

# MINGZHE LI

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School of Economics and Management, Shihezi University

## EDUCATION

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**Shihezi University**

2024-Present

M.F., *Expected Graduation: June 2027*

**Sichuan University**

2023

B.E. in Computer Science

## RESEARCH INTERESTS

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Financial Economics, Macroeconomics

## WORKING PAPERS

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**A Theory of Portfolio Choice for Heterogeneous Investors** (June 17, 2025). *Available at SSRN 5303434*

*Abstract:* This paper proposes a continuous-time heterogeneous agent model with common noise to study portfolio choice for heterogeneous investors. When bearing common financial risk, households pay an "asset-exposure premium" (AEP) in lifetime welfare based on their wealth. The AEP effect serves as a non-monotonic third term in optimal portfolio choice. Near the borrowing constraint, the AEP effect is large and negative, overwhelming other motives and explaining limited participation. As wealth increases, the AEP effect transitions from negative to positive, intensifies in the middle-wealth range, and then gradually weakens until it disappears at the highest wealth levels, generating a hump-shaped profile of risky portfolio share. The AEP mechanism enables households to optimally respond to the risk characteristics of their portfolios. In a complete model incorporating both idiosyncratic risk and systematic risk, this mechanism explains why low wealth households exhibit underdiversification and why middle-to-high wealth households hold diversified portfolios. Furthermore, this paper introduces a steady state that accommodates arbitrary shock histories. Finally, the presence of common noise solves the degeneration problem of the wealth distribution in the continuous-time ABH framework.

## WORK IN PROGRESS

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**Deep Learning Solutions for Continuous-Time Heterogeneous Agent Models with Common Noise**

*Abstract:* This paper proposes a Physics-Informed Neural Network (PINN) framework via Julia to solve global solutions for continuous-time heterogeneous agent models with common noise. By using neural networks to approximate the value function and its derivatives, this method overcomes the curse of dimensionality in the coupled system and offers a mesh-free alternative to finite-difference methods.

## RESEARCH PROJECT

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### **Julia Implementation of Continuous-Time Heterogeneous Agent Model with a Financial Sector (2024)**

*Abstract:* Independent implementation and replication of the model in Fernández-Villaverde, J., Hurtado, S., & Nuno, G. (2023, Econometrica) using Julia.

### **Open-Source Contribution for Modernization of "Recursive Macroeconomic Theory" Codebase (2024) Available at GitHub Repository**

*Abstract:* This repository contains Matlab solutions and updated functions from Ljungqvist & Sargent's textbook (2018, MIT) for compatibility with Matlab 2024+.

## PERSONAL

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### **Technical Skills**

Julia, Matlab, Python, L<sup>A</sup>T<sub>E</sub>X

### **Languages**

Chinese (Native proficiency), English (Fluent)

Last updated: January 1, 2026