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updated Jul 2020

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Education

Ph.D. Candidate in Economics, University of British Columbia, 2015 to present
Thesis Title: Subjective Expectation Formation: A Recurrent Neural Network Approach

M.S. University of Texas at Austin, 2015

M.A. Simon Fraser University, 2013

B.A. Fudan University, 2012

Research Fields

Primary fields: Macroeconomics, Monetary Economics, Applied Econometrics
Secondary fields: Expectation Formation, Information Acquisition, Deep Learning

Job Market Paper

Subjective Expectation Formation: A Recurrent Neural Network Approach

I propose a flexible non-parametric method using Recurrent Neural Networks (RNN) to estimate the dynamic structure of most expectation formation models in macroeconomics. This approach does not rely on restrictive assumptions of functional forms and parametric methods but nests the standard approaches of empirical studies on expectation formation. Applying this approach to data on macroeconomic expectations from the Michigan Survey of Consumers (MSC) and a rich set of signals available to U.S. households, I find qualitatively new results: (1) agents' expectations about the future economic condition have asymmetric and non-linear responses to signals; (2) agents' attentions shift from signals about the current state to signals about future: they behave as if they were adaptive learners in ordinary periods and become forward-looking as the state of economy gets worse; (3) the content of signals on economic condition, rather than the volume of these signals, plays the most important role in creating the attention-shift. My method also allows me to apply the Double Machine Learning method to assess the statistical significance of these empirical findings. Finally, I show these stylized facts can be generated by a model with rational inattention, in which information endogenously becomes more valuable when economic status gets worse.

Presentation: UBC Macro Seminar, UBC Econometrics Seminar, SCE 26th Conference (Cancelled due to covid), BoE "Modelling with Big Data & Machine Learning" Conference

Working Papers

Monetary Policy when the Phillips Curve is Locally Quite Flat

Joint with Paul Beaudry and Franck Portier, CEPR Discussion Papers No. DP15184, submitted

This papers begins by highlighting how the presence of a cost channel of monetary policy can offer new insights into the behavior of inflation when the Phillips curve is locally quite flat. For instance, we highlight a key condition whereby lax monetary policy can push the economy in a low inflation trap and we discuss how, under the same condition, standard policy rules for targeting inflation may need to be modified. In the second part of the paper we explore the empirical relevance of the conditions that give rise to these observations using US data. To this end, we present both *(i)* a wide set of estimates derived from single-equation estimation of the Phillips curve and *(ii)* estimates based on structural estimation of a full model. The results from both sets of empirical exercises strongly support the key condition we derived.

Presentation: UBC Macro Seminar, DNB 23rd Annual Research Conference (scheduled)

Uncovering Subjective Models from Survey Expectations

Expectations about different macroeconomic aspects correlate with each other. I perform a structural test in framework of noisy information model and show that individual forms their expectations on multiple macroeconomic variables jointly rather than independently, thus causing these expectations to be correlated with each other. In particular, they have a subjective model about the economy. They believe economic conditions will be worse during episode with extensive inflation news, even if there's only mild inflation, causing their average expectation on inflation to co-move with that of unemployment and business condition. To alleviate the concern of possible mis-specification of linear noisy information model, I then propose an innovative generic learning model that can cover a large class of expectation formation models, including those are standard in the literature. The effect of signals on expectational variables is estimated with Recurrent Neural Network. I found again realized inflation increase household's perceived future unemployment rate change whereas actual unemployment rate hike will lower their expected inflation. The pessimistic effect of inflation is not because of household's belief on interest rate and is particularly strong after late 1990s. These patterns call for explanations on how agents form beliefs on interactions between macroeconomic variables that are different from the actual structure of data. They also suggest Central Bank should use inflation-related expectation management policy with cautious, as such policy may induce pessimistic responses among households.

Presentation: SED Conference 2020 (rescheduled to 2021)

Work in Progress

Convergence Across Castes (*Joint with Amartya Lahiri and Viktoria Hnatkovska*)

Learning pandemics: the informational content of testing (*Joint with Davide Alonzo*)

Great Moderation on Different Frequency Bands

Teaching Experience

University of British Columbia:

Econ 323	Quantitative Economic Modeling with Data Science Applications, 2020
Econ 502	Advanced Macroeconomics (Masters), 2017-2019
Econ 556	International Finance(Masters), 2019
Econ 546	Monetary Economics (Masters),2018
Econ 302	Intermediate Macroeconomic Analysis,2017-2018
Econ 626	Econometrics Theory (PhD),2016

Research Experience

2017-2020	Research Assistant for Professor Jesse Perla, Professor Paul Schrimpf, Professor Amartya Lahiri

Honors, Scholarships and Fellowships

2017-2019	Li Tze Fong Memorial Fellowship, University of British Columbia
2015-2019	Four Year Fellowship, University of British Columbia
2016	Chuck Blackorby Prize, Vancouver School of Economics
2016	John Cragg Prize, Vancouver School of Economics
2013-2015	Department of Economics Fellowship, University of Texas at Austin
2012-2013	Departmental Fellowship, Simon Fraser University

Certificates and Other Academic Activities

Summer 2018	Tools for Macroeconomics Workshop (LSE)
Referee:	Canadian Journal of Economics

Programming Skills

STATA, Matlab, Python, TensorFlow, LATEX, Julia (Basic), R(Basic)

References

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