Emily Martell

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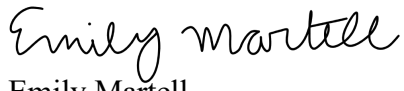
Dear workshop organizers,

I am a second-year economics PhD student at the University of California, Berkeley completing field courses in macroeconomics, environmental economics, and international economics. Since attending Berkeley, I have been a graduate student researcher for Professors Emi Nakamura and Yuriy Gorodnichenko. Previously, I was a senior research analyst at the Federal Reserve Bank of New York for President John Williams. I obtained my bachelor's degree from the College of William and Mary in 2019, where I wrote a thesis comparing two global solution methods for a fully nonlinear New Keynesian model with a zero lower bound constraint.

I have research experience with variants of New Keynesian, DSGE, and HACT models in MATLAB, Julia, and Python. Presently, I am taking a computational macroeconomics course with Professor Chen Lian that culminates with the HANK model and closely follows the material presented in last year's heterogeneous agent macro workshop. At the end of the semester, I will present a replication of McKay, Nakamura, and Steinsson (2016).

My goal is to become an academic economist working on macroeconomics and monetary policy, and their intersection with environmental economics. I hope you will consider me a strong applicant for the 2023 NBER Graduate Student Workshop on Heterogeneous-Agent Macroeconomics.

Sincerely,



Emily Martell

Current research interests

I am interested in the macroeconomic effects of environmental policies and how macroeconomic policies should take climate and environmental considerations into account. For example, economists have called for a carbon tax for several decades, but the recently passed Inflation Reduction Act (IRA) is predominantly subsidies and loans. Acemoglu et al. (2012) provides a compelling explanation in directed technical change: research subsidies can reduce future emissions by encouraging scientists to innovate more on the clean input to production (though optimally there should also be a carbon tax to control current emissions). The duration and urgency of research subsidies depends on how elastic the clean and dirty inputs to production are, and I would like to use the IRA as a setting to estimate this parameter. Additionally, Acemoglu et al. (2012) doesn't account for leakage, which is a current issue with the IRA: companies that would have innovated in Europe are planning to relocate to the US to take advantage of the policy. To what extent is the IRA reshuffling green innovation at a higher cost, rather than encouraging more innovation? Another idea I have is to use a large policy like the IRA to study the effect of green innovation on the natural rate of interest (rstar). Weak investment puts downward pressure on rstar and Olivier Blanchard has argued that green innovation may help counteract this (Blanchard, 2023).

Another of my research interests is monetary policy and inequality. For my NSF GRFP application (awarded 2021), I proposed to study inequality and the refinancing channel of monetary policy, with the idea that households with less access to credit may be unable to reap the benefits from expansionary monetary policy. I proposed to run an empirical analysis and adapt a HANK model to study this question. Berger et al. (2021) and Eichenbaum, Rebello, and Wong (2022) show monetary transmission is path dependent through the refinancing channel, but neither of these papers address inequality. I would also like to study the implications of the Fed switching to an average inflation targeting regime, which may be harder for the public to understand, as Coibion et al. (2020) demonstrated.

Motivation for attending the workshop

Macroeconomics has a high barrier to entry: successful job market candidates typically master both state-of-the-art models and empirical methods. UC Berkeley has a strong tradition in empirical work, but macro students often must individually learn models and computational methods. Professor Chen Lian's macro field course fills some of this gap, but the material is challenging and another opportunity to learn the methods would be very useful.

Heterogeneous agent models are important for my research interests. Clearly, the models are useful for questions on monetary policy and inequality, but they can also be important for the macro-environmental intersection. For example, Bilal and Rossi-Hansberg (2022) have slides looking at the social cost of local and aggregate climate risk through a spatial integrated assessment model using the master equation approach to solving heterogeneous agent models in Bilal (2021).

Summer can be an isolating time for PhD students, and we don't have many opportunities to meet students at other institutions. I was pleased to see the 2022 workshop featured a diverse set of attendees. In macroeconomics, I'm often confronted with being one of few women in the room. I believe this workshop will help me to establish a community of peers within the field.

References

Acemoglu, Daron, et al. "The environment and directed technical change." *American economic review* 102.1 (2012): 131-166.

Berger, David, et al. "Mortgage prepayment and path-dependent effects of monetary policy." *American Economic Review* 111.9 (2021): 2829-78.

Bilal, Adrien. *Solving heterogeneous agent models with the master equation*. Technical report, University of Chicago, 2021.

Blanchard, Olivier. *Fiscal policy under low interest rates*. MIT press, 2023.

Coibion, Olivier, et al. "Average inflation targeting and household expectations." (2020).

Eichenbaum, Martin, Sergio Rebelo, and Arlene Wong. "State-dependent effects of monetary policy: The refinancing channel." *American Economic Review* 112.3 (2022): 721-761.

McKay, Alisdair, Emi Nakamura, and Jón Steinsson. "The power of forward guidance revisited." *American Economic Review* 106.10 (2016): 3133-3158.

EMILY MARTELL

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Skills: MATLAB, R, Python, Stata, Julia, Linux, Git

EDUCATION

University of California, Berkeley
Economics Ph.D. program (3.56 GPA) July 2021 – present

PhD Macroeconomics courses
ECON 236B Chen Lian: Modern macroeconomic theory and quantitative methods Spring 2023
ECON 280C Maurice Obstfeld: International macroeconomics Spring 2023
ECON 236A Emi Nakamura: Empirical macroeconomics Fall 2022
ECON 202B Benjamin Schoefer (Macro labor) and Yuriy Gorodnichenko (Business cycles) Spring 2022
ECON 202A Jón Steinsson (Consumption, investment, asset pricing, financial frictions) and David Romer (Growth) Fall 2021

College of William & Mary, Williamsburg, VA August 2015 – May 2019
Bachelor of Arts: Economics major, Mathematics minor (3.98 GPA)

WORK EXPERIENCE

Graduate Student Researcher, University of California Berkeley
GSR to Professor Emi Nakamura November 2022 – present
- Collected and analyzed measures of US supply chain disruption and industry level macroeconomic data

Graduate Student Researcher, University of California Berkeley
GSR to Professor Yuriy Gorodnichenko May – August 2022
- Coded functional forms for financial stress in the consumer side of a heterogeneous-agent continuous-time model
- Obtained income and wealth summary statistics from survey data on financial stress

Senior Research Analyst, Federal Reserve Bank of New York July 2019 – July 2021
RA to President John Williams, Macroeconomic and Monetary Studies Function
- Calculated risk-neutral densities for interest rates and exchange rates from options data using global solvers
- Adapted state space of President Williams' r* models to incorporate effects of COVID-19 on US and global economies
- Constructed nonparametric models relating Treasury bill yields to the surprise component of macroeconomic releases

Summer Analyst, Federal Reserve Bank of New York June – August 2018
DSGE team under economist Marco Del Negro, Macroeconomic and Monetary Studies Function
- Generalized codes in Julia for solving heterogeneous-agent continuous-time models
- Parallelized tempered particle filter for DSGE Julia package using shared arrays

INDEPENDENT RESEARCH

Senior Thesis August 2018 – May 2019
Comparison of Global Solution Methods to a Zero Lower Bound Model
Professor Nathaniel Throckmorton, William & Mary
- Compared performance of solution methods for fully nonlinear New Keynesian models with a ZLB constraint
- Examined impact of conditioning policy functions on whether the ZLB binds

Economics Department Student-Faculty Research Grant ($2,600) June – September 2017
Analytical and Numerical Methods for Regime-switching Monetary Policy Models
Professor Nathaniel Throckmorton, William & Mary
- Analyzed propagation of structural shocks under determinate and indeterminate monetary policy regimes
- Solved log-linearized fixed monetary regime models and nonlinear regime-switching models in Dynare and MATLAB

AWARDS AND ACTIVITIES

National Science Foundation Graduate Research Fellowship March 2021
Lord Botetourt Metal, William & Mary (given to one graduating senior) May 2019
Robert A. Barry Award, Economics Department, William & Mary (given to one graduating economics major) May 2019
Terry Glenn Scholarship, Economics Department, William & Mary October 2018
Goble Scholarship, Economics Department, William & Mary August 2017