YATHEESAN J. SELVAKUMAR

www.yjselvakumar.github.io

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

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

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

TEACHING EXPERIENCE

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

WORK EXPERIENCE

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

PROFESSIONAL SERVICE

Referee: Journal of Econometrics; Young Economists' Symposium