Application: NBER Workshop on Heterogeneous-Agent Macroeconomics 2023

Sean Lavender

14th March 2023

Dear Organisers,

I am writing to apply to the 2023 NBER Workshop on Heterogeneous-Agent Macroeconomics. Please see attached my application materials, including my CV and a brief summary of my motivation and research interests.

I graduated from the MPhil in Economic Research in 2022 and am currently a PhD student at the University of Cambridge. As the Cambridge PhD follows a 1 + 3 structure, the MPhil course is equivalent to the first year of a US PhD. At the time of the workshop, I will therefore have completed the equivalent of the first two years of PhD studies.

My contact details are as follows:

Sean Lavender
Flat 2 Herrick House
Trinity Hall Wychfield Site
Cambridge
CB3 0DZ
Telephone: +44(0)7415406283
Email: sbl33@cam.ac.uk .

My PhD supervisor, Florin Bilbiie, would be happy to provide a recommendation. His contact details are:

Professor Florin Bilbiie
Faculty of Economics
University of Cambridge
Cambridge
CB3 9DD
Email: florin.bilbiie@gmail.com .

Many thanks for your consideration.

Yours faithfully,

Sean Lavender

SEAN LAVENDER

+44(0)7415406283 ◇ Trinity Hall, University of Cambridge, UK
sbl33@cam.ac.uk

EDUCATION

PhD Economics, University of Cambridge — Oct 2022 -

- Supervised by Prof. Florin Bilbiie.
- Research Interests: Monetary Economics, Heterogeneous-Agent models.
  - First-Year Project: *Sovereign Risk and Long-Term Government Debt in a Tractable Heterogeneous-Agent New Keynesian Model.*
- **Macroeconomics Courses**:
  - Inequality and Macroeconomic Fluctuations and Policies in THANK (Instructor: Florin Bilbiie).
    - Topics: Tractable HANK models, including optimal policy and extensions with capital investment.
  - Computational Methods for Macroeconomics (Instructor: Elisa Faraglia).
    - Topics: Global solution methods (value function iteration, policy function iteration, PEA) and heterogeneous-agent models (including Krusell-Smith algorithm).
  - Firms and Sectors in the Macroeconomy (Instructor: Vasco Carvalho).
    - Topics: Production networks and firm dynamics.

MPhil Economic Research (Distinction), University of Cambridge — Sep 2021 - Aug 2022
The PhD follows a 1+3 format such that the MRes is equivalent to the first year of the PhD.

- Ranked 1st in cohort for overall performance (82.6), final examinations (84.3), and mid-term examinations (81.6).
- Achieved distinction for all papers.
  - Microeconomics I (86), Microeconomics II (93), Advanced Macroeconomics I (90), Advanced Macroeconomics II (80), Applied Macroeconomics (77), Advanced Econometric Methods (78), Time Series Econometrics (83).
- **Macroeconomics Courses**:
  - Advanced Macroeconomics I (Instructors: Tiago Cavalcanti, Giancarlo Corsetti).
    - Topics: Real Business Cycle models, Representative-Agent New Keynesian model, dynamic programming, Ramsey growth model, solution methods for DSGE models.
  - Advanced Macroeconomics II (Instructor: Rhys Bidder).
    - Topics: Heterogeneous household and firm models (including Aiyagari, Krusell-Smith, and Hopenhayn).
  - Applied Macroeconomics (Instructor: Charles Brendon).
    - Topics: Monetary models and identification using Structural VARs.
- Awarded distinction for thesis entitled *An Empirical Analysis of Fiscal Dominance* (75).

BA Economics (Double First-Class Honours), University of Cambridge — Oct 2017 - Jul 2020

- Achieved first-class honours in all three parts of the Economics Tripos.
  - Part I (70.1), Part IIA (72.5), Part IIB (72.9).
- Awarded first-class honours (76) for Part IIB dissertation entitled *Political Business Cycles in Developing Countries* (supervised by Prof. Pontus Rendahl).

EXPERIENCE

Research Assistant Jan 2023 -
Faculty of Economics, University of Cambridge *Cambridge, UK*

- Research Assistant to Prof. Florin Bilbiie.
- Work related to Tractable Heterogeneous-Agent New Keynesian models.

College Supervisor Oct 2021 -
Trinity Hall, University of Cambridge *Cambridge, UK*

- Supervising final-year (Part IIB) undergraduates.
  - Macroeconomics: Macroeconomic Policy, International Finance.
  - Microeconomics: Second Best Theory, Social Cost-Benefit Analysis.

Undergraduate Admissions Interviewer Dec 2022
Trinity Hall, University of Cambridge *Cambridge, UK*

- Interviewed and assessed applicants to the Economics BA at Trinity Hall.

Research Analyst Sep 2020 - Jul 2021
Compass Lexecon *London, UK*

- Conducted economic analyses for Phase I and Phase II European Commission merger proceedings (including analysis of potential remedies), and for Article 101 follow-on damages litigation.
- Data cleaning, statistical analysis, and producing visuals for white papers used in presentations to DG COMP.

ACADEMIC AWARDS AND PRIZES

- ESRC DTP 1+3 Studentship (full funding and stipend for MPhil and PhD). Oct 2021 - Oct 2025
- Stevenson Prize for best overall performance in the MPhil Economic Research. Sep 2021
- Harcourt Prize for exceptional performance in Part IIB of the Economics Tripos. Jul 2020
- Bateman Scholarships for outstanding performance in Parts I/IIA/IIB of the Economics Tripos. 2018-2020

ADDITIONAL SKILLS

- Stata, EViews, LaTeX, Matlab, Dynare, Python.
- MS Office (including Excel).

REFERENCES

Professor Florin Bilbiie
Faculty of Economics
University of Cambridge
Cambridge
CB3 9DD
Email: florin.bilbiie@gmail.com .

Motivation and Research Interests

My principal motivation for applying to the workshop is the exciting opportunity it provides to deepen my knowledge of the HANK literature and the techniques used to compute and estimate state-of-the-art heterogeneous-agent models.

My primary area of research interest is the transmission of fiscal and monetary policy within heterogeneous-agent models. I am particularly interested in studying the interactions between fiscal and monetary policy which play a central role in HANK models. For my first PhD research project, I am investigating the implications of high government indebtedness and sovereign risk for the aggregate and distributional effects of monetary policy. To study this topic, I am initially extending the tractable HANK model developed by Bilbiie (2018; 2020) to incorporate long-term government debt which is subject to default risk. This framework is designed to capture the wealth effects of contractionary monetary policy stemming from revaluation of long-term bonds and increases in sovereign risk. Having analysed the transmission of monetary policy with high government debt levels and sovereign risk, I will then extend the tractable model to build a quantitative HANK framework. This model, featuring a larger number of agents with different asset positions, would allow me to better understand the effect of monetary policy on the wealth distribution.

Given my interests, the workshop would prove invaluable for my own research. The practical tutorials would build upon my computational skills and enable me to deploy sequence-space Jacobian methods in my own projects. This would be particularly helpful in efficiently solving and estimating a richer HANK model. As in McKay and Wolf (2022), the sequence-space methods could also be used to analyse optimal policy in the HANK model, providing insights into policy objectives against a backdrop of high government debt.

In addition, the applications covered in the lectures relate closely to my research interests. For instance, the lectures on monetary and fiscal policy would provide me with a greater insight into fiscal-monetary interactions within HANK models, including the importance of the fiscal rule for the amplification or dampening of monetary policy. This would complement my research project, where the fiscal effects of monetary policy play a central role. Similarly, lectures on open-economy HANK models would assist me in studying topics such as the cross-border spillovers of macroeconomic policy, which are particularly relevant for highly indebted emerging economies.