Maryam Mazrooie

Ph.D. Candidate in Economics

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Education

Syracuse University, Maxwell School of Citizenship and Public Affairs 2022–Present

Ph.D. in Economics (expected May 2027)

- *STEM-Designated:* Econometrics and Quantitative Economics
- *Dissertation Committee:* Dr. Jan Ondrich (Chair), Dr. Gary V. Engelhardt, Dr. Maria B. Zhu, Dr. Chihwa Kao

M.A. in Economics 2023

- Earned en route to the Ph.D. in Economics

Institute for Management and Planning Studies 2018

M.S. in Socio-Economic System Engineering

Azad University 2013

B.S. in Industrial Engineering

Research Fields

Applied Econometrics; Computational Econometrics; Generalized Linear Modeling

Job Market Paper

"Catastrophic Rounding in the Mixed Multiple-Spell Proportional Hazard Model: The Case of Employment for Younger Women"

This paper studies the computational reliability of likelihood-based estimation in multiple-spell, interval-censored duration models. Using employment histories of younger women from NLSY97, I estimate Prentice–Gloeckler–Meyer models that allow for woman-specific unobserved heterogeneity through gamma frailty and Heckman–Singer finite mixtures. A central computational challenge is that the multiple-spell gamma-frailty likelihood contains alternating-sign terms that can suffer severe finite-precision cancellation, so apparent optimizer convergence need not imply convergence to a stationary point of the accurately evaluated likelihood. I develop and implement more stable likelihood-evaluation procedures and use them to examine how numerical treatment affects estimation and model assessment. The empirical analysis also compares a flexible duration-indicator baseline with a spell-stratified restricted cubic spline specification and evaluates alternative finite-mixture representations of unobserved heterogeneity.

Working Papers

"Specification Tests for Women's Employment Duration: Can One Model Fit All Family Structures?"

This paper examines whether a common employment-duration model provides an adequate specification for the same woman as her family circumstances change. Using NLSY97 employment histories, I evaluate model adequacy across four family structures defined by partner and child status. I construct Martingale and deviance residuals and use the Skillings–Mack test to assess whether residual behavior differs systematically across family situations within women; I also use the Pesaran CD test to examine remaining dependence in the residuals. The analysis compares models without unobserved heterogeneity with gamma-frailty and Heckman–Singer finite-mixture specifications and allows duration dependence to vary flexibly across employment spells. The paper uses these diagnostics to study whether richer treatments of heterogeneity and duration dependence are sufficient to provide a common specification across changing family circumstances.

Work in Progress

"Spell-Varying Unobserved Heterogeneity in Multiple-Spell Duration Models"
This project examines whether unobserved heterogeneity in multiple-spell duration models should be allowed to vary with spell order rather than remaining fixed across all employment spells for an individual. The analysis studies the interaction between flexible duration dependence and flexible heterogeneity and considers how these alternative specifications affect model fit and interpretation in repeated-spell duration data.

Research Experience

Graduate Research Associate, Center for Policy Research, Syracuse University September 2025–Present

- Participate in research seminars, presentations, and interdisciplinary research activities at the Center for Policy Research.
- Present dissertation research in CPR research events.

Doctoral Researcher, Department of Economics, Syracuse University 2022–Present

- Developed and implemented likelihood-based estimation procedures for multiple-spell, interval-censored hazard models.
- Developed numerically stable computational procedures to address overflow, underflow, and finite-precision cancellation in likelihood evaluation.
- Modeled unobserved heterogeneity using gamma-distributed frailty and Heckman–Singer finite-mixture specifications.
- Developed residual-based diagnostic procedures for assessing model adequacy and residual dependence in longitudinal employment data.
- Conducted maximum-likelihood estimation and computational diagnostics using GAUSS, Python, and Stata.
- Constructed an NLSY97 employment-spell panel containing 2,220 women and 7,761 employment spells.

Teaching Experiences

Instructor, Introductory Macroeconomics, Syracuse University Summer Session II 2026

Sole instructor of record for a fully asynchronous online course serving approximately 25 undergraduate students.

Teaching Assistant, Syracuse University

- Introduction to Microeconomics Spring 2024, Fall 2024, Spring 2025, and Fall 2026
- Economics of Education Spring 2026
- Economic Development of Africa Fall 2024 and Spring 2025
- Labor Economics Fall 2023
- Environmental and Resource Economics Fall 2023
- Mathematical Economics Fall 2022 and Spring 2023

Conference Presentations

CPR Graduate Student Poster Reception, Syracuse University April 2026

- *"Specification Testing in the Multiple-Spell Proportional Hazard Model of Female Employment"*

2026 AEA CSQIEP Economics PhD Student and Early Career Economist Mentoring Conference, Chicago, IL July 2026

Computer Skills

Programming & Statistical Software	Python, GAUSS, Stata
Statistical Modeling	Duration/Survival Analysis, Finite-Mixture Models, Maximum Likelihood Estimation, Unobserved Heterogeneity
Econometrics & Data Analysis	Longitudinal/Panel Data Analysis, Applied Econometrics, Model Diagnostics, Specification Testing

References

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