Shu Hu

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Research Interests

Computational economics; heterogeneous-agent macroeconomics; wealth and consumption inequality; household finance; distributional dynamics; economic networks.

Research

Job market paper

Consumption and Wealth Tails in Heterogeneous-Agent Models: The Pareto Trap
In standard income-fluctuation models, the conditions that generate a Pareto tail for the stationary wealth distribution also force the stationary consumption distribution to inherit that tail, so a consumption tail index, if one exists, cannot exceed the wealth tail index.
Accepted, Econometric Society Australasian Meeting 2026, Adelaide, November 2026.
virtual.oxfordabstracts.com/event/77845/submission/381

Refereed publication

- Batista, Q., Coleman, C., Furusawa, Y., **Hu, S.**, et al. "QuantEcon.py: A community based Python library for quantitative economics." *Journal of Open Source Software*, 9(93), 5585, 2024. doi:10.21105/joss.05585

Working paper

- **Hu, S.** and Fujiwara, Y. *What Does the Topology of Commodity Return Paths Measure? Validity, Interpretation, and Predictive Boundaries*, 2026.

Work in progress

- **Hu, S.** *Empirical Tails of Household Consumption and Wealth.* Household microdata from Australia (HILDA), China (CHIP) and the euro area (HFCS).
- **Hu, S.** and Stachurski, J. *Convex Liquidation Costs and Consumption–Wealth Tail Gaps.* Provisional title.
- **Hu, S.** and Stachurski, J. *Wealth-in-Utility Preferences and Consumption–Wealth Tail Gaps.* Provisional title.
- **Hu, S.**, Fujiwara, Y. and Escolar, E.G. *Null Models for Label Enrichment in Representative Persistent Cycles.*

Earlier research

- **Hu, S.** *Aggregate Shocks and Wealth Inequality Dynamics in a Random Growth Model.* Master's thesis, 2020; supervised by John Stachurski.
- **Hu, S.** *Stationary Firm Distributions with Entry and Exit: A Pareto-Tail Conjecture and Numerical Evidence.* Master's research note, 2019; supervised by John Stachurski.

Presentations

- Econometric Society Australasian Meeting, Adelaide — Nov 2026 (accepted)
- Thesis oral presentation, *Pareto Tails of Consumption and Wealth*, ANU — May 2026

- 39th PhD Conference in Economics and Business, UNSW — earlier version of the job market paper Nov 2025
- *Top Inequality of Wealth and Consumption in Heterogeneous-Agent Models*, QuantEcon Computational Economics Lunch Workshop, ANU Nov 2023
- Seven further topics presented at the QuantEcon Computational Economics Lunch Workshop and ANU CBE workshops 2022–2023

Appointments

- **Research Associate and Lead Developer**, QuantEcon Dec 2019 – present
  Principal engagement 2020–21; project-based since, alongside doctoral research.
- **Associate Lecturer / Head Tutor / Tutor**, ANU Feb 2019 – present
  Research School of Economics.
- **Research Scientist** (part-time), University of Hyogo and RIKEN Nov 2026 – Mar 2027
  Kobe, Japan.
- **Research Visit**, Kobe, Japan Jun – Jul 2026
  Hosted by the University of Hyogo; also visited RIKEN and Kobe University. Ongoing work with Emerson G. Escolar on topological data analysis of economic data.

Research Software and Open Educational Resources

- Development contributor to *QuantEcon.py*, an open-source Python library for quantitative economics, and co-author of its peer-reviewed paper.
- Led the teams developing three open computational lecture series: *Quantitative Economics with JAX*, *A First Course in Quantitative Economics with Python*, and *Continuous Time Markov Chains*.
- Contributor, acknowledged in the prefaces, to John Stachurski and Thomas J. Sargent's Cambridge University Press open textbooks *Economic Networks: Theory and Computation*, *Dynamic Programming, Vol. I: Finite States*, and *Dynamic Programming, Vol. II: General States* (forthcoming): code, exercises, solutions, mathematical development and review, and documentation.

Teaching

Australian National University, Research School of Economics 2019 – present

- 18 course-semester appointments across undergraduate, master's and PhD levels; nine as Head Tutor or Associate Lecturer.
- **Associate Lecturer / Head Tutor:** EMET8014 *Advanced Econometrics I* (S1 2024, S1 2025, S1 2026); ECON8022 *Macroeconomic Theory* (S2 2024, S2 2026); ECON6037 *Financial Economics* (S2 2025).
- **Head Tutor:** ECON8050 *Economic Growth* (S1 2026); ECON2102 *Macroeconomics 2* (S1 2025); ECON7073 *Microeconomic Analysis* (S2 2022).
- **Tutor:** ECON1102 *Macroeconomics 1* (S2 2023, S1 2024); ECON2102 *Macroeconomics 2* (S2 2025); ECON2101 *Microeconomics 2* (S2 2026); EMET7001 *Mathematical Techniques for Economic Analysis* (S1 2026); ECON1101 *Microeconomics 1* (S2 2019, S1 2020, S1 2021); ECON2009 *Labour Economics and Industrial Relations* (S1 2019).
- Student ratings for overall support of learning: 4.9/5 (ECON8050, 2026; 8 of 27 responding) and 4.7/5 (EMET8014, 2026; 7 of 22).
- Nominated for the CBE Award for Excellence in Tutoring, 2021.

Other teaching

- Teaching Assistant, *Tools for Macroeconomists* (Advanced Tools track), directed by Petr Sedláček Aug 2025
- Head Tutor, QuantEcon Summer Course in Quantitative Economics, for graduate cohorts from India and Benin Jul 2022

- Australia Awards Scholarships tutoring across ten courses (ECON7073, ECON6012, ECON8025, EMET7055, IDEC8015, IDEC8017, IDEC8029, STAT7055, COMP1730, STAT3050); in 2026 alone, nine scholars with individually tailored session packs.

Service

- Co-convenor, weekly Computational Economics Seminar and Workshop Series, ANU, with Esben Scriver Andersen, Fedor Iskhakov and John Stachurski Feb – Dec 2024
- Organiser with John Stachurski, weekly QuantEcon Computational Economics Lunch Workshop, ANU Feb 2022 – Dec 2023

Scholarships and Awards

- ANU University Research Scholarship 2021 – 2025
- ANU Higher Degree Research Fee Merit Scholarship 2021 – 2026
- ANU RSE Neil Vousden Memorial Scholarship 2019 – 2020

Skills

- **Computing:** Python (including JAX), Julia, MATLAB; Git/GitHub; Linux; LaTeX; Jupyter; high-performance computing.
- **Methods:** dynamic programming (endogenous grid method, value function iteration); Markov processes and stationary distributions; simulation and calibration; maximum-likelihood estimation; extreme-value and heavy-tail methods; topological data analysis.
- **Data:** HILDA (Australia); China Household Income Project; Household Finance and Consumption Survey (euro area); ABS DataLab (Survey of Income and Housing, Household Expenditure Survey, BLADE); Orbis.
- **Languages:** Chinese (native); English; Japanese (intermediate).

Education

- **PhD in Economics**, Australian National University Jul 2021 – 2027 (expected)
  - Thesis: *Pareto Tails of Consumption and Wealth*
  - Thesis submitted 6 November 2026; conferral expected 2027.
  - Supervisors: John Stachurski (chair), Fedor Iskhakov, Timothy Kam
- **Master of Economics**, with Commendation, ANU Jul 2019 – Jul 2020
- **Graduate Diploma of Economics**, with Commendation, ANU Jul 2018 – Jul 2019

References

John Stachurski (chair of supervisory panel)
Professor, National Graduate Institute for Policy Studies (GRIPS), Tokyo

Fedor Iskhakov
Professor of Economics, Stony Brook University; Professorial Research Fellow, Deakin University

Timothy Kam
Associate Professor, Research School of Economics, Australian National University

Referee contact details are available on request.