Motivation – HANK – Étienne Latulippe

In 2019, during my studies in the master's program at Queen's University in economics, I attended a presentation given by Adrien Auclert on his paper titled *Micro Jumps, Macro Humps: Monetary Policy and Business Cycles in an Estimated HANK Model*. I enjoyed his presentation, and it sparked my interest in the HANK literature and the role that heterogeneity could play in the transmission of monetary policy. Since then, I have completed the first-year sequence in economics at the University of British Columbia, where we studied heterogenous-agent models (Aiyagari (1994), Huggett (1993), and Krusell-Smith (1998)) with the associated numerical solution methods. In the second year (Fall 2022), I took *ECON516 Special Topics in Macroeconomics*, where we had to present a paper and its methodology. Over two lectures, I presented Auclert et al. (2021) and the associated Python Toolbox to solve models with DAGs structure. I found this approach innovative and intuitive to adapt when estimating extensions departing from the standard HANK framework. During this semester (2023), I have taken *ECON546 Monetary Theory and Policy*, where we studied price rigidities models such as various New Keynesian DSGE models. We also learned identification strategies of monetary policy shocks and the estimation of impulse response functions with local projections and SVAR models. In addition, I have taken *ECON556 International Finance*, where we explored modeling approaches explaining movements in interest rates, exchange rates, and capital flows, among others. I also took *ECON 629C Topics in Applied Econometrics II* where we learned various econometric procedures. As a requirement, we had to present two papers of our choice over two lectures. I picked Kaplan et al. (2018) and Auclert et al. (2020) to deepen my understanding of the HANK model structure and the implications of introducing agents with heterogeneous asset holdings on monetary policy transmission. I also detailed solution methods used in those papers i.e., Finite Differences in continuous time models and Sequence-Space Jacobian methods. Finally, during the summer of 2021, I attended the two-week program titled *Tool for Macroeconomists: The Essentials and Advanced* at the University of Oxford given by Wouter den Haan and Petr Sedlacek, where we studied solution methods for HA models and continuous times models among others.

These previous experiences have sparked my interest, and I wish to write my Ph.D. thesis using HANK models and expand on this literature. As potential future avenues of research, I want to investigate the heterogeneous effects of unconventional monetary policy following Sims et al. (2022). I also plan the revisit the literature on optimal inflation targets through the lens of a HANK model. Previous studies, such as Andrade et al. (2018), have overlooked the potential unequal welfare costs of inflation on households. The prediction of the optimal inflation target may differ when considering heterogeneity. This research would align with recent advances in Mckay et al. (2022) and Davila et al. (2022) on optimal monetary policy rules with heterogeneous agents. Finally, I would also like to sharpen my skills with state-of-the-art estimation techniques to solve HANK models with aggregate shocks, such as those developed by Auclert et al. (2021) or Kase et al. (2022) which used deep learning tools, to name only a few.

These summarize the reasons why participating in this workshop would be highly beneficial for my future research, and I would greatly appreciate meeting Ph.D. students who share similar research interests. Thank you for considering my application.

References

Aiyagari, S. R. (1994). Uninsured idiosyncratic risk and aggregate saving. *The Quarterly Journal of Economics*, *109*(3), 659-684.

Andrade, P., Galí, J., Le Bihan, H., & Matheron, J. (2018). *The optimal inflation target and the natural rate of interest* (No. w24328). National Bureau of Economic Research.

Auclert, A., Rognlie, M., & Straub, L. (2020). Micro Jumps, Macro Humps: Monetary Policy and Business Cycles in an Estimated HANK Model (No. w26647). National Bureau of Economic Research.

Auclert, A., Bardóczy B., Rognlie, M., Straub, L. (2021) Using the Sequence-Space Jacobian to Solve and Estimate Heterogeneous-Agent Models, Econometrica 89(5), pp. 2375–2408

Dávila, E., & Schaab, A. (2022). Optimal Monetary Policy with Heterogeneous Agents: A Timeless Ramsey Approach. Available at SSRN, 4102028.

Huggett, M. (1993). The risk-free rate in heterogeneous-agent incomplete-insurance economies. *Journal of economic Dynamics and Control*, *17*(5-6), 953-969.

Kaplan, G., Moll, B., & Violante, G. L. (2018). Monetary Policy According to HANK. *American Economic Review*, *108*(3), 697-743.

Kase, H., Melosi, L., & Rottner, M. (2022). Estimating HANK Models with Neural Networks.

McKay, A., & Wolf, C. K. (2022). Optimal policy rules in HANK. Working Paper, FRB Minneapolis.

Sims, E. R., Wu, J. C., & Zhang, J. (2022). *Unconventional Monetary Policy According to HANK* (No. w30329). National Bureau of Economic Research.

Étienne Latulippe (March, 2023)

Contact Information

University of Bristish Columbia
Vancouver School of Economics
6000 Iona Drive, V6T 1L4
Vancouver, British Columbia, Canada

Citizenship: Canada
Telephone: +1 (514) 586-2095
Email: elatulip@student.ubc.ca

Research Interests

Macroeconomics, Monetary Economics and Numerical Methods

Education

University of British Columbia, Vancouver, B.C. Canada 2021-Present

Ph.D. in Economics

- Courses taken in Macroeconomics:
  - First Year : ECON602 Macroeconomics I, ECON603 Macroeconomics II
  - Second Year: ECON516 Special Topics in Macroeconomics, ECON546 Monetary Theory and Policy, ECON556 International Finance

University of Montreal, Montreal, Quebec Canada 2021

Ph.D. Coursework in Economics

Queen's University, Kingston, Ontario Canada 2020

M.A. in Economics : 4.2/4.3

- Thesis : *Parameter Variability, Learning and Inflation Targeting*

University of Ottawa, Ottawa, Ontario Canada 2019

Undergraduate Coursework in Mathematics : 10/10

University of Montreal, Montreal, Quebec Canada 2018

B.Sc in Economics (Honours) : 4.16/4.3

Teaching Experience

University of British Columbia, Vancouver, B.C. Canada
Teaching Assistant
ECON 356: Introduction to International Finance, undergraduate 2022-Winter 2023

Queen's University, Kingston, Ontario Canada
Teaching Assistant
ECON 348: Law and Economics, undergraduate Winter 2020
ECON 262: Labour Markets and Gender Differences, undergraduate Fall 2019

Research and Other Experience

University of British Columbia, Vancouver, B.C. Canada 2022-Present
Research Assistant for Giovanni Galipolli

University of Montreal, Montreal, Quebec Canada 2019-2020
Research Assistant for Vasia Panousi

Bank of Canada, Ottawa, Ontario Canada 2018-2019
Research Assistant, Commodities Division

Hydro-Quebec, Montreal, Quebec Canada — Summer 2017
Intern, Demand Forecasting Division

United States Consulate General, Montreal, Quebec Canada — Summer 2016
Intern, Economic and Political Section

Honors and Awards

Scarthingmoor MA Prize in Economics, Queen's University 2020
Joseph-Armand Bombardier CGS - Master, Queen's University 2019-2020
Master Tri-Agency Recipient Recognition Award (TARRA), Queen's University 2019
Alma Mater Scholarship (declined), University of Montreal 2018
SAE Excellence Award (Student Services), University of Montreal 2018

Computer Skills

- Statistical Packages: Stata
- Languages: MATLAB, Dynare, Python, Julia
- Applications: LaTeX, common Windows database, spreadsheet, and presentation softwares

Languages

French (Native), English (Fluent)

Cover Letter – HANK – Étienne Latulippe

Since the Fall of 2021, I have been enrolled in the doctoral program in economics at the University of British Columbia. At the time of the Graduate Student Workshop on Heterogenous-Agent Macroeconomics, I will be finishing my second year in the program. I have taken several courses in macroeconomics in the program so far: ECON602 Macroeconomics I, ECON603 Macroeconomics II in the first year and ECON516 Special Topics in Macroeconomics, ECON546 Monetary Theory and Policy, ECON556 International Finance in the second year. A more thorough description of the material covered in those courses is contained in my motivation letter.

Since the Fall of 2022, I have been working with Giovanni Gallipoli on a research project aimed at understanding the role of production networks in the distribution of wages across agents and if workers benefit from being employed in central firms with many connections with other firms in a particular production network. To do so, we extended a standard DMP framework with a production network component. We plan on using a German administrative dataset to estimate networks of firms with edges of workers moving from one firm to the other. We will then be able to estimate workers' benefits in terms of wages and better outside options when moving and if the skill returns vary across employers. Giovanni Gallipoli can provide a recommendation if I am shortlisted for participation to the workshop. His email address is the following: giovanni.gallipoli@ubc.ca

Before my doctoral studies, I worked with Professor Vasia Panousi to develop a Canadian census database to study spatial inequality across Canadian municipalities, using programming languages like MATLAB, Python, and Stata to collect and analyze data. This database includes socio-demographic variables of each Canadian municipality's population over the census years from 1981 to 2016. It allowed us to examine regional trends in inequality in Canada and pair the database with nightlight satellite data, serving as a proxy of regional economic activity.

Before this experience, I completed a year as a research assistant at the Bank of Canada in the International Section - Commodities Division in 2018-2019. During my stay, I participated in developing quantitative analytical models and econometric tools using Stata, Eviews, and MATLAB programs to analyze commodity markets. For example, I coauthored a staff analytical on scenarios for global electric vehicle fleet expansion and potential impacts on global crude oil demand and prices. We performed this analysis using responses obtained with a structural vector autoregression (SVAR) model I helped develop. I assembled a MATLAB database regrouping production, demand, price of global crude oil, and economic activity indicators that serve as inputs to the estimation of the SVAR model. I also supported data processing, wrote internal notes, and produced the graphs and tables in the International Section of the Monetary Policy Report. During that year, I also completed two courses in mathematics at the University of Ottawa.

I also carried out an internship with Hydro-Quebec, Quebec's hydroelectricity producer, in which I compiled a historical database comprising variables on economic activity and production, demand, and prices of hydroelectricity in Quebec. I later computed the price elasticity of demand, income elasticity, and cross-price elasticity of electricity prices for

several industrial sectors of Quebec's economy using regression analysis. The year prior, I carried out an internship at the United States Consulate General in Montreal. As an intern, I monitored and researched the main economic and political developments between the United States and Quebec. I worked closely with U.S. diplomats to write reports on topical political and economic issues.

In 2018, I completed a bachelor's degree with honors in economics at the University of Montreal and a Master of Arts (M.A) in economics at Queen's University with cumulative averages of 4.16/4.3 (3.87/4) and 4.2/4.3 (3.91/4), respectively. I was formally introduced to research as I wrote my M.A. essay in macroeconomics titled "*Parameter Variability, Learning and Inflation Targeting*," under the supervision of Professor Gregor S. Smith. The essay investigated the parameter values' learning process, which composes the central bank's Phillips curve equation. I observed that central banks would act more cautiously when deciding on their monetary policy stances in the presence of parameter uncertainty. I received the Joseph-Armand Bombardier Canada Graduate Scholarship from the Canadian Social Sciences and Humanities Research Council (SSRCH) while studying at Queen's University.

Thank you for considering my application.

Best regards,

Étienne Latulippe

Contact Information

University of British Columbia, Vancouver School of Economics, 6000 Iona Drive, V6T 1L4, Vancouver, British Columbia, Canada

Emails: elatulip@student.ubc.ca, etiennelatulippe@hotmail.com

Telephone: +1 (514) 586-2095