

Firmin Ayivodji

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Research Interests

Primary: Econometrics, Big Data, Machine Learning/NLP, Causal Inference, Macroeconometrics.

Secondary: Climate Finance, ESG Investing, Real Estate, Household Finance, Macro-Finance.

Education

2017-present: PhD Candidate in Economics, Universite de Montreal (UdeM), Canada.

2014–2017: MSc in Statistics and Economics, Ecole Nationale de la Statistique et de l'Analyse Economique (ENSAE), Senegal.

2010–2013: BSc in Statistics, Ecole Nationale d'Economie Appliquée et de Management (ENEAM), Benin.

Selected Additional Training

March 05-June 30, 2022: "*Statistical Learning*", Stanford University, taught by Trevor Hastie and Rob Tibshirani.

January 11-April 26, 2021: "*Big Data: Methods and Applications*", Université de Montréal (UdeM), taught by Marine Carrasco.

April 17- May 10, 2022: "*Macroeconomics of Climate Change: Science, Economics, and Policies*", IMF, taught by James Roaf, Augustus Panton, Irene Yackovlev.

October 02-December 04, 2020: "*Empirical Household Finance*", New York University Leonard N. Stern School of Business, taught by Theresa Kuchler and Johannes Stroebel.

January 15-April 30, 2019: "*Financial Programming and Policies, Part 1: Macroeconomic Accounts and Policies*", International Monetary Fund (IMF), taught by Antonio David, Eric Verreydt, Celine Rochon, Romain Ranciere, Marc Quintyn.

August 14-December 14, 2018: "*Machine Learning*", Georgia Tech, taught by Charles Isbell.

August 21-December 21, 2018: "*Artificial Intelligence (AI)*", Columbia University, Department of Computer Science, taught by Ansaf Salieb-Aouissi.

August 15-December 18, 2018: "*Machine Learning Fundamentals*", California-San Diego University, Computer Science and Engineering Department, taught by Sanjoy Dasgupta.

Research and Publications

Working Papers

"Identification and Estimation of Common Factors in Panel Data".

"Measuring Economic Activity using News-Based Sentiment Indices".

"Food Security and the COVID-19 Employment Shock in Nigeria: Any Ex-Ante Mitigating Effects of Past Remittances?", with Almouksit Akim, and Jeffrey Kouton (submitted).

"Interaction Effect of Lockdown with Economic and Fiscal Measures against COVID-19 on Social-Distancing Compliance: Evidence from Africa", with Almouksit Akim.

Selected Research in Progress

"Deep Dynamic Factor Models in a Data-Rich Environment".

"When Real Estate Investing Meets Climate-Transition Risk".

"How Disclosing Transition and Physical Climate News Affects Sovereign Default Risk".

"Real-Time Inflation Expectations Forecasting using Media Reports and Social Media", with Ghislain Afavi, and Farell Waji.

"The Power of Text: How Media Narratives Influence Canadian Regional Housing Markets".

Policy Papers

2021 *"More Than Words: A Textual Analysis of MEFP"*, with Jochen Andritzky, and Heiko Hesse.

2019: *"Fiscal Vulnerabilities and the Role of Fiscal Policy in Commodity-Exporting Countries"*, World Bank, MTI discussion paper, with Christine Richaud, Sebastian Essl, Arthur Mendes, and Samer Matta.

Pre-Doctoral Publications

2019: *"Analysis of Determinants of Export Diversification in Franc Zone: A comparative study between UE-MOA and CEMAC countries"*, [Journal of Economics and Public Finance Vol. 6, No. 1, 2020], with Remy Hounsou.

2018: *"Regional Debt Market in the WAEMU: Curse Or Blessing?"*, with Boileau Loko, and Christine Richaud.

2018: *"Threshold Effects of Health on Economic Growth in Sub-Saharan African Countries: Evidence from a Dynamic Panel Threshold Model"*, [Journal of Economics and Development Studies, 2018, vol. 6, no 4, p. 19-37], with Jeffrey Kouton, and Coffie José N'guessan.

Teaching and Academic experience

Lecturer, University of Montreal (UdeM)

- Econometrics II for undergraduate degree, Winter (2020).

Lecturer, Ecole Nationale de la Statistique et de l'Analyse Economique (ENSAE)

- Big Data, Machine Learning and Econometrics, Graduate, Guest speaker, Fall (2021).
- Econometrics of Panel Data and Quantile Regression, Guest speaker, Winter (2016).

Teaching Assistant, University of Montreal (UdeM)

- Advanced Econometrics for graduate degree, Fall (2021), Fall (2020), Fall (2019).
- Macroeconometrics for graduate degree, Winter (2021).
- Econometrics II for undergraduate degree, Winter (2022), Fall (2021), Winter (2021).
- Introduction to Macroeconomics for undergraduate degree, Fall (2019).
- Principles of Economics for undergraduate degree, Summer (2022), Summer (2021).

Research Experience and Other Employment

October 2021 – present: **Research Assistant** for Prof. *Karim Chalak*, University of Montreal, Canada

June – August, 2021: **PhD Intern**, International Monetary Fund (IMF), Strategy, Policy, and Review Department, Washington, US

December – January 2021: **Research Assistant** for Prof. *Benoit Perron*, University of Montreal, Canada

November 2020 – January 2021: **Research Assistant** at *Observatoire de la Francophonie Économique (OFE)*, Montreal, Canada

August 2019 – September 2019: **Economic Researcher** at *Macroeconomics, Trade and Investment (MTI) Global Practice*, World Bank, Washington, USA

August 2019 – present: **Co-founder & Chairman** at *KiDs A.I. Inc.*, Canada

August 2018 – August 2019: **Research Assistant** for Prof. *Christopher Rauh*, University of Montreal, Canada

January – June 2018: **Economic Researcher** at *Macroeconomics, Trade and Investment (MTI) Global Practice*, World Bank (WB), Washington, USA

January – July 2017: **Data Scientist Intern**, *École Nationale de la Statistique et de l'Analyse Économique (ENSAE)*, Dakar, Senegal

August – October 2016: **Research Officer**, *International Monetary Fund (IMF)*, Dakar, Senegal

July 2016: **Data Scientist Intern**, *École Nationale de la Statistique et de l'Analyse Économique (ENSAE)*, Dakar, Senegal

2013-2016: **Co-Founder STATEC**, *Lead Data Scientist*, Cotonou, Benin

May 2015: **Data Scientist Intern**, *ENSAE-United Nations Industrial Development Organization (UNIDO) Co-operation*, Dakar, Senegal

August – November 2013: **Data Scientist Intern**, *Direction of Forecasting and Business Cycle (DPC)*, Cotonou, Benin

Seminar and Conference Presentations

2022:

- CIREQ Montreal Econometrics Conference in Honor of Eric Renault (Montreal, poster).
- 56th Annual Meetings of the Canadian Economics Association, Carleton University.
- 61st Congress of the Canadian Society of Economic Sciences, Montreal.
- 17th CIREQ Ph.D. Students' Conference, Montreal, Canada.
- Quebec PhD workshop in Economics, Statistics and Finance.

2021:

- Econometrics and Machine Learning Reading Group, University of Montreal, Canada.
- Eleventh Montreal Industrial Problem Solving Workshop (IPSW), Quebec, Canada.
- 60th Congress - Société Canadienne de Science Economique (SCSE), Ottawa, Canada.
- Pan-African Scientific Research Council (PASR) Conference.
- 16th CIREQ Ph.D. Students' Conference, Montreal, Canada.
- Quebec PhD workshop in Economics, Statistics and Finance.

Research Grants, Scholarships, & Fellowships

2022: First International Workshop on Interactive Causal Learning, Travel grant.

2022: Canadian Economics Association, Travel grant.

2022: Second Sustainable Finance Summit, Conference participation grant.

2021: International Monetary Fund (IMF), Summer Fellowship.

2020: World Bank Group Fellowship, Africa Region, shortlisted.

2020-2023: FRQSC - Doctoral Research Scholarships.

2018-2023: Research Fellowship, CIREQ and Department of Economics, University of Montreal.

2014-2017: MSc in Statistics Fellowship, France-Senegal Excellence Scholarship.

2010-2013: Government of Benin Scholarship.

Skills

Software: Python, Stata, Matlab, R, SAS, Git, QGIS, ArcGIS, GoogleCloud Computing, \LaTeX , Microsoft Office package, git, plotly, scikit-learn, statsmodel, xgboost, Keras, EconML, InterpretML.

Other: Tableau, Bloomberg, Datastream.

Languages

Languages: English (Advanced), French (native)