

YATHEESAN J. SELVAKUMAR

www.yjselvakumar.com

Address: New York University, Department of Economics
19 West 4th Street, 6th floor, New York, NY 10012-1119

Contact: y4d.s@nyu.edu (646) 750-8713

Placement Director: Jaroslav Borovička jaroslav.borovicka@nyu.edu (212) 998-8963

Graduate Administrator: Ian Johnson ian.johnson@nyu.edu (212) 998-8901

Fields: Macroeconomics, Econometrics, Finance

Citizenship: United Kingdom

EDUCATION

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

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
New York, NY 10012-1119
(212) 998-3548
thomas.sargent@nyu.edu

Professor Simon Gilchrist
19 West 4th Street, 6th floor
New York, NY 10012-1119
(212) 998-9770
simon.gilchrist@nyu.edu

Professor Jaroslav Borovička
19 West 4th Street, 6th floor
New York, NY 10012-1119
(212) 998-8963
jaroslav.borovicka@nyu.edu

Professor Juan F. Rubio-Ramirez
Emory University, Rich Memorial Building
Atlanta, Georgia 30322-2240
404-727-6464
jrubior @emory.edu

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 evolutions of both macro and large cross-section data. In monte-carlo simulations, we show that our method using the entire cross-section delivers precision up to an order of magnitude larger than the conventional approaches. We apply our method to estimate a medium-scale HANK model with heterogeneous exposures to aggregate fluctuations. Our estimates imply that poorer households are more sensitive to aggregate fluctuations on average, but the converse is true conditional on a monetary policy shock. Through the lens of the model, we estimate that heterogeneous earnings exposures amplify the consumption response to monetary policy shocks by 40% and the output response by 20%.

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 ASSISTANT 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