Baltimore, MD, USA, 19th of March 2023

Application for Graduate Student Workshop on Heterogeneous-Agent Macroeconomics June 12-14, 2023 – Cambridge, MA

To whom it may concern,
I am applying to the NBER Graduate Student Workshop on Heterogeneous-Agent Macroeconomics. Please find my contact details below as well as those of my supervisor, who is sponsoring this application.

Best regards,
Adrian Monninger

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Referee:

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To whom it may concern,

As a 3rd-year PhD student at Johns Hopkins University, my research examines the reciprocal relationship between macroeconomic dynamics and household behavior. For this, I am introducing household expectations into heterogeneous agent models.

I am applying to the NBER workshop to deepen my understanding of the SSJ toolbox. My main toolbox so far is HARK, which I am developing further together with my supervisor Chris Carroll and other students. Notably, my colleague Will Du and I utilized notebooks from the 2022 NBER workshop to connect HARK and SSJ. Specifically, we solve the heterogeneous agent block with HARK and compute partial equilibrium jacobians to input into SSJ to generate general equilibrium IRFs. In December 2022, I was invited for an opportunity to trial the implementation of this procedure for the research division of the ECB and showcase the merits of conjoining the two toolboxes.

In my JMP, I try to match durable and non-durable consumption dynamics over the business cycle. Here, I show empirically that household expectations of unemployment rates are a strong predictor of changes in durable expenditure. If households expect a higher risk of unemployment in the near future, they tend to delay durable good purchases until the perceived economic uncertainty subsides.

To demonstrate this concept within a model framework, I built a HA model with durable and non-durable goods à la Jeppe Druedahl (2021)[1]. My immediate objectives are threefold. Firstly, I aim to replicate the literature that durable expenditure responses are excessively large when models incorporate actual unemployment changes. Secondly, I plan to substitute perfect foresight with more realistic household expectations. Since these are sticky, the resulting responses should be smaller and align with actual data. Thirdly, I intend to reassess the impact of fiscal and monetary policies on total expenditure, by accounting for durable as well as non-durable consumption.

I anticipate that the NBER workshop will facilitate my research in several ways. Firstly, I intend to employ the SSJ toolkit to generate general equilibrium IRFs. Although I have established a workflow that links the SSJ and HARK toolboxes, a comprehensive introduction to the SSJ toolkit will bolster my confidence in interpreting my findings.

Secondly, my model features sticky household expectations of future unemployment probabilities. I wish to explore the various options within SSJ, and am particularly eager for guidance on the most appropriate method of implementation for my project.

Thirdly, having durables and non-durables provides the basis for a two-sector model. I am enthusiastic about this year's guest lectures by Marco del Negro and Donggyu Lee on modeling the production side with heterogeneous firms. I am keen to explore the feasibility and applicability of such an approach for my paper.

Thank you for considering my application.

Best regards,

Adrian Monninger

[1]Druedahl, Jeppe. 2021. "A Guide on Solving Non-convex Consumption-Saving Models." Computational Economics 58 (3): 747–75.

Adrian Monninger

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Research Interests

Heterogeneous Agent Macroeconomics, Computational Economics, Inequality

Education

- **Johns Hopkins University** — Baltimore, MD, USA
  PhD Candidate in Economics — *09/2020 - present*
  - **Thesis Advisor**: Christopher D. Carroll
  - **JMP**: Durable Expenditure, Heterogeneous Households, and Unemployment Expectations
  - **T. Rowe Price Fellow (2021-22)**: awarded to a particularly promising first-year or second-year doctoral student
- **University of Göttingen** — Göttingen, Germany
  M.A. International Economics — *10/2016 - 08/2018*
  - **Focus**: Quantitative Methods
  - **Thesis**: Differences in Aid Allocation Motives of Bilateral, Multilateral, and NGO aid
- **University of Groningen** — Groningen, Netherlands
  M.Sc. International Economics and Business — *09/2017 - 08/2018*
  - **Focus**: Globalization and Development
  - **Honours College, Groningen**:
  - **PROMOS**: Scholarship of the German Academic Exchange Service (DAAD) (2017/2018)
- **University of Heidelberg** — Heidelberg, Germany
  B.Sc. Economics — *10/2013 - 09/2016*
  - **Thesis**: Keynes' Bancor plan
  - **Erasmus**: Universitetet I Bergen (Bergen, Norway: 08/2015 - 12/2015)
  - **Erasmus+**: Scholarship (2015)

Experience

- **Johns Hopkins University** — Baltimore, MD, USA
  Research Assistant for Christopher D. Carroll — *06/2022 - present*
  - Heterogenous Agents Resources & toolKit (HARK)
  - Developing solution methods for models with heterogeneous agents in Python
  - Updating Documentation of econ-ark.org using Sphinx
- **European Central Bank** — Frankfurt a.M., Germany
  External Consultant: Department General Research — *11/2022 - 12/2022*
  - Combining HARK with Sequence Space Jacobian Toolbox to solve a HANK model
  - Hands-on Introduction and Presentation of Usage
- **Deutsche Bundesbank (German Central Bank)** — Frankfurt a.M., Germany
  Visiting Researcher at the Research Centre of the Deutsche Bundesbank — *11/2019 - 08/2020*
  - Analysing Microdata (Panel of Household Finance)
  - Conducting own research projects on heterogeneous households
  - Assisting Research on Household Finance

- **European Central Bank** — Frankfurt a.M., Germany
  Traineeship: Department General Research — *09/2018 - 08/2019*
  - Analysing Microdata (Household Finance and Consumption Survey)
  - Writing and Presenting own Working Paper
  - Research Assistance for: J. Slacalek, O. Tristani, G. Violante (2020): Household Balance Sheet Channels of Monetary Policy: A Back of the Envelope Calculation for the Euro Area
- **Georg-August Universität Göttingen** — Göttingen, Germany
  Student Research Assistant: Globalization and Development (GLAD) — *05/2017 - 03/2018*
  - Identifying literature related to humanitarian aid and global health
  - Collecting/Cleaning data of national accounts and geo-coded data
  - Research Assistance for: C. Bommer, A. Dreher, M. Perez-Alvarez (2022): Home bias in humanitarian aid: The role of regional favoritism in the allocation of international disaster relief
- **Statistisches Bundesamt (Federal Statistical Office)** — Wiesbaden, Germany
  Internship: Department of Population, Finance and Taxes — *01/2016 - 03/2016*
  - Comparing different population prediction scenarios
  - Identifying literature and research methods for a big data project

Work in Progress

- Durable Expenditure, Heterogeneous Households, and Unemployment Expectations
- Equity Premium Puzzle, Expectations and Covid-19: Evidence from Germany

Publications

- Culture and Portfolios: Trust, Precautionary Savings and Home Ownership- with Johannes Fleck (ECB WPS No 2457)

Presentations

- Cultural Economics and Finance Conference 2020 (6/2020, Trier, Germany, Virtual)
- ECB Household Finance and Consumption Network (03/2020, Frankfurt a.M, Germany)
- Society for Economic Measurement Conference (08/2019, Frankfurt a.M, Germany)
- ECB workshop on Household Economics (05/2019, Frankfurt a.M, Germany)

Languages & Skills

- **Languages:** German (native), English (fluent, IELTS certificate 8.0), Dutch (Level: B1), Spanish (basics)
- **Statistics:** Python, STATA, R, Matlab (advanced), SAS, EViews (beginner)
- **Text Processing:** Latex, Microsoft Office (advanced)

Courses in Macroeconomics

- **Asset Pricing**
  Johns Hopkins University: Greg Duffee *1/2023 - 5/2023*
  - Asset Pricing Theory Models in Theory and Empirical Research
  - CAPM, Beta Pricing, Consumption-based Models, Intermediary Asset Pricing
- **Advanced Macroeconomic Theory II** Grade: A
  Johns Hopkins University: Christopher D. Carroll *1/2022 - 5/2022*
  - Heterogeneous Agent Modelling using HARK (Python)
  - Replication of Druedahl, J. (2021). A guide on solving non-convex consumption-saving models.
- **Inernational Monetary Economics** Grade: A-
  Johns Hopkins University: Olivier Jeanne *1/2022 - 5/2022*
  - Core facts and models of open-economy macroeconomics
  - Presentation on HANK in a small open economy
- **Advanced Macroeconomic Theory I** Grade: A
  Johns Hopkins University: Lawrence Ball *8/2021 - 12/2021*
  - Theory and Empirics on Inflation and Government debt
  - Presentation on Measuring Aggregate Effects of Fiscal Policy
- **Macroeconomic Theory I** Grade: A
  Johns Hopkins University: Olivier Jeanne *1/2021 - 5/2021*
  - RBC and New Keynesian Models
  - Labor market models
- **Macroeconomic Theory I** Grade: A
  Johns Hopkins University: Christopher D. Carroll *8/2020 - 12/2020*
  - Consumption Savings Model
  - Asset Pricing, Investment, and Growth Models