March 20, 2023

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Dr. Auclert, Dr. Bardóczy, Dr. Rognlie, and Dr. Straub
National Bureau of Economic Research
1050 Massachusetts Ave.
Cambridge, MA 02138

Dear Dr. Auclert, Dr. Bardóczy, Dr. Rognlie, and Dr. Straub,

I am writing to you in the hopes of attending the NBER heterogenous agents workshop in June of 2023. Professor Cesar Sosa-Padilla shared the application with the department and encouraged us to apply.

Independently, I worked through the lectures and tutorials on Github from last year's workshop. I have a working knowledge of Python and some familiarity with using the sequence-space Jacobian toolbox, as I coded a medium-scale New Keynesian DSGE model similar to that found in Sims & Wu (2021) both as a RANK model and as a HANK model. I plan on using the toolbox for the remaining two chapters of my dissertation. The attached statement further details my motivation for attending the workshop.

My attached vitae demonstrates that I am prepared to study heterogeneous agent models. I completed multiple advanced macroeconomics classes, most of which involved various forms of modeling with value functions. I also worked with international trade and macro models, showing that I can understand and work with models outside the conventional RANK literature. My advisor, Cynthia Wu, can provide a recommendation. She can be reached at cynthia.wu@nd.edu.

I appreciate you taking the time to read through this cover letter and the attached documents. I look forward to hearing from you soon, with the hopes that I can learn more about the sequence-space Jacobian toolbox and heterogeneous agent modeling from you in June.

Sincerely,



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NBER HA Workshop: Motivation

Alex Houtz

March 20, 2023

I look forward to attending the NBER heterogeneous agents workshop for two reasons: (1) My research going forward will center around the use of heterogeneous agents and/or firms, and (2) I plan on using both Python and the sequence-space Jacobian toolbox to solve the heterogeneous models I use in that research. The workshop will better my understanding of heterogeneous models and explain the toolbox in greater depth. Below I detail my two planned projects.

The first project I am working on looks at the fiscal theory of the price level inside a heterogeneous agents framework. In the fiscal theory of the price level, prices are determined by unexpected future government surpluses or deficits. To satisfy the flow budget constraint, the Treasury must change the number of bonds sold, assuming taxes remain relatively constant. In a heterogeneous agents model, agents endogenously choose their optimal number of government bonds. My paper will look at the inflationary impacts of household portfolio choices under different shocks with endogenous government spending. I started reading John Cochrane's *The Fiscal Theory of the Price Level* at the beginning of March and working through papers by Eric Leeper over spring break.

The second project I plan to work on looks at targeted government stimulus. Local governments across the US have subsidized employment at private firms for years. The federal government subsidized employment during the COVID-19 pandemic. My paper will model government subsidies tied to employment at firms with various productivity levels and seek to determine the costs and benefits of such a policy. I have done some exploratory data analysis on the COVID policies, but this project will largely wait until I make more progress on my first project.

Alex Houtz

Economics - 3rd Year PhD Student

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Education

2021–date **University of Notre Dame**, *Ph.D.*, Economics *(in progress)*, Areas of Research: Macroeconomics with an emphasis on monetary and fiscal policy. Interested in the role heterogeneity plays in those policies.
GPA: 3.91/4.0

2020–2021 **University of Notre Dame**, *M.A.*, Economics

2016–2019 **Montana State University**, *B.S.*, Economics, *Highest Honors*
GPA: 4.0/4.0

Academic Experience

2023 - date **Research Assistant - Cynthia Wu and Benjamin Pugsley**, *University of Notre Dame*, Assisting in gathering data for yield curve projects and small business projects.

2021–2022 **Graduate Teaching Assistant**, *University of Notre Dame*, Instructor-of-record for the recitation companion section for Econometrics I and II (PhD level). Duties include preparing and teaching weekly classes, grading problem sets and quizzes, and hosting office hours. Supervising professors: Drew Creal and Marinho Bertanha.

2018–2019 **Teaching Assistant**, *Montana State University*, Taught companion recitation class for the Economic Way of Thinking (ECNS 101) and Principles of Macroeconomics. Duties included preparing weekly classes, constructing problem sets and quizzes, and grading. Supervising professors: Andrew Hill and Gregory Gilpin.

2017–2018 **Research Assistant - Isaac Swensen**, *Montana State University*, Conducting literature reviews and gathering data for an applied microeconomics project looking at domestic violence prevention programs.

Research

Preparing for Submission **A Systematic Analysis of NGDP Targeting**, Abstract: Proponents claim that if monetary policy followed an NGDP targeting rule, economic performance under shocks would improve compared to the current practice of inflation targeting. Inflation would stabilize, economic performance would stabilize, welfare would improve, and the zero lower-bound problem would be alleviated. I analyze these claims in two ways. First, I demonstrate analytically that while economic output would be more stable, inflation will be much more volatile. Then, I numerically show that welfare outcomes are shock-dependent. Lastly, I find that NGDP targeting exacerbates, rather than alleviates, the zero lower-bound problem.

In Progress **Targeted Government Spending and Heterogeneity in Firms**, Idea: Local governments across the US have subsidized employment at private firms for years. The federal government subsidized employment during the COVID-19 pandemic. This paper models government subsidies tied to employment at firms with various productivity levels and seeks to determine the costs and benefits of such a policy.

In Progress **Heterogeneity and the Fiscal Theory**, Idea: In the fiscal theory of the price level, prices are determined by unexpected future government surpluses or deficits. To satisfy the flow budget constraint, the Treasury must change the number of bonds sold, assuming taxes remain relatively constant. In a heterogeneous agents model, agents endogenously choose their optimal number of government bonds. This paper looks at the inflationary impacts of household portfolio choices under different shocks with endogenous government spending.

Awards and Fellowships

2021-2023 **Roy and Joan Laughlin Fellowship**, A fellowship that provides funds for graduate students across the University of Notre Dame.

2022 **Kaneb Center Outstanding Graduate Student Teacher Award**, This award recognizes graduate students who demonstrate excellent teaching at Notre Dame. I was nominated by Drew Creal for teaching the recitation section accompanying Econometrics I (PhD level).

PhD Field Courses

- Empirical Macro I: Identification – Christiane Baumeister
- Empirical Macro II: Non-linearities – Christiane Baumeister
- International Trade – Robert Johnson
- Numerical Methods for Structural Models – Zachary Stangebye
- Economic Development – Joseph Kaboski
- Advanced Macro: Monetary DSGE – Jeffrey Campbell
- Advanced Macro: Macro Finance and Monetary Policy – Cynthia Wu
- Micro Data for Macro Models – Benjamin Pugsley
- Advanced Macro: Climate Change – Nelson Mark
- International Macro (in progress) – Cesar Sosa-Padilla

Computer Skills

MATLAB

Stata

Python

LaTeX

Last updated: March 20, 2023