

Alan **Lujan**

Economics Ph.D. Candidate · The Ohio State University

5032 Baffin Bay Ln., Rockville, MD 20853

(832) 567 - 2665 | alanlujan91@gmail.com | quantmacro.org | alanlujan91 | alanlujan91

Graduate Student Workshop on Heterogeneous-Agent Macroeconomics *March 17, 2023*

National Bureau of Economic Research
1050 Massachusetts Avenue
Cambridge, MA 02138

Personal Statement

To whom it may concern,

I am a Ph.D. candidate at The Ohio State University and work under the direction of Professor Christopher Carroll (Johns Hopkins University) whom I met when he recruited me to work on the `Econ-ARK/HARK` project. I have been working with Chris and been an `Econ-ARK/HARK` collaborator for 3 years . My areas of specialization are Quantitative Macroeconomics, Computational Economics, and Household Finance. I expect to complete my Ph.D. by December of 2023.

My primary research interest is understanding the financial decisions of households and exploring how macroeconomic policies can help mitigate inequality and precarity. To achieve this, I develop quantitative models that analyze a range of questions in areas including housing and mortgage choice, portfolio choice, and household spending on children's development. I am motivated by the potential impact of my research on understanding how conditions change over the business cycle for marginalized communities.

My job market paper, "EGM^n: The Sequential Endogenous Grid Method," proposes an extension the the Endogenous Grid Method (EGM) in a multidimensional setting. The method introduces a novel way of breaking down complex problems into a sequence of simpler, smaller, and more tractable problems that can use multiple EGM steps; examples in the paper show that each decomposition of multidimensional EGM problems into a sequence of lower-dimensional EGM stages can speed up the solution by orders of magnitude. Additionally, the paper highlights the value of modern machine learning techniques for multidimensional interpolation such as the Gaussian Process Regression advocated by Simon Schideger to tackle these problems effectively.

My hope is both that my work will benefit from what I learn and that it will be reciprocally interesting to the other students and possibly even the organizers.

Reference

Christopher D. Carroll
email: ccarroll@jhu.edu

Best regards,

Alan Lujan

Attached: Curriculum Vitae

Alan Lujan **Curriculum Vitae**

CONTACT INFORMATION

Department of Economics
The Ohio State University
321 Arps Hall
1945 N. High St.
Columbus, OH 43210

Phone: (832) 567 - 2665
Email: alanlujan91@gmail.com
Web: quantmacro.org

EDUCATION

The Ohio State University, Columbus, OH

Ph.D. Economics	December 2023 (Expected)
M.A. Economics	December 2020

The University of Texas at Austin, Austin, TX

M.A. Economics	May 2017
B.S. Pure Mathematics	May 2013
B.A. Economics with Special Honors	May 2013
B.A. Government	May 2013

RESEARCH INTERESTS

Quantitative Macroeconomics, Computational Economics,
Inequality, Social Mobility, Household Finance

WORKING PAPERS

EGM^n: The Sequential Endogenous Grid Method

The software for this project is being developed as part of the Econ-ARK/HARK toolkit and can be found at alanlujan91/HARK, alanlujan91/multinterp, and alanlujan91/SequentialEGM.

Portfolio Choice and Risky Housing *with Christopher D. Carroll and Mateo Velásquez-Giraldo.*

Open source at econ-ark/PortfolioChoiceWithRiskyHousing.

Simulating Heterogeneous Portfolio Choices and Financial Market Outcomes *with Sebastian Benthall, Christopher D. Carroll, Zachary David, John Liechty, Christopher McComb, and Nicholas Skar-Gislinge.*

This project is supported by DARPA through cooperative agreement No. HR001 12220029 and can be found at sbenthall/SHARKFin.

WORK IN PROGRESS

A Practical Guide to Multivariate Interpolation on Irregular Grids

This open source project can be found at alanlujan91/multinterp and alanlujan91/HARK@map_coordinates.

Student debt and financial distress during the COVID-19 Pandemic

Fixed Point Endogenous Grid Method

Ph.D. Macroeconomics Coursework	Macro Theory 1, Macro Theory 2, Adv Macro 1, Adv Macro 2, Adv Macro 3, Adv Macro Methods, Macro Seminar, Macro Workshop, Macro Colloquium
Awards and Scholarships	**Distinguished University Fellowship**, The Ohio State University 2017-2018 and 2022-2023
	Graduate Associate Teaching Award, The Ohio State University For outstanding work as Independent Instructor May 2021
	Larry and Shelia Kantor Award, The Ohio State University In recognition of service to the graduate student population in the Department of Economics May 2021
	Economics Scholars Program for Undergraduate Research, Federal Reserve Bank of Dallas April 2013
	Surender Kumar Jain Award for Best Paper in Computational Economics, The University of Texas at Austin May 2013
Research Experience	**Google Summer of Code 2020 participant with** `Econ-Ark` Worked with Dr. Carroll (JHU Economics) and Econ-Ark team on fast solutions to heterogeneous agent structural models of economic choices.
Open Source Contributions	`github.com/econ-ark/HARK` `github.com/QuantEcon/QuantEcon.py` `github.com/sbenthall/SHARKFin`
Teaching Experience	**Independent Instructor, The Ohio State University**
	ECON 2367.02 - Current Economic Issues in the U.S. Spring 2021
	ECON 2367.02 - Current Economic Issues in the U.S. Fall 2020
	ECON 2002.01 - Principles of Macroeconomics Summer 2020
	Recitation Leader, The Ohio State University
	ECON 8732 - (PhD) Econometrics II Spring 2019
	ECON 2001.01 - Principles of Microeconomics Fall 2018
Service to University	**Graduate Student Representative, Diversity Equity and Inclusion** Committee, Department of Economics Fall 2020 - Current
	Delegate, Council of Graduate Students The Ohio State University Fall 2020 - Spring 2022
	President, Economics Graduate Student Society Fall 2018 - Spring 2020
Additional Information	**Computer Skills:** Python, R **Languages:** English (fluent), Spanish (native) **Citizenship:** Mexican citizen, US permanent resident. **Work Authorization:** Authorized to work for any US employer (no sponsorship required).