Institute (CDI) 2017-Present.

- Committee member for the Financial Innovation and Risk Management Conference: In Memory of Peter Christoffersen.
- External examiner for the thesis of Kokouvi Tewou, PhD in Economics. Université de Montréal, April 2020. Title: Essays in financial econometrics and asset pricing.
- Chair of the selection and organizing committee for the Bank of Canada 2020 graduate student paper award.
- Socio-economic member of the financial economics program committee at the University of Quebec in Outaouais. 2020-Present.

## REFEREEING FOR JOURNALS AND CONFERENCES

Journal of Applied Econometrics, Journal of Econometrics, Quantitative Finance, The IFAC journal Automatica, Journal of Empirical Finance, International Journal of Financial Markets & Derivatives, Revue Economique, The Financial Review, Journal of Economic Dynamics and Control, Journal of Business and Economic Statistics, Annales d'Economie et de Statistique, Journal of Applied Statistics, The European Journal of Finance, Studies in Nonlinear Dynamics & Econometrics, Review of Financial Economics. International Journal of Forecasting, Journal of Financial Econometrics, IFSID & Bank of Canada Second Conference on Derivatives : Tail Risk, Midwest Finance Association 2014 Annual Meeting, Empirical Economics, Econometric Theory, Econometric Reviews, The Review of Financial Studies, The Journal of Finance, Journal of Financial and Quantitative Analysis, Management Science, Review of Finance, Journal of Banking and Finance, Canadian Journal of Economics, Journal of Economic Literature. Review of Derivatives Research, Macroeconomic Dynamics, Northern Finance Association Conference 2016, 2017. Africa Meeting of the Econometric Society 2017, Journal of Futures Markets. Eastern Finance Association 2019 Annual Meeting.

## COURSES TAUGHT

1-Junior Research Seminar, Spring 2009 (co-taught with Tim Bollerslev and George Tauchen), Duke University. 2-Time Series for Financial Analysis, Spring 2010, Duke University. 3-Time Series for Macroeconomics (Macroeconometrics), Winter 2016, Université de Montréal. 4- Financial Markets (FINM31165-CRN234), Winter 2019, ESSEC Business School. 5- ESSEC Doctoral Course Program in Finance, Winter 2019, ESSEC Business School. 6- SUJETS SPÉCIAUX EN MONNAIE, BANQUES ET MARCHÉS, Winter and Fall 2020 (co-taught with Rene Garcia), Université de Montréal.

## PAPERS PRESENTED IN CONFERENCES AND SEMINARS

1. Realized term structure of risk.
    - Workshop on realized Variance, Imperial College, London, UK, 2007.
    - Conference on Volatility and High Frequency Data, Chicago, US, 2007.
2. Option Valuation with Conditional Heteroskedasticity and Non-Normality.
    - European Economic Association Annual Congress, Budapest, Hungary, 2007.
3. Which model for conditional skewness?
    - Econometric Society Annual Congress, Budapest, Hungary, 2007.
    - Brown-Bag Seminar, Bank-of-Canada, Ottawa, Canada, December 2011.
4. Generalized Affine Models.
    - Econometric seminar, University of Toulouse, Toulouse, France, 2007.
    - Finance seminar, CREST, Paris, 2007.
    - Finance department, Laval University, Québec, Canada, 2007.
    - Annual Meeting Allied Social Science Associations, New Orleans US, 2007.
    - Seminar, Oxford-man Institute, Oxford University, UK, 2008.
    - Seminar, Board of governors, Washington, US, 2008.
    - Seminar, Duke University, Durham, US, 2008.
    - Finance Seminar, HEC de Montréal, Montréal, Canada, 2008.
    - Seminar, York University, Economics department, Toronto, Canada, 2008.
    - Seminar, Chicago GSB, Statistics and Econometrics Group, Chicago, US, 2008.

- Financial Econometrics Conference, Imperial College London, UK, 2008.
- Finance Seminar, University of Maryland, US, 2008.

5. Discrete Choice Term Structure Models: Theory and Applications.
    - Seminar, Bank-of-Canada, Ottawa, Canada, 2010.
    - Econometrics Conference, Toulouse School of Economics, Toulouse, France 2010.
    - Seminar, North Carolina State University, Economics, Raleigh, US, 2010.
    - Poster session at the 2010 NBER-NSF Time Series conference, Durham, US.
    - Seminar, West-Virginia University, US, 2011.
    - Seminar, Imperial College Business School, UK, 2011.
6. Modeling Market Downside Volatility.
    - Seminar, Bank-of-Canada, Ottawa, Canada, November 2010.
    - Seminar, Board of governors, Washington, US, December 2010.
    - Seminar, School of Finance, St-Gallen University, Switzerland, January 2011.
7. The Economic Value of Realized Volatility: Using High-Frequency Returns for Option Valuation
    - Fourth Annual SoFiE (The Society for Financial Econometrics) Conference, the University of Chicago, Chicago, US, June 2011.
    - Departmental Seminar, Bank-of-Canada, Ottawa, Canada, November 2011.
    - NFA Conference 2012, Niagara Falls, Canada, September 2012.
    - Seminar, Concordia University, Montreal, Canada, October 2012.
    - AFA Annual Meeting, San Diego, US, January 2013.
8. Non-Markov Gaussian Term Structure Models: The Case of Inflation
    - Brown-Bag Seminar, Bank-of-Canada, Ottawa, Canada, December 2011.
    - Departmental Seminar, Bank-of-Canada, Ottawa, Canada, June 2012.
    - Management Forum Seminar, Bank-of-Canada, Ottawa, Canada, September 2012.
    - CEMLA (Central Bank Researchers Network of the American Continent) Meeting, Montevideo, Uruguay, November 2012.
    - Seminar, OCC (Office of the Comptroller of the Currency), Washington, US, December 2012.
    - NFA Conference 2013, Quebec City, Canada, September 2013.
9. Equity Premium and the Maturity Structure of Uncertainty
    - Seminar, ESG, UQAM, Montreal, Canada, January 2013.
10. Bond Risk Premia and Gaussian Term Structure Models
    - NFA Conference 2014, Ottawa, Canada, September 2014.
11. Option Valuation with Observable Volatility and Jump Dynamics
    - 1st Conference on Recent Developments in Financial Econometrics and Applications, Geelong, Australia, December 2014.
12. Affine Term Structure of Risk-Neutral moments Models
    - Inaugural Financial Econometrics and Risk Management conference at Western University, London, Canada, March 2015.
    - HEC of Montreal, Decision Sciences Department, December 2020.
13. Downside Variance Risk-Premium
    - BoC fellowship learning exchange, Ottawa, Canada, May 2015.
    - HEC of Montreal, Finance Department, September 2017.
14. Time-Varying Crash Risk: The Role of Stock Market Liquidity
    - IFSID 2016– FIFTH CONFERENCE ON DERIVATIVES, Montreal, Canada, September 2016.
    - MFA 2018, San Antonio, Texas, USA.
15. Good Volatility, Bad Volatility and Option Pricing
    - HEC of Montreal, Finance Department, September 2017.
16. A Cross-Sectional Analysis of the Variance Risk Premium.
    - OptionMetrics Research Conference, October 2017.
17. The Term Structure of Bad and Good Variance and Risk Premium
    - 5th Empirical Finance Workshop March 29, 2018, ESSEC-PARIS.
18. Macro-Finance Term Structure Models with External Instruments
    - 6th Empirical Finance Workshop March 2019, ESSEC-PARIS.

- 5th Western conference on Financial Econometrics and Risk Management – in honor of Peter Christoffersen.
- Brazilian Finance Meeting 2019

19. Secular movements in US interest rates, inflation and growth
    - Seminar, Department of Economics, Queen's University

**DISCUSSIONS AT CONFERENCES AND PROFESSIONAL MEETINGS**

20. The Affine Arbitrage-Free Class of Nelson-Siegel Term Structure Models, by Christensen, Diebold, Rudebusch, Financial Econometric Conference, Montreal, April 2009.
21. Exploring Time-Varying Jump Intensities: Evidence from S&P500 Returns and Options, by Peter Christoffersen, Kris Jacobs and Chayawat Ornthanalai, Financial Econometric Conference, Toulouse School of Economics, May 2009.
22. A Semiparametric Interest Rate Model Based on Reducible Stochastic Differential Equations and Pseudo Maximum Likelihood Estimation, by Ruijun Bu and Kaddour Hadri, Financial Econometric Conference, Toulouse School of Economics, May 2011.
23. Understanding Equity Option Prices, by Peter Christoffersen, Mathieu Fournier and Kris Jacobs, NFA Conference 2012, Niagara Falls, Canada, September 2012.
24. What determines Professional forecasters' expectations in Chile? The role of the Central Bank's projections, by Michael Pedersen. XVII annual meeting of the central bank researchers' network 2012. Montevideo, Uruguay, November 2012.
25. Volatility of Volatility and Tail Risk Premiums, by Yang-Ho Park. IFSID & BANK OF CANADA second conference on derivative: Tail risk. Montreal, Canada. September 2013.
26. Implied Risk Exposures, by Christophe Perignon, Christophe Hurlin, Sylvain Benoit. NFA Conference 2013, Quebec City, Canada, September 2013.
27. Resolution of Policy Uncertainty and Sudden Declines in Volatility, by Dante Amengual and Dacheng Xiu. The fifth risk management conference, Mont Tremblant, Quebec, Canada, February 2014.
28. Staying at Zero with Affine Processes: A New Dynamic Term-Structure Model, by Jean-Paul Renne, Alain Monfort, Fulvio Pegoraro and Guillaume Roussellet. Financial Econometrics Conference, May 16-17, 2014 - Toulouse School of Economics (TSE).
29. Aggregation of Information about the Cross Section of Stock Returns: A Latent Variable Approach, by Nathaniel Light, Denys Maslov and Oleg Rytchkov. NFA Conference 2014, Ottawa, Canada, September 2014.
30. Economically Implied Tail Risk from Equity Returns, by Caio Almeida, Kym Ardison, Rene Garcia, Jose Vicente and Osmani Guillen. CIREQ Montreal Econometrics Conference: Time Series and Financial Econometrics, Montreal, Canada, May 2015.
31. The Shadow Rate of Interest, Macroeconomic Trends and Time-Varying Uncertainty, by Elmar Mertens and Benjamin Johannsen. The 6th Joint Conference by the Bank of Canada and the European Central Bank, Ottawa, Canada, June 2015.
32. Affine Option Pricing Model in Discrete Time, by Eric Renault. Rene Garcia's 65th Anniversary Conference, Montreal, Canada, August 2015.
33. Volatility and Expected Option Returns, by Guanglian Hu and Kris Jacobs. The Sixth Risk Management Conference, Mont Tremblant, Canada, March 2016.
34. Idiosyncratic Jump Risk Matters, by Jean-François Begin, Christian Dorion, Geneviève Gauthier, Sixth ITAM finance conference in Mexico City on June 2-3, 2017.
35. The Pricing of Tail Risk and the Equity Premium: Evidence from International Option Markets, by Torben Andersen, Nicola Fusari and Viktor Todorov; 4th Bank of Canada-Bank of Spain Workshop on International Financial Markets, Ottawa, September 2017.
36. Consumption Based Models and Option Prices, by Heber Farnsworth, MFA 2018, San Antonio, Texas, USA.