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Gabriel Rodriguez-Rondon

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Current Position

Senior Economist, Bank of Canada — **Since** June 2025

Education

Ph.D. in Economics, McGill University — 2025
Thesis: "Monte Carlo Test Methods for Markov Switching and Stochastic Volatility Models with Applications in Macroeconomics and Finance"
Committee: Jean-Marie Dufour (Chair), Zhongjun Qu, John Galbraith, & Hafedh Bouakez
Defended: October 2025

Visiting Ph.D. Student, Boston University — Spring 2023
M.A. in Economics, McGill University — 2019
B.A. (Honours) in Economics, Carleton University — 2016

Fields of Interest

Econometrics, Macroeconomics and Monetary Economics, Finance, Machine Learning

Past Research Experience

Research Assistant, McGill University - Prof. Jean Marie Dufour	2019 - 2025
Research Assistant, UQAM - Prof. Philippe Goulet Coulombe	2024 - 2025
Ph.D. Intern, Bank of Canada	2023 - 2024
Research Assistant, McGill University - Prof. Francesca Carrieri	2023 - 2024
Research Data Scientist, Financial Network Analytics	2019 - 2022
Research Assistant, Bank of Canada	2016 - 2018

Teaching Experience

Lecturer, HEC Montréal - Time Series Econometrics (Ph.D.)	Winter 2026 (**Scheduled**)
Lecturer, HEC Montréal - Financial Econometrics (MSc.)	Winter 2025
Guest Lecturer, McGill University: Econometrics II (Ph.D.)	Winter 2024
Teaching Assistant, HEC Montréal	2024 - 2025
Teaching Assistant, McGill University	2018 - 2025

Publications & Conference Proceedings

1. "Estimation and Inference for Higher-Order Stochastic Volatility Models With Leverage", with Jean-Marie Dufour & Md. Nazmul Ahsan, *Journal of Time Series Analysis*, vol. 46, no. 6: 1064–1084. https://doi.org/10.1111/jtsa.12851.

2. "Simulation-Based Inference for the Synchronization of Business Cycles", with Jean-Marie Dufour, *Proceedings of the Business and Economic Statistics Section of the American Statistical Association*, December 2023.

3. "Simulation-Based Inference for Markov Switching Models", with Jean-Marie Dufour, *Proceedings of the Business and Economic Statistics Section of the American Statistical Association*, 275-289, December 2022.

Working Papers

4. "Monte Carlo Likelihood Ratio Tests for Markov Switching Models", with Jean-Marie Dufour, Discussion Paper, McGill University. Revised August 2025.

5. "Underlying Core Inflation with Multiple Regimes", Discussion Paper, McGill University. arxiv.org/abs/2411.12845. Revised November 2024.

6. "MSTest: An R-package for Testing Markov-Switching Models", with Jean-Marie Dufour, Discussion Paper, McGill University, arxiv.org/abs/2411.08188. Revised November 2024.

7. "Volatility Forecasting with Higher-order Stochastic Volatility Models", with Jean-Marie Dufour & Md. Nazmul Ahsan, Discussion Paper, McGill University. Revised June 2025.

8. "Estimation and inference for stochastic volatility models with leverage and heavy-tailed distributions", with Jean-Marie Dufour & Md. Nazmul Ahsan, Discussion Paper, McGill University. Revised June 2025.

9. "Joint Determination of Counterparty and Liquidity Risk in Payment Systems", with Jorge Cruz Lopez & Charles M. Kahn. Revised September 2024. Awarded *Best Paper on Risk Management* at the NFA 2019 Conference.

10. "mbreaks: R Package for Estimating and Testing Multiple Structural Changes in Linear Regression Models", with Linh Nguyen, Pierre Perron, & Yohei Yamamoto. Revised January 2023.

Policy & Technical Notes

11. "Practical estimation of high-dimensional stochastic volatility models with application to macroeconomic uncertainty in Québec and Canada", with Jean-Marie Dufour & Md. Nazmul Ahsan, 2025RP-19, Projects Reports, CIRANO. https://doi.org/10.54932/XBOU8314

12. "The Government of Canada Debt Securities Dataset", with Jeffrey Gao & Francisco Rivadeneyra, *Bank of Canada Technical Report*, February 2018.

Work in Progress

13. "Practical and reliable estimation methods for high-dimensional multivariate stochastic volatility models with macroeconomic applications", with Jean-Marie Dufour & Md. Nazmul Ahsan.

14. "Monte Carlo Test for Factor Models with Markov switching"

15. "MNbreaks: An R Package for Estimating and Testing Multiple Structural Changes in Multivariate Linear Regression Models", with Pierre Perron & Zhongjun Qu.

16. "Identification Through Heteroskedasticity Using Multiple Structural Change Tests", with Pierre Perron.

Grants and Awards

Fonds de Recherche du Québec - Société et Culture (FRQSC), PhD Fellowship	2021 - 2024
Graduate Excellence Award, McGill University	2021 - 2024
International Association for Applied Econometrics Travel Grant	2023
McGill Graduate Mobility Award	2022 - 2023
McGill Graduate Research Enhancement and Travel Awards	2022 - 2023
Canadian Economics Association Travel Grant	2022
Carleton Academic Scholarship	2012 - 2013

Papers Presented In Conferences and Seminars

"Monte Carlo Likelihood Ratio Tests for Markov Switching Models" (with Jean-Marie Dufour),

- The Econometric Society, World Congress, Seoul, Korea, August 18, 2025.
- CIREQ Econometrics Conference: Recent Developments in Identification and Inference, Montreal, Quebec, April 18, 2025.
- Universidad del Rosario (Virtual) Seminar, Bogota, Colombia, April 8, 2025.
- CIREQ-McGill Lunch Seminar, Montreal, Quebec, October 8, 2024.
- 76th European meeting of the Econometric Society, Erasmus School of Economics, Rotterdam, Netherlands, August 26, 2024.
- New York Camp Econometrics XVIII, Lake Placid, NY, April 26, 2024.
- Carleton University Brown Bag Seminar, Ottawa, Ontario, October 19, 2023.
- NBER-NSF Time Series Conference, Department of Economics, Université du Québec à Montréal, Montreal, Quebec, September 23, 2023.
- International Association for Applied Econometrics (IAAE) Annual Conference, BI Norwegian Business School, Oslo, Norway, June 28, 2023.
- Boston University Econometrics Seminar, Boston, MA, February 24, 2023.
- 16th International Conference on Computational and Financial Econometrics, King's College, London, UK, December 18, 2022.
- Latin American Meeting of the Econometric Society (LAMES), Univesidad del Pacífico, Lima, Peru, November 3, 2022.
- Joint Statistical Meetings, American Statistical Association, Washington, D.C. August 9, 2022.
- 17th CIREQ Ph.D. Students' Conference, Concordia University, Montreal, Quebec, June 6, 2022.
- 56th Annual Meetings of the Canadian Economics Association, Carleton University, Ottawa, Ontario, June 3, 2022.

"Volatility Forecasting with Higher-order Stochastic Volatility Models"

- International Association for Applied Econometrics (IAAE) Annual Conference, Torino, Italy June 25, 2025.

"Underlying Core Inflation with Multiple Regimes"

- New York Camp Econometrics XIX, Bolton Landing, NY, April 25, 2025.
- Bank of Canada Conference on Real-Time Data Analysis, Methods and Applications in Macroeconomics and Finance, Ottawa, Ontario, October 17, 2024.
- International Association for Applied Econometrics (IAAE) Annual Conference, Thessaloniki, Greece June 27, 2024.
- Bank of Canada Brown Bag Seminar, Ottawa, Ontario, July 5, 2023.

- 57th Annual Meetings of the Canadian Economics Association, Winnipeg, Manitoba, June 3, 2023.

"Estimation and Inference for Higher-order Stochastic Volatility Models with Leverage" (with Jean-Marie Dufour & Md. Nazmul Ahsan)

- 39th Annual Meeting of the Canadian Econometrics Study Group (CESG), Toronto, Ontario, October 25, 2024.
- North American Summer Meeting of the Econometric Society, Vanderbilt University, Nashville, TN, June 13, 2024.
- 58th Annual Meetings of the Canadian Economics Association, Toronto Metropolitan University, Toronto, Ontario, May 31, 2024.
- 63e Congrès de la Société Canadienne de Science Économique, Montreal, Quebec, May 15, 2024.
- CIREQ Econometrics Conference in Honor of Eric Ghysels, Montreal, Quebec, May 10, 2024.

"Joint Determination of Counterparty and Liquidity Risk in Payment Systems" (with Jorge Cruz Lopez & Charles M. Kahn),

- II Regional Conference on Payments and Financial Market Infrastructures, Banco de la República de Colombia & CEMLA, Bogota, Colombia, September 21, 2023.
- Payments Canada & Bank of Canada Research Symposium, Ottawa, Ontario, October 2017.
- 51st Annual Meetings of the Canadian Economics Association, St. Francis Xavier University, Antigonish, Nova Scotia, June 3, 2017.

"Testing for the Synchronization of International Business Cycles" (with Jean-Marie Dufour)

- Joint Statistical Meetings, American Statistical Association, Toronto, Ontario, August 10, 2023.

Professional Service

Referee
International Statistical Review
Journal of Financial Market Infrastructures
Journal of Quantitative Economics
Journal of International Financial Markets, Institutions & Money

Discussant
CEMLA - II Conference on Payments and FMIs (2023)
58th Annual Meetings of the Canadian Economics Association (2024)

Computational Skills

R, Python, MATLAB, Dynare, C++, Linux, GAUSS, STATA

Software

MSTest - R package, creator & maintainer, available on CRAN
MaxMC - R package, maintainer, available on CRAN
mbreaks (v2) - R package, creator & maintainer, available on GitHub
bootBtest - R package, creator & maintainer, available on GitHub

Languages

English (native), French (fluent), Spanish (fluent)

Citizenship

Canada, Peru

References

Jean-Marie Dufour
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