

# FABIEN FORGE

fabien.forge@gmail.com (+1) 514-995-4835  
Last update: December 2021 [forgef.github.io](https://github.com/forgef)

## REFERENCES

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**Jason Garred** (Ph.D. Supervisor) – [jason.garred@uottawa.ca](mailto:jason.garred@uottawa.ca)  
Assistant Professor, Department of Economics, University of Ottawa

**Abel Brodeur** (Ph.D. Supervisor) – [abrodeur@uottawa.ca](mailto:abrodeur@uottawa.ca)  
Associate Professor, Department of Economics, University of Ottawa

**Nicholas Rivers** (Postdoc Supervisor) – [nrivers@uottawa.ca](mailto:nrivers@uottawa.ca)  
Associate Professor, Graduate School of Public and International Affairs and  
the Institute of the Environment, University of Ottawa

## APPOINTMENTS AND TEACHING EXPERIENCE

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<b>University of Ottawa – Postdoctoral researcher</b> – <i>Applied Statistics and Machine Learning for Environment</i>	Ottawa, Canada <i>Jan 2021 - Dec 2021</i>
<b>McGill University – Lecturer</b> – <i>Quantitative Methods (econometrics)</i> – <i>Applied Environmental Economics</i>	Montreal, Canada <i>Fall 2021</i> <i>Winter 2021</i>
<b>University of Ottawa – Lecturer</b> – <i>Data Science and Machine Learning</i> – <i>Econometrics</i>	Ottawa, Canada <i>Winter and Fall 2021</i> <i>Winter 2020</i>
<b>Royal Military College – Lecturer</b> – <i>Health economics</i>	Remote, Canada <i>Jan 2021 - Dec 2021</i>
<b>University of Ottawa – Research Coordinator</b> – <i>Supervised research teams</i>	Ottawa, Canada <i>2018 - 2019</i>

## EDUCATION

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<b>Ph.D. in Economics – University of Ottawa</b> <i>Nominated for best doctoral thesis award</i>	Ottawa, Canada <i>Sep 2015 - Dec 2020</i>
<b>Visiting Researcher – UC Berkeley</b> <i>Haas Business School</i>	Berkeley, USA <i>Sep 2019 - Jan 2020</i>
<b>MA in Economics – University of Grenoble Alps</b> <i>Top 1%</i>	Grenoble, France <i>Sep 2013 - Jul 2014</i>
<b>MBA – Kedge Business School</b> <i>Top 1%</i>	Marseille, France <i>Sep 2009 - Jul 2013</i>
· Visiting Student – Brandeis University, MA	
<b>B.A. in Economics – University of Grenoble Alps</b> <i>Top 1%</i>	Grenoble, France <i>2012</i>

## RESEARCH – WORKING PAPERS

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### Climate Change and the Distribution of Agricultural Output

with: *Francisco Costa, Jason Garred and João Paulo Pessoa*

*R&R at Environmental and Resource Economics*

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

with: *Jason Garred and Kyae Lim Kwon*

*R&R at the Journal of International Economics*

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

This paper investigates the relationship between income, education and fertility by looking at the long term impact of the Mexican conditional cash transfer program. To do so, I define two cohorts of women that were exposed to the program differently. The older cohort, received cash transfers conditional on sending their children to school, while the younger cohort received additionally extra education. Using spatiotemporal variations in the roll-out of the program at the municipality level I find suggestive evidence that fertility declined for both cohorts, 13 years after the program started, and that there is no additional effect of increased schooling.

## RESEARCH – WORK IN PROGRESS

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### High Temperatures and Vulnerabilities

with: *Nicholas Rivers*

We examine the effect of high temperatures on individual income and document some of the determinants explaining heterogeneous effects. Using the longitudinal administrative survey of Canada, which contains information on 20% of Canadian taxpayers, we document that high temperatures, which are rare events, do not impact aggregate measures of income. The results change when including individual fixed-effects and suggests that a day with average temperature above 30 degrees is associated with a decrease in income by 1.5% and an increase in health spending by 0.1%. A decomposition of this effect suggests that it is mainly driven by the sectors of construction and retail.

## Reactive or Proactive? Capturing adaptation to climate change using machine learning

with: [Julia Mink](#)

We study the determinants of climate change adaptation using both machine learning and economic theory. For farmers, crop choice is one of the most effective and cheapest way of mitigating the effects of climate change. Yet it is unclear whether farmers’ adapt in reaction to past weather realisations or in anticipation of climate change. We attempt to answer this question by testing two theories: one in which farmers are only backward looking and a second in which they are also forward looking. Since these two behavioural models do not live in the same parameter space, we follow Fudenberg et al. (2020) and measure how ‘complete’ each theory is by comparing their predictive performance to a predictive upper bound defined using machine learning. Our results suggest that behavioural models assuming no adaptation best describe the data.

## US-China Trade Relationship and US Pollution Emissions

Since the 2000’s, Chinese import competition has significantly influenced the US industrial composition and motivated the 2018 US tariff increase. This paper takes advantage of these two opposite trade shocks to look at their impact on pollution emissions (CO, NO2, O3, PM10, PM2.5) in the US. I empirically examine how US counties have changed their pollution emissions in response to i) a fall in Chinese import prices and ii) recent protectionist measures and retaliatory tariffs. The reduced form identification relies on a shift-share instrument where weights are given by local exposure to Chinese competition resulting from counties’ industrial composition prior to the shocks. Preliminary results suggests that US counties with the highest exposure to Chinese import competition reduced their emissions relatively more.

## CONFERENCE PRESENTATIONS

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<a href="#">CIREQ workshop</a> , Montreal	2018
<a href="#">Environment for Development (EfD) Annual Meeting</a> , Hanoi, Vietnam	2018
<a href="#">Canadian Resource &amp; Environmental Economics Annual Meeting</a> , Montreal	2018, 2019, 2021
<a href="#">Development Seminars</a> , UC Berkeley	2019
<a href="#">Société canadienne de science économique</a> , Quebec	2019
<a href="#">Occasional Workshop in Environmental and Resource Economics</a> , UC Santa Barbara	2019
<a href="#">Canadian Economics Association</a> , Canada	2021

## REFEREEING

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Journal of Environmental Economics and Management

## LANGUAGES

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French: Native ; English: Fluent

## TECHNICAL CAPABILITIES

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<b>Languages/Software (advanced):</b>	Python, R, Stata, ArcGIS
<b>Languages/Software (intermediate):</b>	SQL, Matlab, Julia, Java, QGIS
<b>Data Science Tools (advanced):</b>	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
<b>Data Science Tools (intermediate):</b>	Docker, NLP, Network Analysis