Firmin Ayivodji

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Research Interests

Primary: Econometrics, Big Data, Machine Learning, 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 Salleb-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*".

"*The Power of Text: How News Sentiment Influences Canadian Regional Housing Markets*".

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

"*Measuring Climate Risk Exposure Using Media Reports in SSA countries*".

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

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

Pre-Doctoral Publications

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

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], joint with Remy Hounsou.

2018: "*Regional Debt Market in the WAEMU: Curse Or Blessing?*", joint with Boileau Loko (IMF) and Christine Richaud (World Bank) .

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], joint with Jeffrey Kouton (ENSEA) and Coffie José N'guessan (CIRES).

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) Cooperation*, 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 - Societé 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.

Languages

Languages: English (Advanced), French (native)