UNIVERSITY OF CALIFORNIA, IRVINE

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December 9th, 2019

Selection Committee
National Bureau of Economic Research
1050 Massachusetts Ave.
Cambridge, MA 02138
United States

Greta Meggiorini
Department of Economics
3151 Social Sciences Plaza
Irvine, CA 92697
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Dear Members of the Selection Committee,

I am writing to apply for the Behavioral Macroeconomics Research Boot Camp. I am currently a third year Ph.D. Candidate in Economics at the University of California, Irvine.

My main research areas are Behavioral Macroeconomics and Monetary Economics. My current research focuses on models that introduce departures from rational expectations and I have worked closely with Woodford's finite horizon model, Gabaix's macroeconomic inattention model, and Angeletos and Lian's model without common knowledge.

In my application packet, I have enclosed my CV, cover letter, and a two page essay. My recommendation letter will be written and sent by Fabio Milani. I would be happy to send you additional material as needed. You can contact me by phone at (425)-375-1816 or via email at gmeggior@uci.edu. I look forward to hearing from you.

Sincerely,

Greta Meggiorini
Ph.D. Candidate
Department of Economics
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+1 (425) 375 1816
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Italian citizenship

Greta Meggiorini

Research Interests

Behavioral Macroeconomics, Monetary Economics, Bayesian Econometrics

Education

2017–present **University of California, Irvine**, *Ph.D.*, Economics.

2017–2018 **University of California, Irvine**, *M.A.*, Economics, *with distinction in Macroeconomics.*

2014–2017 **University of Padova**, *B.Sc.*, Aerospace Engineering, *110/110.*
Thesis: *"Space debris removal: optimal mission planning"*

Publication

"Bounded Rationality, Monetary Policy and Macroeconomic Stability", *with Francisco Ilabaca and Fabio Milani*, Economics Letters.
Forthcoming, 2019.

This paper estimates a Behavioral New Keynesian model to revisit the evidence that passive US monetary policy in the pre-1979 sample led to indeterminate equilibria and sunspot-driven fluctuations, while active policy after 1982, by satisfying the Taylor principle, was instrumental in restoring macroeconomic stability. The model assumes "cognitive discounting", i.e., consumers and firms pay less attention to variables further into the future. We estimate the model allowing for both determinacy and indeterminacy. The empirical results show that determinacy is preferred both before and after 1979. Even if monetary policy is found to react only mildly to inflation pre-Volcker, the substantial degrees of bounded rationality that we estimate prevent the economy from falling into indeterminacy.

Working Papers

"Behavioral New Keynesian Models: A Look through the Window".

"Behavioral New Keynesian Models: Infinite Horizon Learning vs. Cognitive Discounting", *with Fabio Milani.*

"Finite Planning Horizons, Expectations, and Learning", *with Fabio Milani.*

Ph.D. Courses

Fall 2017 **Microeconomic Theory I, Macroeconomic Theory I, Statistics and Econometrics I**.

Winter 2018 **Microeconomic Theory II, Macroeconomic Theory II, Statistics and Econometrics II**.

Spring 2018 **Microeconomic Theory III, Macroeconomic Theory III, Statistics and Econometrics III**.

Fall 2018 **Monetary Economics I, International Trade**.

Spring 2019 **Monetary Economics II, Open Economy Macroeconomics**.

Winter 2020 **Macroeconomics and Finance**, *(expected)*.

Spring 2020 **Advanced Macroeconomics I**, *(expected)*.

Experience

2017–present **Teaching Assistant**, UC Irvine.

Graduate, *Ph.D. course*, Macroeconomic Theory III, (Spring 2019).

Undergraduate, Intermediate Economics II, (Winter 2019, Spring 2018); Asymmetric Information (Fall 2018, Fall 2019); Basic Economics I (Winter 2018); Risk and Uncertainty (Fall 2017).

Fall 2020 **Ph.D. Internship**, Norges Bank.
(planned)

Seminar Presentations

recurring **Macroeconomics Workshops**, UC Irvine.

July 2019 **Padova Macro Talks**, University of Padova.

Fellowships

2017–present **Non-Resident Merit Fellowship, School of Social Sciences**, UC Irvine.

2019 **Summer Research Fellowship, Department of Economics**, UC Irvine.

Language and Computer Skills

Italian (native), English (fluent), Spanish (basic)

MATLAB, Dynare, LaTeX

Membership

2018–present **Women in Economics**, UC Irvine.

2019–present **Mentoring program for incoming Ph.D. students**, UC Irvine.

References

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Essay

Greta Meggiorini

My main research areas are Behavioral Macroeconomics and Monetary Economics. My current research focuses on departures from rational expectations and I work closely with New Keynesian models in this literature. In particular, I have worked with the finite horizon model proposed by Woodford (2018), the macroeconomic inattention model proposed by Gabaix (2019), and the model without common knowledge proposed by Angeletos and Lian (2018).

The three aforementioned behavioral models are the focus of my current working paper, "Behavioral New Keynesian Models: a look through the window". I use a rolling window approach and Bayesian methods to estimate and compare the models. I find that with regard to model fit, no model strictly outperforms the others in terms of marginal likelihood. Woodford's model, however, does perform better in most windows; the better fit reflects that this model can induce slow-moving trends in key variables, generating substantial persistence in the dynamics. When I allow for stochastic trends in key variables in Gabaix's model and Angeletos and Lian's model, the three models perform almost identically. A rolling window estimation allows me to analyze the evolution of the behavioral parameters. In the baseline models, I find that these parameters are relatively stable over time. When I allow for stochastic trends, however, these parameters vary over time. In particular, I find that in a period of high uncertainty like the 1970s, agents have higher levels of attention and common knowledge compared to any other window.

Another recent project on behavioral models resulted in a co-authored paper with Francisco Ilabaca and Fabio Milani, "Bounded Rationality, Monetary Policy, and Macroeconomic Stability," forthcoming in *Economics Letters*. This paper estimates the macroeconomic inattention model proposed by Gabaix (2019) to revisit the evidence that passive U.S. monetary policy in the pre-1979 sample led to indeterminate equilibria and sunspot-driven fluctuations, while active policy after 1982 was instrumental in restoring macroeconomic stability. The empirical results show that determinacy is preferred both before and after 1979. Even if monetary policy is found to react only mildly to inflation in the pre-Volcker era, the substantial degrees of bounded rationality that we estimate prevent the economy from falling into indeterminacy. We estimate the model by allowing for parameter values that fall in the determinacy or indeterminacy regions using the techniques proposed by Bianchi and Nicoló (2019).

In a working paper with Fabio Milani, "Behavioral New Keynesian Models: Infinite-Horizon Learning vs. Cognitive Discounting," we introduce adaptive learning in a model of macroeconomic inattention proposed by Gabaix (2019). We use infinite horizon expectations à la Preston (2005) to evaluate the importance of cognitive discounting in a model with boundedly-rational expectations. We let the model decide whether these components can coexist, or, alternatively, inattention is not as needed in a model with learning. Preliminary results show that inattention is less important than in a model with rational expectations.

In the same line of research, another preliminary working paper with Fabio Milani, "Finite Planning Horizons, Expectations, and Learning" introduces subjective expectations obtained through learning in the finite horizon model proposed by Woodford (2018). In Woodford's model, even if only for a finite horizon, there are still strong informational requirements. We relax the rational expectation assumption in the expectation formation and allow agents to learn about the relationships in the model.

Going forward, I plan to further extend my work on behavioral models. I would like to incorporate the idea proposed by Ascari et al. (2019) with a behavioral New Keynesian model similar to that proposed by Gabaix and Woodford. The typical stability result hinges on the idea that under rational expectations agents stay on the saddle path since they recognize that the economy would have explosive properties outside of it, which would not be consistent with the transversality conditions. This assumption implicitly assumes unrealistic abilities on the part of the agents. Behavioral models, however, obtain stability in a more intrinsic way through bounded rationality. I am interested to see whether the results show that behavioral features always make the economy more stable or whether the economy is still subject to unstable paths, especially during the pre-Volcker period and the Zero Lower Bound period.

Participating in this Boot Camp represents a big opportunity to learn from and exchange ideas with expert researchers in the field. I would benefit from meeting students whose focus over the past few years has been similar to mine to connect and possibly collaborate in the future. Attending the presentations at the Workshop will allow me to expand my understanding and knowledge of behavioral models and presents a valuable opportunity to get inspiration and ideas for future research and enhance my current work.

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December 9, 2019

Dear Selection Committee,

It's a pleasure to write this letter in support of **Greta Meggiorini**'s application for participation in the Behavioral Macroeconomics Boot Camp. I can recommend her highly.

Greta is an extremely promising third-year student at UC Irvine, already working in Behavioral Macroeconomics. At this stage of her Ph.D., she is comparable to, or even better than, the very best students we've had at UCI, and who went on to obtain tenure-track (and later tenured) positions in research universities in the U.S. or abroad.

I've first come to know Greta as a student in my first-year Macroeconomic Theory course, where she was the top student in the class. Since I didn't teach a field course in macro or econometrics the year after, Greta followed, instead, a couple of independent study courses with me (besides attending regular courses taught by other professors), where she went over a lot of the material that I taught in the past: she learned by herself about Bayesian estimation of DSGE models (following Herbst and Schorfheide's book, and reading many papers covering a variety of applications) and about topics in Behavioral Macroeconomics (learning, exotic preferences, rational inattention, sticky information, expectations-driven business cycles, etc.). She is also a regular participant in the reading group in Empirical Macroeconomics that we've been running for the past two years for students with an interest in DSGE models.

Since the end of her coursework, I've been serving as Greta's main dissertation advisor, with Bill Branch and Eric Swanson, also being part of the dissertation committee. Her research interests are solidly in the area of behavioral macroeconomics, both the older (deviations from rational expectations, learning) and newer waves (a lot of the new approaches covered in the workshop). At the moment, Greta has completed a single-authored paper, a co-authored paper with me and another student, she has two ongoing projects with me that should be completed soon, and she's beginning working on another challenging project on her own. Greta has been a rare student in how quick she was in sprinting off the starting blocks and into meaningful research after her first year.

In her first paper, titled "Behavioral New Keynesian Models: a Look Through the Window", Greta estimates and compares the empirical evidence for three versions of Behavioral New Keynesian models: Gabaix's model with myopia/cognitive discounting, Woodford's model with finite planning horizons, and Angeletos and Lian's model with lack of common knowledge. She estimates the three models using Bayesian methods and a rolling-window estimation, to study how the relevant behavioral parameters (as well as all other parameters) vary over the post-war sample. She finds evidence that degrees of macroeconomic attention are higher and planning horizons are shorter during the 1970s, than in the more stables decades after 1980. She was invited to present this paper at a conference in Italy last June and it was well received. The paper can be submitted to a journal in the Winter or Spring quarter.

In the paper "Bounded Rationality, Monetary Policy, and Macroeconomic Stability", coauthored with me and Francisco Ilabaca, and forthcoming in *Economics Letters*, we also estimate Gabaix's behavioral New Keynesian model, to revisit the evidence that passive monetary policy was responsible for indeterminacy and macroeconomic instability in the 1970s, while a shift to active monetary policy after Volcker restored determinacy and led to a more stable environment. The model is estimated allowing for both determinacy and indeterminacy. We confirm that monetary policy was indeed passive before 1979. But we estimate large degrees of bounded rationality, which acted to prevent the economy from falling into indeterminacy. The data prefer determinate equilibria both before and after 1979, in contrast to the accepted wisdom about postwar US monetary policy and instability.

More recently, Greta and I have started working on two other projects that merge new and old behavioral features in New Keynesian settings. In one paper, we consider the evidence in favor of cognitive discounting when agents form subjective, rather than rational, expectations, and can update their beliefs. Agents form long-horizons expectations as in Preston (2005), but they are allowed to pay less attention to developments that they expect to happen further into the future.
In the other, we assume learning in an environment where firms and consumers have finite planning horizons. In Woodford's framework, agents still have full information about the economy when forming expectations over their shortened horizon. In our paper, we allow agents to learn the parameters of the economy and we require the model to match data on survey expectations as well.

Recently, Greta has become interested in the recent AER paper by Ascari et al. (2019) and she's planning to estimate behavioral models, while allowing for temporarily unstable paths, in addition to equilibrium determinacy or indeterminacy. Unstable paths may be a feature of the data in the 1970s, even if indeterminacy is ruled out under substantial degrees of bounded rationality.

Greta has freshly been accepted in the Dissertation Internship program at the Norges Bank (one of four admitted students out of 100 applications) for Fall 2020, and she's now in the selection phase for the summer internship at the ECB. We all expect her to do extremely well in the academic job market in a couple of years.

Greta has started her research phase of the Ph.D. program very strongly. She came to UCI straight from her Bachelor in Engineering (which in Italy would imply a lot of courses in engineering, physics, math, but at most one or maybe two courses in economics). Therefore, an exposure to the best research in the field and to alternative approaches will be extremely useful for her. She is a great fit in terms of topics, as she has already been working with a subset of the behavioral models for a while. She is technically and mathematically very skilled, and she is at ease with both theory and empirical work. I'm encouraging her to be very ambitious in her choice of research problems to tackle in her dissertation. The workshop would come at the perfect time for her as she forms ideas for the next two years. She would be an ideal student to have in the program.

Therefore, I strongly recommend that you accept Greta's application for participation in the boot camp.

Best regards,



Fabio Milani
Professor of Economics
University of California, Irvine