THOMAS BOURANY

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Research and Teaching Fields

Primary: Macroeconomics, Environmental Economics, International Trade
Secondary: Monetary Economics, Public Finance, Computational Econonomics, Macro-Finance

Education

University of Chicago, Ph.D. Economics *2019–2025*

University of Chicago, M.A. Economics *2018–2019*
MAPSS

UPMC – Sorbonne Université, M.Sc. Mathematics *2016–2018*
Applied Mathematics for Modeling, with honors

Sciences Po, École Polytechnique & Ensae, M.A. Economics *2014–2016*
Economics and Public Policies (EPP)

Sciences Po & UPMC–Sorbonne Université, Dual Bachelor *2011–2014*
Sciences and Social Sciences, with honors

- B.A. Social Sciences, "Diplôme du Collège universitaire" – Sciences Po Paris
- B.Sc. Mathematics – UPMC–Sorbonne Paris
- Exchange program – Indian Institute of Technology, Madras, Chennai, India

References

Professor Mikhaïl Golosov (Chair)
University of Chicago
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Professor Esteban Rossi-Hansberg
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Professor Lars Hansen
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Department of Economics, Statistics
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Professor Michael Greenstone
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Job Market Paper

The Optimal Design of Climate Agreements, Inequality, Trade and Incentives for Carbon Policy
Job Market Paper link

Abstract: *Fighting climate change requires ambitious global policies, which are undermined by free-riding incentives. The heterogeneity in both the impacts of climate change and the costs of carbon taxation exacerbate non-cooperation, which makes the implementation of multilateral climate agreements difficult. This paper studies how to design an optimal climate club – in the spirit of Nordhaus (2015) – to maximize global welfare, incorporating strategic behavior when countries can exit climate agreements. In an Integrated Assessment Model with heterogeneous countries and international trade, I study the choice of countries in the agreement, the optimal level of carbon tax that members set on fossil fuels, and the tariffs they impose on non-members to incentivize participation. The decision balances an intensive margin – a club with few countries and large individual emission reductions – and an extensive margin – accommodating more countries at the cost of lowering the carbon tax. I find that the optimal climate club consists of all countries except several fossil producers – Russia, Saudi Arabia, Iran, and Nigeria – a* \$110 *tax per ton of* CO_2 *within the club, and a* 50% *tariff on goods from non-members. In contrast, the globally optimal carbon tax is* \$130 *when free-riding is absent. In several extensions, I study additional policy instruments, such as transfers (as in the COP29), carbon tariffs (e.g. UE's CBAM), or fossil-fuel-specific tariffs, and examine the effects of trade retaliation for the stability of climate agreements.*

Working Papers

Inequality, Climate Change, and the Optimal Climate Policy, *paper link*

Abstract: *What is the optimal policy to fight climate change? Taxation of carbon and fossil fuels has strong redistributive effects across countries: (i) curbing energy demand is costly for developing economies, which are the most affected by climate change in the first place (ii) carbon taxation has strong general equilibrium effects through energy markets and fossil fuel rents. Through the lens of an Integrated Assessment Model (IAM) with heterogeneous countries, I show that the optimal taxation of carbon depends crucially on the availability of redistribution instruments. After characterizing the Social Cost of Carbon (SCC), I provide formulas for the Second-Best carbon tax in the presence of inequalities in incomes and climate damages, and redistributive and distortionary effects on energy markets. I show that a uniform carbon tax should be reduced by approximately 15% in the presence of inequality compared to First-Best where cross-country transfers are available. If country-specific carbon taxes are available, the distribution of carbon prices is proportionally related to the level of income: poor and hot countries should pay lower energy taxes than rich and cold countries. These qualitative results are general, and I propose a dynamic quantitative model to provide recommendations for the optimal path of carbon taxes.*

Supply Chain Disruptions and Diversification, *paper link*
(with Ignacia Cuevas and Gustavo González)

Abstract: *Supply chain disruptions have become increasingly frequent, generating substantial uncertainty for companies that rely on sourcing inputs for production. We investigate how firms facing supply chain uncertainty adapt their sourcing strategies, by diversifying foreign suppliers, re-shoring, or selecting suppliers based on cost and risk considerations. To answer these questions, we develop a multi-country sourcing model inspired by Antràs, Fort, and Tintelnot (2017), in which firms choose where to import from, accounting for international supply-chain disruptions. Our findings reveal that mean-preserving uncertainty introduces a positive option value associated with diversifying the set of suppliers. However, country-specific aggregate risk also features hedging motives, yielding ambiguous predictions on firms' sourcing decisions. Leveraging firm-level data from Chile, we use this structural model to estimate supply chain risk over time for major trade partners as well as fixed costs of sourcing. We assess the impact of the recent surge in trade risk following the Covid-19 pandemic, and we perform counterfactual exercises to evaluate how this affected firms' sourcing strategies. Our results indicate that the observed change in sourcing patterns correspond more to changes in expected costs rather than solely to increases in risk.*

A Perturbational Approach for Approximating Heterogeneous-Agent Models, *paper link*
(with Mikhaïl Golosov, Anmol Bhandari, and David Evans)

Abstract: *We develop a perturbational technique to approximate equilibria of a wide class of discrete-time dy- namic stochastic general equilibrium heterogeneous-agent models with complex state spaces, including multi-dimensional distributions of endogenous variables. We show that approximating policy functions and stochastic process that governs the distributional state to any order is equivalent to solving small systems of linear equations that characterize values of certain directional derivatives. We analytically derive the coefficients of these linear systems and show that they satisfy simple recursive relations making their numerical implementation quick and efficient. Compared to existing state-of-the-art techniques, our method is faster in constructing first-order approximations and extends to higher orders, capturing the effects of risk that are ignored by many current methods. We illustrate how to apply our method to a broad set of questions such as impacts of first- and second-moment shocks, welfare effect of macroeconomic risk and stabilization policies, endogenous household portfolio formation, and transition dynamics in heterogeneous agent general equilibrium settings.*

Non-Keynesian Stabilizers and Wage-Price Spirals, *paper link*
(with Xavier Ragot and François Le Grand)

Abstract: *When both prices and wages are subject to nominal frictions, a negative supply shock or a positive demand shock can trigger a wage-price spiral, as both nominal wages and prices adjust slowly. To analyze optimal policy in this environment, we consider a heterogeneous-agent model, with both wage and price stickiness. We derive joint optimal fiscal-monetary Ramsey policy, using a rich set of fiscal tools, for both supply and demand shocks. Studying various economies, we first find that time-varying labor tax is important to ensure price stability for demand shocks. Second, time-varying wage subsidy (to decrease the labor cost of firm) is the useful instrument for negative demand shocks. We call these policies a non-Keynesian stabilization policy because it does not operate directly through aggregate demand management. Finally, we show that the allocation is significantly different in the HA economy compared to the RA economy when public debt is a relevant tool.*

Work in Progress

When is Aggregation Enough? Aggregation and Projection for the Master Equation, *slides link*

Abstract: *I study how the Master Equation – developed in the Mean Field Games literature – can be used for economic models with heterogeneous agents and aggregate risk. Using projection, I bypass part of the assumption of bounded-rationality as in Krusell, Smith (1998): households still consider few moments of the distribution when making expectations but their dynamics are now fully non-linear and consistent with equilibrium outcomes. I obtain a global characterization of the value, agent policy, and aggregate dynamics in a standard HA models, that can be adapted to richer models with portfolio choice when perturbation methods is limited.*

Energy shocks and Aggregate Fluctuations, 3rd-year paper, *slides link*

Abstract: *How important is energy for economic fluctuations? I analyze the contribution of energy shocks – oil shocks for example – for business cycles fluctuations using a RBC model that features a high degree of complementarity and non-linearity in production. I show that the expansion of energy supply was significant for output growth in the post-WWII period, and its decline explains part of the slowdown since the second oil shock. I estimate that energy shocks explain between 20 and 30% of output volatility.*

Credit Cycles, Asset prices, and Heterogeneous Firms
Master thesis (MAPSS) and 2nd-year paper, 2020, University of Chicago

Pre-Doc

Wealth distribution over the business cycle, A mean-field game with common noise,
Master thesis (M2), 2018, M. Sc. Mathematics at UPMC-Sorbonne. Supervisor: Yves Achdou

Fiscal policy in monetary union
Master thesis (M2), 2016, M.A. Economics / EPP. Supervisor: Jean Baptiste Michau

Fiscal Policy and Tax compliance over the business cycle
Master thesis (M1), 2015, M.A. Economics / EPP. Supervisor: Francesco Pappadà

Teaching Experience

University of Chicago, Department of Economics

Mathematical Methods in Economics, *PhD*	Lecturer	*Summer 2020, 2021 & 2022*
Applied Macroeconomics: Heterogeneity & Macro, *PhD*	TA for Prof. J. Vavra, R. Kekre	*Winter 2022*
Monetary Economics, *PhD*	TA for Prof. F. Alvarez	*Fall 2021*

Chicago Booth School of Business

Global Strategy and Economics, *EMBA*	TA for Prof. G. Lorenzoni	*Spr. 2022, 2023, 2024*
International Financial Policy, *MBA*	TA for Prof. R. Kekre	*Spr. 2020, 2021, 2022*
Money and Banking, *MBA*	TA for Prof. K. Huber	*Winter 2021*

University of Chicago, The College

Economic Policy Analysis, *undergrad*	TA for Prof. K. Kuevibulvanich	*Spring 2019*

Sciences Po, Doctoral School, Economics Department

Graduate Macroeconomics & finance, *PhD*	TA for Prof. X. Ragot	*Fall 2016, 2017*
Fiscal and monetary policy, *PhD*	TA for Prof. J. Barthelemy	*Fall 2016*

Sciences Po, School of Public Affairs, Master in Public Policy

Macroeconomics, *MPP*	TA for Prof. T. Chaney	*Fall 2016, Spr. 2018*
Macroeconomics for public policy, *MPP*	TA for Prof. X. Ragot, P. Andrade	*Spr. 2016*
Public Economics, *MPP*	TA for Prof. Mark Stabile	*Fall 2015*
Quantitative Analysis, *MPP*	TA for Prof. M. Foucault	*Fall 2015*

Awards, Scholarships, and Grants

Stevanovich Fellowship Award	*2024*
Frank H. Knight Fellowship Award	*2024-2025*
3-Minutes Thesis Competition, Finalist	*2024*
University of Chicago, Social Sciences Division, Graduate Fellowship,	*2019-2024*
University of Chicago MAPSS Merit Scholarship	*2018*
Sciences Po, Prize for the Best Master Thesis in Economics	*2016*
École Polytechnique, Prize for the Research Internship	*2015*

Research Experience

Research Assistant, University of Chicago
Prof. Mikhail Golosov — *2019–2021*

Research Assistant (ponctual), University of Chicago
Prof. Greg Kaplan, Prof. Robert Lucas, Prof. Kilian Huber — *resp. 2019, 2020, 2023*

Research Intern, Université Paris Diderot
Prof Y. Achdou — *2018*

Research Intern, Banque de France, International Macro Division & Forecasting
Prof F. Pappadà and Y. Zylberberg — *2015*

Academic Experience

Conferences

2025: (i) Harvard, International Climate Policy Conf., *Boston*, (ii) Stanford, Political Economics of Environmental Sustainability Conf., *Doerr School, Palo Alto*, (iii) NBER, Energy Markets, Decarbonization, and Trade Conf., *Boston*

2024: (i) NBER SI Macro-Public Finance, *Boston*, (ii) EEA-ESEM, *European Economic Association, Rotterdam*, (iii) Society of Economic Dynamics (SED), *Barcelona*, (iv) Dynamic Quantitative Trade – JIE special Conference, *UWisconsin, Madison*, (v) PUC Alumni Conference, *PUC Chile, Santiago*, (vi) Yiran Fan Memorial Conference, *UChicago*, (vii) 49th Annual Conference, *Eastern Economic Association, Boston*

2023: Economic & Environmental Consequences of Climate Change, *IMSI UChicago*, HEC Economics PhD Conference, *HEC, Paris Area*

2018: Macroeconomic Implications of Micro Heterogeneity, *OFCE, Paris*

Note: only presentations of solo/junior projects

Presentations

2023-2024: Young Scholars Webinar on Climate Economics, *E-axes Forum*
EPIC Lunch Seminar, MFR Summer Session for Young Scholar (poster), Climate Frontiers: Energy and Climate (poster), *UChicago*
2020-2024: PhD workshops (Macro, Trade, Environment, Finance), *UChicago*
2017, 2023: PhD workshops, *Sciences Po*
2019: Fiscal Affairs Department, *International Monetary Fund*
2018: Workshop on MFGs, *Université Paris Diderot*
2015: DGEI Internal Seminar, *Banque de France*

Refereeing Activity

▷ *Journal of Political Economy (×2)*, ▷ *American Economic Review (×2)*
▷ *Journal of European Economic Association (×2)*, ▷ *AEJ-Microeconomics*,
▷ *Theoretical Economics*, ▷ *Journal of Political Economy, Macroeconomics*,
▷ *Journal of International Financial Markets, Institutions & Money*,
▷ *European Association of Young Economists (Conference)*
▷ *IEEE Transactions on Automatic Control (Maths)*

Seminar organization:

Student organizer of the Capital Theory Macro Workshop, UChicago *2023–2025*

Student organizer of the Advanced Macro Reading Group, UChicago *2022–2024*

Organizer of 2nd-3rd year students Macro workshop, UChicago *2019–2020*

Others student activities:

Graduate Student Liaison (GSL) – Student representative, UChicago *2023–2025*

Political Economy Club (PEC) – Social Events, UChicago *2021–2022*

Additional Information

Citizenship France

Programming Skills Julia, Matlab, Dynare, Stata, Python, R

Other interests Triathlon (Swim, Bike, Run, IM70.3 (×2)), Classical Guitar (10-year conservatory)

Languages French (Native), English (Fluent), Spanish (Intermediate), Hindi, Arabic (Beginner)

Updated: February 15, 2025