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Education

Ph.D. in Interdisciplinary Graduate Programme, Nanyang Technological University, 2020 - 2024.

B.A. (Hons) in Economics, Nanyang Technological University, 2016 - 2020.

Research Fields

Behavioural and Experimental Economics, and Experimental Finance.

Working Papers

"Cognitive Uncertainty, GPT, and Contribution in Public Goods Game", with Te Bao.

This paper establishes a connection between cognitive noise (Enke and Graeber, 2023) and the level of contribution in the public goods game. We argue that cognitive noise complements, rather than replaces, taste-based social preference to explain the contribution decision. Both correlational and causal data supports the notion that cognitive uncertainty is positively correlated with contribution in the public goods game at the aggregate level, or cognitive uncertainty led people to behave as if they are more cooperative. And the result is robust when removing strategic uncertainty. However, there is heterogeneity, where cognitive noise is negatively correlated with the contribution level of some participants at an economically significant extent. These findings suggest the significance of only considering contribution decisions that exceed a certain cognitive certainty threshold in a public goods game if they are to be taken at face value. Further, our experimental results also demonstrate that a cooperative advice from the Generative Pre-trained Transformer (hereafter referred to as "GPT") reduces cognitive uncertainty for all participants assist individual in either gaining a better understanding of their true social preference, or translating their true social preferences into contribution actions that maximize their utility as the game repeats. The impact of the advice, however, does not seem to depend on whether or not the participants are informed the advice was made by GPT.

"Reference Model Based Learning in Expectation Formation: Experimental Evidence".

How do people form expectations about future prices in financial markets? One of the dominant learning rules that explains the forecasting behavior is the Adaptive Expectation Rule (ADA), which suggests that people adjust their predictions by adapting to the most recent prediction error at a *constant* weight. However, this rule also implies that they will continually learn and adapt until the prediction error is zero, which contradicts recent experimental evidence showing that people usually stop learning long before reaching zero prediction error. A more recent learning rule — Reference Model Based Learning (RMBL) — extends and generalizes ADA, hypothesizing that: i) People apply ADA but *dynamically* adjust the adaptive coefficient with regards to the auto-correlation of the prediction error in the most recent two periods; ii) Meanwhile, they also utilize a satisficing rule so that people would only adjust their adaptive coefficient when the prediction error is higher than their anticipation. This paper utilizes a rich set of experimental data with observations of 41,490 predictions from 801 subjects from the Learning-to-Forecast Experiments (LtFEs), i.e., the experiment that has been used to study expectation formation. Our results concludes that RMBL fits better than ADA in all the experiments.

Publications

"Reading the Market? Expectation Coordination and Theory of Mind", with Te Bao, Sascha Füllbrunn, and Jichuan Zhong, *Journal of Economic Behavior & Organization*, 2024.

Suppose that all asset market traders are proficient at reading the market. Would markets become more stable, resulting in lower volatility and fewer price bubbles? To answer this question, we test whether Theory of Mind (ToM) capabilities enhance expectation coordination and reduce expectation heterogeneity and price bubbles in learning-to-forecast experiments. We compare the price and expectation dynamics between markets composed of participants with either high or low ToM capabilities as measured by the eye gaze test. Despite an economically substantial difference between the two groups, we find no statistically significant differences in the measures of expectation coordination, price bubbles, market stability, and expectation heterogeneity.

"Does Ethnic Diversity Always Undermine Pro-Social Behavior? Evidence from a Laboratory Experiment", with Te Bao and Bin Liang, *European Journal of Political Economy*, 2022.

A large body of literature concludes a negative association between ethnic diversity and pro-social behavior. Inspired by the works suggesting that the costly punishment would sustain the contribution level in public goods experiment, we compare the economic behavior of Mongolian- and Han-Chinese and investigate how ethnic diversity would affect contribution, punishment, and the marginal effect of punishment on contribution. We find that the association between ethnic diversity and pro-social behavior is not a simple negative relationship but rather depends on both cultural traits and ethnic fusion when we take punishment opportunity into consideration. Ethnic diversity may help promote contribution, alleviate the punishment level, and increase the efficiency of introducing a punishment mechanism in some circumstances.

"Expectation Formation in Finance and Macroeconomics: A Review of New Experimental Evidence", with Te Bao and Cars Hommes, *Journal of Behavioral and Experimental Finance*, 2021.

This paper reviews the recent development and new findings of the literature on learning-to-forecast experiments (LtFEs). In general, the stylized finding in the typical LtFEs, namely the rapid convergence to the rational expectations equilibrium in negative feedback markets and persistent bubbles and crashes in positive feedback markets, is a robust result against several deviations from the baseline design (e.g., number of subjects in each market, price prediction versus quantity decision, short term versus long term predictions, predicting price or returns). Recent studies also find a high level of consistency between findings from forecasting data from the laboratory and the field, and forecasting accuracy crucially depends on the complexity of the task.

Work In Progress

"Cognitive Uncertainty in Lotteries", with Te Bao.

"Wait! Present Bias is a Void", with Te Bao.

"The Die is Cast", with Te Bao and Songfa Zhong.

"More Nasty Games", with Te Bao and Ruge Zhang.

"Experimental Study on Information Acquisition", with Te Bao, Mengzhong Ma, and Yohanes Eko Riyanto.

Grants, Scholarships, Honors, and Awards

7th Lindau Meeting on Economic Sciences (Online), August 2022.

Nanyang Research Scholarship, Nanyang Technological University, 2020-2024.

Referee Service

European Journal of Political Economy (1).

Seminars and Conference Presentations

2024: 30th International Conference Computing in Economics (Singapore), 2024 ESA Asia-Pacific Meeting (Singapore), and seminar at Dongbei University of Finance and Economics (Dalian).

2023: European ESA Meeting (Exeter) and seminars at East China Normal University and Fudan University (Shanghai).

2022: Experimental Finance Asia Pacific Regional Conference (Online), 4th Behavioral Macroeconomics Workshop (Online), World Finance Conference (Online).

2021: The Chinese Economists Society 2021 Annual Conference (Online).

Teaching

Nanyang Technological University, Teaching Assistant

Spring 2023, 2024: HE5091 Principles of Economics, 92.89/100, N=40.

Fall 2022: HE1001 Microeconomics Principles, 85.83/100, N=32.

Spring 2022: HE3023 Econometric Analysis for Financial Data.

Professional Experience

Short-term Research Assistant, World Bank, 2022.

Research Assistant for Prof. Bao Te, Nanyang Technological University, 2019 - now.

Intern in Channel 8 Chinese Current Affairs, Mediacorp (Singapore), 2019.

Intern in Lianhe Zaobao Business Desk, Singapore Press Holdings (Singapore), 2018.

Personal

Singapore Citizen.

References

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