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Fields: Macroeconomics, Econometrics, Finance

Citizenship: United Kingdom

EDUCATION

2025 (*exp*) **New York University**, Ph.D., Economics
Dissertation: Essays in Macroeconomics

2019 **King's College London**, Grad. Dip., Mathematics (Distinction)

2016 **London School of Economics & Pol. Science**, M.Sc., Economics (Distinction)

2012 **University College London**, B.Sc., Economics

REFERENCES

Professor Thomas J. Sargent
19 West 4th Street, 6th floor
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Professor Simon Gilchrist
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Professor Jaroslav Borovička
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Professor Juan F. Rubio-Ramirez
Emory University, Rich Memorial Building
Atlanta, Georgia 30322-2240
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AWARDS AND SCHOLARSHIPS

2020-2024 Henry M. McCracken Scholarship – New York University

WORKING PAPERS

1. **Estimation of Heterogeneous Economies with Micro Data (with M. C. Iao)** (Job Market Paper).

We give sufficient conditions under which dynamic equilibrium models with heterogeneous agents can be represented by a first-order reduced-rank vector autoregression. We exploit this result to develop an econometric framework that enables the rapid estimation of a rich class of models with macro and repeated cross-sections of micro data. In monte-carlo simulations, we show that including micro-data delivers precision up to an order of magnitude larger than conventional approaches. We apply our method to estimate a medium-scale HANK model with heterogeneous exposures to aggregate fluctuations at the household-level. Our estimates imply that poorer households are more sensitive to changes in aggregate income on average, and that this sensitivity is heightened conditional on a monetary policy shock. Through the lens of the model, our method estimates that heterogeneous earnings exposures amplify the consumption response to monetary policy shocks by 40%, substantially larger than those implied by traditional estimation methods.

2. **Dynamic Mode Decompositions and Vector Autoregressions (with Prof. T. J. Sargent)**

Sufficient conditions on state-space matrices A , C , G , R allow inferring them from a reduced-rank first-order vector autoregression (VAR) that can be computed with a Dynamic Mode Decomposition (DMD), thereby connecting DMD modes to hidden Markov states in the state-space system. When these sufficient conditions hold, our technique provides a fast way to infer parameters of the linear state space system. An application infers two macro-economic aggregate factors from dynamics of CEX cross sections.

3. **Linearizing Stochastic systems with the Koopman Operator**

This paper provides an alternative computationally-efficient approach to approximate non-linear stochastic models. The novel method combines both perturbation and projection methods and draws on results from Koopman operator theory. I state convergence results and demonstrate its capabilities on a highly non-linear consumption- based asset-pricing model with external habits.

WORK IN PROGRESS

4. *Dynamic Mode Decomposition of a CEX cross-section* (with Prof. T. J. Sargent)
5. *Deep Asset Allocation* (with Prof. J. Rubio-Ramirez)
6. *Granular Identification of Vector Autoregression Models* (with H. Han, and L. Gagliardone)

PRESENTATIONS

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|------|---|
| 2024 | Society for Economic Dynamics, Barcelona; NYU internal seminars |
| 2023 | NYU internal seminars (Econometrics, Student Macro Lunch) |
| 2022 | NYU internal seminars (Econometrics, Student Macro Lunch) |

RESEARCH EXPERIENCE

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|------------------|--|
| <i>2020-2025</i> | Prof. T. J. Sargent – New York University |
| <i>2022-2023</i> | Prof. Thomas Philippon – New York University |
| <i>2022-2023</i> | Prof. T. M. Christensen – New York University |
| <i>2021</i> | Profs. T. J. Sargent and L. P. Hansen – New York University |

TEACHING EXPERIENCE

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|---------------------|--|
| <i>Fall, 2024</i> | Intermediate Macro – New York University <i>TA for Prof. G. McIntyre</i> |
| <i>Summer, 2023</i> | Foundation of Finance (MBA) – NYU Stern <i>TA for Prof. A. Lynch</i> |
| <i>Spring, 2022</i> | Econometrics II (Ph.D.) – New York University <i>TA for Prof. T. Cogley and R. Crump</i> |
| <i>Summer, 2022</i> | Foundations of Finance (MBA) – NYU Stern <i>Prof. A. Lynch</i> |

WORK EXPERIENCE

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| <i>2017-2019</i> | Bank of England – External Monetary Policy Committee Unit |
| <i>2016-2017</i> | Fulcrum Asset Management – Research Economist |
| <i>2012-2015</i> | HSBC Bank, PLC – Global Asset Allocation strategist |

PROFESSIONAL SERVICE

Referee: Journal of Econometrics; Young Economists' Symposium