

FABIEN FORGE

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Ph.D. in economics with over 6 years of experience in quantitative methods and data science. Looking for new opportunities to use my practical experience with data and my strong theoretical background in statistics.

EXPERIENCE

University of Ottawa – Applied Statistics and Machine Learning Ottawa, Canada
Postdoctoral researcher Jan 2021 - Dec 2021

- **Research domain:** what are the impact of weather and trees on socioeconomic outcomes in Canada?
- **Deep learning:** I use deep learning and transfer learning to perform remote sensing and map the evolution of urban tree canopy in Canada over the last 15 years
- **Weather satellite data:** I map daily weather data to all Canadian municipalities
- **Causal inference:** I use plausible exogenous variations in tree cover following the random expansion of the emerald ash borer to measure the impact of trees on confidential health and income data
- **Relevant tools used:** Python, R, Tensorflow 2.0, arcGIS, Pandas, Geopandas, xarray, fixest...

McGill University – Quantitative Methods Montreal, Canada
Part-time professor Sep 2021 - Dec 2021

- Design and teaching of 3rd year course
- Methods of causal inference
(Randomized controlled experiments, difference-in-difference, panel, RDD, IV, matching...)
- Applications in R (tidyverse, ggplot2, plm, fixest...)
- Probability and statistics and sample properties of estimators

University of Ottawa – Data Science and Machine Learning Ottawa, Canada
Part-time professor Jan 2021 - Dec 2021

- Design and teaching of 4th year course
- Data science techniques, statistical modelling and machine learning
- Linear and non-linear modelling, supervised and unsupervised learning, regression and classification
(Least squares, Probit/Logit, Ridge/LASSO, Tree methods, K-means, PCA, Deep Learning)
- Statistical learning and social biases
- Applications in Python
(Scikit-Learn, Tensorflow, PyCaret, Statsmodels, Scipy, Pandas, Matplotlib, Seaborn,...)

Royal Military College – Health Economics Remote, Canada
Part-time professor Jan 2021 - Dec 2021

- Introduction to health economics (course design and online teaching).
- Microeconomic theory of health markets and their agents

McGill University – Applied Environmental Economics Montreal, Canada
Part-time professor Sep 2021 - Dec 2021

- Design and teaching of 3rd year course
- Introduction to quantitative methods used in environmental economics
(RCT, RDD, IV, Panel Data and Lab experiments)
- Research design and interpretation of statistical results

University of Ottawa – Econometrics*Part-time professor*Ottawa, Canada
Jan 2020 - Apr 2020

- Design and teaching of 3rd year course in econometrics and statistics
- Methods, conditions and interpretation of causal inference
- Theory and properties of linear estimators
- Applications in Stata

University of Ottawa – Research Coordinator*Head research assistant*Ottawa, Canada
2018 - 2019

- Coordination of 15 research assistants over 2 years
- Teaching of arcGIS
- Weekly advancement meeting and mentoring

Think Tank Different – Researcher in Politics and Economics*Researcher*Paris, France
2014 - 2015

- Research on racial and gender discrimination in France.
- Production of reports for the French government

uMedia – Movie production company*Business Assistant*Brussels, Belgium
2013

- Business administration and strategy

TECHNICAL STRENGTHS

Languages/Software (advanced*):

Python, R, Stata, ArcGIS

Languages/Software (intermediary):**

SQL, Matlab, Julia, Java, QGIS

Data Science Tools (advanced):Machine Learning and Deep Learning
Causal inference (including A/B testing)
Data mining and unstructured data
Cloud Computing (GCP and AWS)
Github (version control), Web Scraping
Geospatial data**Data Science Tools (intermediary):**

Docker, NLP, Network Analysis

*: *advanced* means that I used extensively these tools in my daily work and/or taught them**: *intermediary* means I would feel comfortable using them fairly quickly in industry**EDUCATION**

Ph.D. in Economics – University of Ottawa*Nominated for best doctoral thesis*Ottawa, Canada
Sep 2015 - Dec 2020

- I hold a Ph.D. in economics with a specialization in the two main branches of applied statistics: causal inference and statistical learning for prediction.
- I applied these tools to environmental and health issues (see my research work below)
- In my research, I extensively used data science tools such as Python, R, Google Cloud Computing, Github, Docker... I detail how these tools were used in the academic work and expertise section

Specialization:

- Applied statistics for causal inference
- Prediction, data science and machine learning
- Applications to environmental and health economics

University of California Berkeley, Haas Business School

Research visitor

Berkeley, California

Sep 2019 - Jan 2020

- I was invited to join the economics department to share my research
- I participated and presented in their seminars

MA in Economics – University of Grenoble Alps

Top 1%

Grenoble, France

Sep 2013 - Jul 2014

Specializations: - Economics and Econometrics (statistics)

MBA (Master's in Business Administration) – Kedge Business School

Top 1%

Marseille, France

Sep 2009 - Jul 2013

Specializations: - Economics and Finance

Visiting Student – Brandeis University

Exchange Program, Finance and Economics

Waltham, Massachusetts

Sep 2011 - Dec 2011

University of Grenoble Alps

B.A. in Economics

Grenoble, France

2012

University of Provence

B.A. in English and Spanish

Marseille, France

2009

ACADEMIC WORK AND EXPERTISE

Climate Change: Using Machine Learning to Predict How to Model Adaptation On-going
with: Julia Mink

- How do farmers adapt to climate change? How do they respond to signals such as past weather realizations, climate predictions or their peers' yield? These questions matter because they influence the way we should model the impact of climate change on farmers' welfare. We answer these questions by mixing economic theory with machine learning. Specifically, we compare the predictive power of three calibrated theoretical model to the maximum of explainable variance delivered by the best machine learning algorithms. This allows us to measure model completeness: conditional on features space, how close are theoretical models to the information contained in the data.

Climate Change and the Distribution of Agricultural Output

submitted

with: Francisco Costa, Jason Garred and João Paulo Pessoa

- We investigate the extent to which climate change will result in insurable and uninsurable losses for farmers in India. Shifts in the distributions of temperature and precipitation may increase the volatility of farmers' yields, leading to rising but insurable risk, and/or reduce mean yields and thus cause permanent reductions in the returns to farming. We use a multi-run climate model to predict the future distribution of yields at the district level for sixteen major crops. For the average district, we project a sharp decline in mean agricultural revenue, but relatively small shifts in volatility. This is because weather draws resulting in extremely low agricultural revenue – what had once been 1-in-100-year events – are predicted to become the norm by the end of the century, implying substantial uninsurable losses from the changing climate.

When Are Tariff Cuts Not Enough? Heterogeneous Effects of Trade Preferences for the Least Developed Countries

submitted

with: Jason Garred and Kyae Lim Kwon

- Poor countries export a remarkably narrow range of products. To what extent have trade preferences targeted to the least developed countries (LDCs) changed this situation? We study a large set of recent reforms to the LDC trade preferences offered by OECD countries. Leveraging trade policy variation by importer, exporter, product and year, we show that tariff reductions have increased the prevalence of positive trade flows. However, new flows have been far more likely to emerge in cases with previous ‘export experience’, i.e. where countries already exported the same product to another OECD country, or exported a related product to the same importer. So this wave of tariff cuts for LDCs has resulted in an extension of existing patterns of trade rather than wider export diversification.

CCTs and Fertility: Long-Term Impacts Across Two Generations

submitted

Sole author

- The Mexican conditional cash transfer program Progresa, started in 1997, has been found to have positively impacted many aspects of the lives of the poor in Mexico both in the short and long run. The few studies that used the initial randomization over the first 18 to 24 months failed to observe any change in fertility decisions. Using the IPUMS census survey, I construct two cohorts of women that I observe in 2010, 13 years after the program started. The older cohort mainly benefited from a reduction in the cost of quality of their children, while the younger cohort benefited, in addition, from a schooling treatment on themselves. The results from a difference-in-difference identification strategy suggest a significant negative effect on fertility in a fashion consistent with what Becker’s quality-quantity trade-off model predicts. Although, both cohorts reduced their fertility, no additional effect was found on the fertility of the younger cohort in the early part of their fertility window