David Crommelynck

Postdoctoral Researcher in Economics, UMR BETA, Université de Lorraine (UL), Nancy, France
Normalien, former student of the École Normale Supérieure Paris-Saclay

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Current Position

Postdoctoral Researcher at BETA (Université de Lorraine) **since November 1st, 2025**

Research conducted with Stéphane Saussier, Simon Porcher and Alexandre Mayol at the Institute of Water Economics. Research topics include: water economics, network resilience, pricing, and local public policies.

Research Interests

Environmental economics; Water economics; Microeconometrics for policy evaluation; Economic geography; Local public economics; Conservation economics.

Education

Université de Bretagne Occidentale, **2021–2025**
Brest, France
PhD in Economics, UMR AMURE.
Dissertation title: Protect or develop? An analysis of the effects of protected areas on French municipal finances.
Supervisors: Matthieu Leprince (UMR AMURE, UBO) and Olivier Thébaud (UMR AMURE, IFREMER).
Jury: Sonia Paty (Université Lyon 2, Chair); Olivier Beaumais (Université de Rouen Normandie, Referee); Tina Rambonilaza (INRAE, Referee); Marie-Estelle Binet (Université de Bretagne Occidentale, Examiner); Isabelle Witté (OFB–MNHN, Examiner); Pierre Scemama (IFREMER, Examiner).

École Normale Supérieure Paris-Saclay, **2017–2021**
Gif-sur-Yvette, France
Diploma of the École Normale Supérieure Paris-Saclay, Social Sciences.

Université Paris-Saclay, **2020–2021**
Gif-sur-Yvette, France
Master's degree in *Higher Education Training in Economic and Social Sciences.*

Université Paris-Saclay, École Polytechnique, ENSAE, **2018–2020**
Palaiseau, France
Master in Economics.

École Normale Supérieure Paris-Saclay, **2017–2018**
Gif-sur-Yvette, France
Undergraduate Certificate (equivalent to a Bachelor's degree), Economics and Management.

Lycée Turgot, **2014–2017**
Paris, France
Preparatory Classes for the Grandes Écoles, Economics track.

Previous Positions

Teaching and Research Fellow (ATER), **September 2024 – August 2025**
Université de Bretagne Occidentale, Brest, France.
Temporary Teaching and Research Fellow (190 hours of teaching).

Lecturer (Teaching Assistant), **September 2021 – August 2024**
Université de Rennes, Rennes, France.
Teaching Assistant (TD), 64 hours per year (192 hours in total).

Research Assistant, **April 2018 – July 2018**
University of Oxford, Oxford, United Kingdom.
Research internship under the supervision of Clément Imbert and Gabriel Ulyssea.

Research Activities

Publications

Crommelynck, D., Leprince, M., & Thébaud, O. (2024).
Protected Areas and Municipality Finances. *Annals of Economics and Statistics* (CNU ranking: A), 156, 167–206.
https://doi.org/10.2307/48804185

Working Papers

Crommelynck, D. (2025). **The Spillover Effects of Protected Areas on Local Tax Revenues: A Spatial Study of Municipalities in Western France**. Cem Ertur Prize 2025. available here

Crommelynck, D. (2025). **The Fiscal and Demographic Effects of Protected Areas: Evidence from French Municipalities**. available here

Crommelynck, D., & Witté, I. (2025). **Linking Ecology and Local Development: A Harmonized Municipal Dataset on Protected Areas, Biodiversity, Fiscal, Socio-Economic, and Political Indicators in France (1985–2021)**. Data paper. available here

Work in Progress

Crommelynck, D., Mayol, A., Porcher, S., Saussier, S.
The Strategy of Horizons: Underinvestment in Municipal Water Networks During Summer Droughts.

Scientific Presentations (Conferences and Seminars)

26th Annual BIOECON Conference, Cambridge, United Kingdom September 1–2, 2025
23rd International Workshop in Spatial Econometrics and Statistics, Saint-Étienne, France June 4–6, 2025

73rd Congress of the French Economic Association, Paris-Saclay, France — June 2–4, 2025
45th AISRe Scientific Conference, Turin, Italy — September 4–6, 2024
SMART Laboratory Seminar, Rennes, France — October 3, 2023
10th Annual FAERE Conference, Montpellier, France — September 7–8, 2023
24th Annual BIOECON Conference, Santiago de Compostela, Spain — August 31 – September 1, 2023
13th FAERE Thematic Workshops, Champs-sur-Marne, France — June 1–2, 2023
SecGo Seminar, Online — January 19, 2023
FAERE Doctoral Workshop, Le Bourget-du-Lac, France — November 24–25, 2022
AMURE Seminar, Plouzané, France — February 22–23, 2022

Awards and Distinctions

Cem Ertur Prize (2025), awarded by the French Association of Spatial Statistics and Econometrics for the paper *"The Spillover Effects of Protected Areas on Local Tax Revenues: A Spatial Study of Municipalities in Western France"*.

Refereeing Activity

Economics and Law, Polish journal (not ranked by the CNU) — 2025

Teaching (Summary)

Université de Bretagne Occidentale (UBO):
Statistics (60 hours), 2025
Undergraduate (2nd year) in Economics and Management
Computer Science (10 hours), 2025
Undergraduate (1st year) in Applied Economic and Social Sciences (AES)
Mathematics (60 hours), 2024
Undergraduate (1st year) in Applied Economic and Social Sciences (AES
Introduction to Academic Methods (60 hours), 2024
Undergraduate (1st year) in Economics and Management
Science and Society (30 hours), 2022
Interdisciplinary Master's program
"Cordées de la réussite" Program (20 hours), 2022
Upper secondary education (11th grade)

Université de Rennes:
Macroeconomics (96 hours), 2021, 2022, 2023
Undergraduate (1st year) in Economics and Management
Microeconomics (40 hours), 2023
Undergraduate (1st year) in Economics and Management
Microeconomics (40 hours), 2022
Undergraduate (2nd year) in Economics and Management
Introduction to Academic Methods (16 hours), 2021
Undergraduate (1st year)

Lycée Marie Curie, Versailles:
Oral Examiner (20 hours), 2019, 2020
2nd year of the D2 preparatory program (CPGE)

Skills

Languages: French (native); English (C1); Spanish (intermediate).
Technical Skills: Stata, R, QGIS, LaTeX, SQL, SPARQL, Python (NumPy, Pandas, GeoPandas, Matplotlib).

Administrative Responsibilities

Elected PhD Student Representative on the Unit Council and Executive Board of UMR AMURE (2021–2024).
Monthly participation in unit council meetings, representation of doctoral students' concerns, and support in administrative procedures.

Analytical Overview of Research Activities

My research activities are structured around several interrelated objectives, with a constant focus on **territories**. They are embedded in a broader framework of **public policy evaluation** at the local level, with particular attention to biodiversity-related policies and natural resource management. My work mobilizes tools from **causal inference**, **spatial econometrics**, and theoretical modeling to analyze how conservation and resource management policies shape economic, fiscal, and demographic dynamics across territories. While diversifying my research topics, I aim to maintain a strong conceptual coherence centered on the interactions between territorial dynamics and and public decision-making.

A key dimension of my research is the integration of insights from other disciplines, particularly **conservation ecology**. This interdisciplinary approach seeks to capture the multidimensional nature of territories in order to better understand the effects of local environmental policies. Economic responses to such policies can only be fully understood in light of the physical and ecological characteristics of the areas concerned.

I also place strong emphasis on **open science**, striving to make data, methods, and tools openly available and reproducible. This commitment is reflected in my efforts to disseminate scientific results beyond academia. I initiated this work through participation in a working group of early-career researchers whose outputs were shared with stakeholders involved in the One Ocean Summit in 2022, as well as through several teaching activities closely aligned with the themes of my doctoral research. This approach also materializes through the preparation of a **data paper** aimed at making the datasets constructed during my PhD publicly accessible.

My doctoral and postdoctoral research is organized around three interrelated axes: natural resource management issues, the spatial dimension of public policies, and questions related to local public finance.

Axis A: Environmental, Conservation, and Biodiversity Economics

This research axis constitutes the core of my PhD and focuses on evaluating the effects of the establishment of **protected areas** on territorial development, with a particular emphasis on **local public finance**. The primary objective is to shed light on the economic mechanisms that may explain why territories with high biodiversity value remain insufficiently protected, despite national and international conservation commitments. Tensions between conservation objectives and local resistance are often rooted in perceived **opportunity costs**, such as foregone development potential or land-use restrictions, which are frequently emphasized by local policymakers. However, a large body of economic literature highlights that ecosystem services and the signaling effects associated with protected areas can enhance territorial attractiveness. My ambition is therefore to assess the impact of these conservation instruments on indicators of territorial development.

The first analytical paper, published in *Annals of Economics and Statistics* under the title **Protected Areas and Municipality Finances**, co-authored with Matthieu Leprince and Olivier Thébaud, examines differences in tax wealth between protected and non-protected municipalities. Conditional on comparable biodiversity stakes, municipalities hosting protected areas exhibit lower tax potential per hectare. Two mechanisms are discussed: the spatial targeting of protected areas toward economically disadvantaged territories and the development constraints induced by protection status. These findings highlight the role of local public finance considerations as a potential barrier to the expansion of conservation policies.

The third analytical paper, entitled **The Fiscal and Demographic Effects of Protected Areas: Evidence from French Municipalities**, aims to disentangle causal effects from selection effects

associated with the designation of protected areas on various indicators of territorial development. To do so, it relies on **staggered difference-in-differences** models, cohort-based matching, and **causal forests**. The results show that municipalities hosting protected areas experience a gradual increase in **per capita property tax bases** over time. This effect stems from a progressive reconfiguration of local dynamics, notably through demographic changes. The use of causal forests reveals substantial spatial heterogeneity in these effects across metropolitan France and seeks to identify territorial configurations in which conservation acts as a driver of development, as opposed to contexts where it represents a constraint.

This research has been conducted in close partnership with the **UAR Patrinat** and the **French National Museum of Natural History (Muséum national d'Histoire naturelle)**. Collaboration with these institutions, particularly through the expertise and support of Isabelle Witté, was instrumental in integrating concepts from **conservation ecology**, such as **irreplaceability**, into my empirical work. This collaboration enabled me to jointly analyze ecological stakes, anthropogenic pressures, and local economic dynamics.

Overall, this body of work contributes to a better understanding of the mechanisms linking **biodiversity conservation** and **local public economics**, and helps clarify the conditions under which biodiversity protection policies become socially and politically acceptable at the local level.

Axis B: Economic Geography and Territorial Management of Natural Resources

The **spatial dimension** of environmental policies constitutes a second major axis of my research. Environmental policies do not only affect the jurisdictions that implement them; they may also generate externalities that redistribute population, economic activity, and wealth across neighboring territories. Understanding these mechanisms requires combining economic theory with spatial modeling and the use of fine-grained geographic data.

The second analytical paper of my PhD, entitled **The Spillover Effects of Protected Areas on Local Tax Revenues: A Spatial Study of Municipalities in Western France**, fits within this perspective. Building on a theoretical framework inspired by urban economics, I formalize the idea that protected areas may simultaneously constrain development within the municipalities where they are established while increasing the attractiveness of adjacent municipalities. Instrumented **Spatial Durbin models** show lower tax potential per hectare in protected municipalities and positive **spillover effects** for neighboring jurisdictions. These results highlight how spatial externalities generated by conservation policies can create incentive misalignments, raising important questions regarding **territorial compensation** mechanisms and the appropriate scale of public policy intervention.

Spatial analysis also structures my current postdoctoral research on **water resources**. In this work, I examine how investments in water infrastructure influence the **resilience** of territories to droughts. Spatial inequalities in access to water resources and in network management lie at the core of my current research agenda. A first paper in progress investigates the relationship between **tariff structures**, investment efforts, and the resilience of water services, relying on panel data methods and spatial econometric models.

Axis C: Local Public Economics

The **fiscal dimension** runs through all of my research. My doctoral articles consistently examine the mechanisms underlying **municipal tax wealth**, the formation of **local tax bases**, and redistribution mechanisms across local governments, thereby addressing the link between environmental policies and municipal budgets. This work contributes to a broader reflection on **local public finance** and the trade-offs faced by local elected officials when balancing conservation objectives, territorial attrac-

tiveness, and budgetary constraints. Local taxation emerges as a central issue in natural resource management policies, as it constitutes a key indicator in the decision-making process of the actors responsible, at least in part, for implementing these policies.

In my postdoctoral research, these fiscal issues are extended to the study of **local water governance**. Investment decisions in water networks and tariff choices have direct implications for municipal budgets. My objective is to analyze how local governments arbitrate between **financial sustainability**, **tariff equity**, and **resilience** in the face of increasingly frequent and intense climatic shocks.

The growing importance of these research questions motivated the construction of a harmonized municipal-level database, presented in a **data paper** entitled **Linking Ecology and Local Development: A Harmonized Municipal Dataset on Protected Areas, Biodiversity, Fiscal, Socio-Economic, and Political Indicators in France (1985–2021)**, co-authored with Isabelle Witté. This dataset brings together biodiversity, fiscal, socio-demographic, and public policy indicators over the period 1985–2021. Its purpose is to enable researchers and institutions to further investigate the relationships between **local budgets** and **natural resource management policies**. The indicators included in the dataset allow for the analysis of conservation policies and local taxation not only through tax bases, but also through voted tax rates and municipal expenditure choices.

Conclusion

My research agenda thus articulates **biodiversity conservation**, **spatial analysis** of territorial dynamics, and issues related to **local public finance**. This body of work relies on a shared methodological foundation combining **causal inference**, **spatial econometrics**, and **theoretical modeling**, alongside a strong commitment to **transdisciplinarity** and **open science**.

This agenda is intended to expand toward the study of additional dimensions of local public policies in natural resource management, notably by examining their effects on **municipal elections** and the interactions between environmental policies and the dynamics of the **local productive system**. My objective is to contribute to a nuanced understanding of the territorial transformations induced by public decision-making and by the ecological constraints faced by local communities.

Analytical Overview of Teaching Activities

With the objective of pursuing a career in both teaching and research, I chose to engage in teaching activities from my Master's years onward, initially through oral examinations (*khôlles*) in microeconomics for students enrolled in the D2 preparatory program (CPGE). I then continued this pedagogical commitment throughout my three-year doctoral contract at Université de Rennes, followed by my appointment as a Teaching and Research Fellow (ATER) at Université de Bretagne Occidentale. My teaching activity will continue during the 2025–2026 academic year, as I have committed to teaching a Master's-level statistics course (lectures and tutorials) for two Master's programs at Université Rennes 2. Within the scope of the opportunities available to me, my teaching experience has been structured around three main pillars: diversification of subjects taught, diversification of student audiences, and diversification of teaching methods.

Diversification of Subjects Taught

From a disciplinary perspective, I have sought to cover the full range of core subjects typically included in economics curricula. I have taught tutorial sessions in microeconomics, macroeconomics, statistics, mathematics, computer science, and academic methodology. This diversification, which I have maintained throughout my career, has enabled me to identify the pedagogical specificities of each discipline and to adapt my teaching materials and examples to students' recurring difficulties.

Diversification of Student Audiences

I have also attached great importance to the diversity of student audiences. While my teaching duties have mainly focused on undergraduate-level tutorials, I have sought to teach at other levels by engaging in initiatives proposed by my doctoral school. The course unit "Science and Society" at Institut Universitaire Européen de la mer allowed me to supervise Master's students from diverse disciplinary backgrounds in the design of a serious game addressing biodiversity conservation issues. The "Cordées de la réussite" program gave me the opportunity to mentor a group of three high school students, from the design of a randomized experiment to the statistical analysis of its results. Finally, I chose to complete my ATER year at Université de Bretagne Occidentale because the position allowed me to teach both Economics and Management students and students enrolled in Applied Economic and Social Sciences (AES), thus enabling me to better understand the specificities of this curriculum. In this context, I was fully responsible for the course "Use of Mathematical Tools," including the design of teaching materials as well as the preparation and grading of examinations. The strong heterogeneity of student backgrounds, ranging from mathematics majors to students with highly literary high school training, led me to implement teaching strategies aimed at ensuring that all students could acquire, by the end of the semester, a common core of mathematical skills essential for economic and statistical analysis.

Diversification of Teaching Methods

The diversity of teaching methods constitutes the third pillar of my pedagogical experience. Traditional tutorial sessions taught me how to manage groups of approximately forty students and how to structure class time between theoretical reminders, problem-solving exercises, and collective discussions at the end of each session. Other teaching formats allowed me to develop more individualized forms of student support. This was notably the case in the "Cordées de la réussite" program, the "Science and Society" course, and several macroeconomics tutorial groups at Université de Rennes, which I had the opportunity to teach over two consecutive years as part of a course coordinated by Chantal Guéguen. In these settings, sessions alternated between standard presentations delivered to the entire group and periods of personalized supervision, during which I supported small groups of two to four students in the development of their projects (macroeconomic dashboards, serious games, experimental protocols, etc.). This experience led me to refine my approach to providing constructive feedback and to better assist students in structuring and clarifying their ideas.

In the following section, I provide a detailed presentation of all the courses I have taught, specifying for each course the academic level, teaching hours, disciplinary content, and the type of pedagogical responsibilities assumed.

Detailed Teaching Activities

Academic Year 2019–2020:

Lycée Marie Curie, Versailles (20 hours)
Oral Examiner ("Kholleur") in Microeconomics, 2nd year of CPGE D2
This activity consisted of examining groups of three second-year CPGE students in microeconomics in preparation for the ENS Paris-Saclay entrance examination (D2 track). I designed exercises in line with the official syllabus and guided students through their resolution.
Syllabus: general equilibrium, monopoly, duopoly, externalities.

Academic Year 2021–2022:

Université de Rennes (64 hours)

Macroeconomics, Semester 1, Undergraduate Year 1 in Economics and Management (48 hours)
This course involved correcting tutorial problem sets for six different groups and explaining the core concepts of the course syllabus.
Syllabus: introduction to macroeconomics, goods and services market, labor market, financial markets, money market.
Course coordinator: Chantal Guéguen, Université de Rennes.

Introduction to Academic Methods, Semester 1, Undergraduate Year 1 in Economics and Management (16 hours)
This course consisted of evaluating written assignments and group presentations as part of students' training in academic methodology. Students were required to read a seminal text in the history of economic thought, summarize it, identify two academic and two non-academic sources related to the topic, and illustrate its relevance to current issues using a graph.
Course coordinator: Chantal Guéguen, Université de Rennes.

Academic Year 2022–2023:

Université de Rennes (64 hours)

Microeconomics, Semester 3, Undergraduate Year 2 in Economics and Management (40 hours)
This course involved correcting tutorial problem sets with students from two different groups and explaining the underlying concepts.
Syllabus: monopoly, oligopoly.
Course coordinator: Yunnan Shi, Université de Rennes.

Macroeconomics, Semester 2, Undergraduate Year 1 in Economics and Management (24 hours)
This course consisted of supervising and evaluating students from two tutorial groups in the preparation and presentation of a dashboard comparing the macroeconomic situations of two countries, using OECD and World Bank data.
Course coordinator: Chantal Guéguen, Université de Rennes.

Université de Bretagne Occidentale – Doctoral Training Programs (50 hours)

"Science and Society" Course Unit (30 hours)
This course involved supervising a group of approximately thirty Master's students in Marine and Coastal Sciences in the design of a serious game simulating negotiations during a Conference of the Parties (COP). Students were required to prepare policy proposals and arguments based on scientific literature.
Topic: Global development of marine protected areas.
Course coordinator: Adélie Pomade, Université de Bretagne Occidentale.

"Cordées de la réussite" Program (20 hours)
This activity consisted of mentoring a group of three 11th-grade high school students in the implementation of a randomized experiment within their high school and in the statistical analysis of its results. I introduced the methodology of randomized experiments and statistical testing, as well as the associated mathematical concepts.
Topic: The effects of citizen science on high school students' environmental behaviors.

Course coordinator: Jean-Philippe Jay, Université de Bretagne Occidentale.

Academic Year 2023–2024:

Université de Rennes (64 hours)

Microeconomics, Semester 1, Undergraduate Year 1 in Economics and Management (40 hours)
This course involved correcting tutorial problem sets with two groups, including one group of academically "at-risk" students ("oui si" track), and explaining the associated concepts.
Syllabus: supply and demand functions, partial equilibrium, price floors and ceilings, introduction to the theory of the firm.
Course coordinator: Daniele Benezech, Université de Rennes.

Macroeconomics, Semester 2, Undergraduate Year 1 in Economics and Management (24 hours)
This course again involved supervising students from two tutorial groups in the construction of a dashboard comparing the macroeconomic situations of two countries.
Course coordinator: Chantal Guéguen, Université de Rennes.

Academic Year 2024–2025:

Université de Bretagne Occidentale (190 hours)

Use of Mathematical Tools, Undergraduate Year 1 in Applied Economic and Social Sciences (AES) (60 hours)
This course consisted of designing, teaching, and assessing a course for three groups of first-year AES students with highly heterogeneous backgrounds. The objective was to provide students with the mathematical tools necessary to understand the economic and management concepts encountered throughout their degree program.
Syllabus: operations with fractions, powers, functions (basic concepts, continuity, limits, derivatives).
Program director: Mourad Kertous, Université de Bretagne Occidentale.

Introduction to Academic Methods, Year 1 in Economics and Management (60 hours)
This course focused on explaining the methods required for the different types of assignments encountered during university studies.
Syllabus: oral presentation, essay writing, text analysis, document synthesis, literature search.
Other instructors: Myriam Nourry and Thierry Cohard, Université de Bretagne Occidentale.

Computer Science: Introduction to Excel, Undergraduate Year 1 in AES (10 hours)
This course involved guiding a group of students through their first exposure to Excel.
Syllabus: functions, mixed and absolute references, conditional expressions, charts, formatting.
Course coordinator: Mourad Kertous, Université de Bretagne Occidentale.

Statistics, Undergraduate Year 2 in Economics and Management (60 hours)
This course involved correcting tutorial problem sets for three undergraduate groups and explaining the concepts covered in the syllabus.
Syllabus: standard discrete distributions, standard continuous distributions, confidence intervals, linear regression.
Course coordinator: Abdelhak Nassiri, Université de Bretagne Occidentale.

Administrative Responsibilities

Elected PhD Student Representative on the Unit Council and Executive Board of UMR AMURE

Between 2021 and 2024, I participated on average in one monthly meeting to contribute to laboratory discussions and decision-making processes. This role also involved relaying doctoral students' concerns to the laboratory management and providing support with administrative matters related to doctoral studies.

References

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