March 19, 2023

Yinjie Yu
Ph.D. Candidate in Economics (2nd year)
Tel: (+1)6099338857
Email: yy1457@princeton.edu
Address: Julis Romo Rabinowitz Building
20 Washington Rd, Princeton, NJ 08540

Application supported by Moritz Lenel
Email: lenel@princeton.edu

NBER HA Macroeconomics Workshop Admission Committee
1050 Massachusetts Avenue
Cambridge, Massachusetts 02138

Dear NBER HA Macroeconomics Workshop Admission Committee,

I am writing to express my interest in the Graduate Student Workshop on Heterogeneous-Agent Macroeconomics this year. As a second-year Ph.D. student in Princeton, I would have completed the course requirements for Macroeconomics by the time of the workshop. I believe I will be equipped adequately with the knowledge and experience needed to ensure an active contribution to the workshop.

For the past four years, I have been fully engaged in the study of heterogeneous-agent macroeconomics and my enthusiasm for this field remains unwavering. This workshop provides great chances to connect with fellow students and experts from different academic institutions who are also actively involved in this area. I am eager to broaden my perspective by exploring the latest advances in methodology and topical trends. I would be grateful if you could consider granting me admission to the workshop.

Sincerely yours,

Yinjie

YINJIE YU

Tel: +(1) 6099338857 | Email: yy1457@princeton.edu

EDUCATION

Princeton University — New Jersey, US
Ph.D., Economics — Aug 2021 – Jul 2026 (expected)

- **GPA: 3.89/4.00.** Fields: Macroeconomics and Finance.
- **Macro Courses Completed:** Macroeconomic Theory I, II (first year macro); Advanced Macroeconomic Theory I, II (Grigsby: labor, Rogerson: development, Kiyotaki: leverage); Macroeconomic Perspectives on Inequality (Violante, HA models and numerical methods covered); Financial and Monetary Economics (Brunnermeier: cts time monetary macro, Lenel: discrete time, global solution methods).

National School of Development (NSD), Peking University — Beijing, China
Bachelor of Economics; Double Major: Mathematics; GPA: 3.85/4.00 — Sep 2017 – Jul 2021

School of Economics, UC Berkeley — Berkeley, US
2019 Fall Exchange Student, GPA: 4.00/4.00 — Aug 2019 – Dec 2019

School of Economics, Harvard University — Cambridge, US
2020 Spring Visiting Student, GPA: 4.00/4.00 — Jan 2020 – May 2020

SELECTED RESEARCH/WORK EXPERIENCE

Princeton University (Economics Department) Research Assistant of Prof. Moritz Lenel — Princeton, NJ
Monetary Policy, Redistribution, and Risk Premia — Dec 2021 –Dec 2022

- Wrote codes to solve and simulate the model with Julia.

Monetary Policy, Segmentation and the Term Structure — Feb 2023 –

- Solving bond pricing equations with machine learning methods.

UC Berkeley (Economics Department) Research Assistant of Prof. Benjamin Schoefer — Berkeley, CA
The Financial Channel of Wage Rigidity — Nov 2019 – Mar 2020

- Developed extensions of DMP labor market model with financial constraints and wage rigidity, derived formula for wage expressions, and simulated model with occasionally binding constraints in Dynare.

GF Securities Co., Ltd. (Industry) — Shanghai, China
Research assistant, Research Center — Jul 2020 – Sep 2020

- Sourced data, methodology and assisted research supervisor with client-requested reports
- Work includes Chinese fiscal system, growth estimate with global IO table, inflation, and industry chains.

Working Papers (URL: https://github.com/yoursilver/yoursilver.github.io/tree/master/docs**)**

- *Bounded Rationality, Financial Innovation, and Social Welfare. (2021)*
- *Re-estimate the Phillips curve in China: Shed "light" on the Phillips curve using panel data. (2019)*
- *The impact of Likin system on the market integration in Late Qing Dynasty. (In Chinese) (2019)*

ADDITIONAL INFORMATION

Programming Skills

- Proficient: Python (Machine Learning), Julia (Numerical methods), MATLAB (Dynare), Stata (Data work)
- Competent: C++, Fortran, ARCGIS, HTML and CSS

Teaching Experience

- Teaching assistant of Intermediate Macroeconomics at PKU (2020 Fall, 2021 Spring)

Statement of Purpose

I started studying macroeconomics at a time when inequality was gaining increasing attention. When I took my first Ph.D. macroeconomic course at Berkeley, the readings were about Thomas Piketty's famous book and secular stagnation, the debate on wealth tax was omnipresent. The intense public and academic exposure to these topics sparked my interest in studying the relationship between inequality and crisis, which has become a core focus of my research. After taking Professor Straub's course about inequality and debt-oriented economic issues, I began to study debt and the financial system as an important source of systematic risk that's potentially exacerbated by inequality.

I firmly believe that incorporating inequality into macroeconomics represents a significant advancement in our understanding of the economy as a complex system. In a speech at Princeton last year, Thomas Sargent "joked" that the whole point of macroeconomics is that we don't need to be bothered by heterogeneity. But I think that is apparently at the cost of leaving very important economic issues untouched. Armed with modern computational tools, we now have greater power and flexibility to study questions that used to be technically intimidating yet economically significant.

I have a good command of numerical methods for solving heterogeneous-agent macroeconomic models, including the finite difference method as well as the Sequence-Space Jacobean approach. However, I found that working with variations of the baseline model is essential to fully grasp the tools. For instance, working through the codes for the Micro-Jump-Macro-Hump paper greatly enhanced my understanding of the potential of SSJ. I believe that this workshop is an excellent opportunity to gain exposure to new and exciting practices related to these methodologies. In addition to gaining new technical skills, I am eager to connect with peers and professors to learn more about cutting-edge research in a wide range of macroeconomic topics. I believe that the insights and ideas I gain from these interactions will be invaluable in developing and refining my own research ideas.

My research interests are two-fold. Methodologically, I am interested in using machine learning tools to solve macro-finance models. Although the existing SSJ framework is excellent, it falls short in terms of its ability to address issues such as risk premiums. Therefore, I want to work on creating a portable framework that can generate global solutions approximated by neural networks. As a starter, I am experimenting with a wide range of HA models using a ML solver.

Economically, I am interested in studying the role of behavioral heterogeneity in business cycles and growth. Specifically, I aim to investigate how disbelief about investment returns contributes to over-indebtedness and how disagreement or inattention to aggregate signals can contribute to endogenous boom and bust. Recently, I have been re-investigating the housing-credit literature from the perspective of inequality and credit constraint. Combining borrowing constraints and foreclosure costs with inattention could be a potential channel of endogenous crisis. I am eager to discuss my research with peers and professors to gain further insights and perspectives, and I would be grateful for the opportunity to participate in the workshop.