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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: Behavioural Macroeconomics, Monetary Economics, Deep Learning
Secondary fields: Applied Macroeconomics, Expectation Formation

Job Market Paper

Subjective Expectation Formation: A Recurrent Neural Network Approach

Households are exposed to a rich set of signals that can help them form expectations. How they make use of these signals remain a debated question among economists. Standard learning models rely on structural assumptions and parametric methods that are typically incapable to capture potential non-linear and state-dependent relationship between signals and expectations. This paper tackles the problem by proposing a generic learning model that can cover a large class of expectation formation models, including those are standard in the literature. The average structural function of this model is estimated with an innovative semi-parametric approach: Recurrent Neural Network. Average marginal effect of signals on expectational variable is estimated using Double De-biased Machine Learning estimator, together with valid inferences. Applying this approach to survey expectations for U.S. households, I find: (1) agents' perceptions about future economic condition have asymmetric and non-linear response to signals; (2)the attentions to past and future signals in the learning model are highly state-dependent, agents are adaptive learner in ordinary periods and become forward looking as state of economy gets worse; (3) both signal and exposure to news on economic condition play important role in creating the attention-shift. I then propose a model that features rational inattention to explain these patterns.

Presentation: UBC Macro Seminar, UBC Econometrics Seminar, SCE 26th Conference (Cancelled due to covid)

Working Papers

Monetary Policy when the Phillips Curve is Locally Quite Flat

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

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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