

NUS RMI Conference on Quantitative Economics and Finance: In Honour of Professor Thomas J. Sargent

Date: Monday, 6 March 2023
 Time: 10.30 am to 5.30 pm
 Venue : Seminar Room Level 1, 21 Heng Mui Keng Terrace, I³ Building, National University of Singapore, 119613

Program Agenda:

Time	Speaker	Title
10:30 – 10:50	Registration	
10:50 ~ 10:55	Prof. Yi-Chun CHEN (NUS RMI)	<i>Welcome address</i>
10:55 ~ 11:00	Prof. Danny QUAH (NUS)	<i>Opening Remarks</i>
11:00 ~ 12:00	Keynote Talk Prof. Thomas J. SARGENT (New York University)	Distributions and Aggregates in HAOK and HANK Models
12:00 ~ 12:15	Q&A Session	
12:15 ~ 14:00	<i>Lunch Break</i>	
13:00 ~ 13:45	Lunch-Time Talk Prof. Neng WANG (Columbia University)	Dynamic Agency in a Multi-Division Firm
14:00 ~ 14:45	A/P Shengxing ZHANG (Peking University HSBC Business School)	A Q-theory of Token Platforms with Search and Matching
14:45 ~ 15:30	Asst Prof. Chang LIU (NUS)	Attention to Inflation
15:30 ~ 16:00		<i>Tea break</i>
16:00 ~ 16:45	A/P Chao ZHOU (NUS)	Large Ranking Games with Diffusion Control
16:45 ~ 17:30	Prof. Yi-Chun CHEN (NUS RMI)	Distributionally Robust Auction Design
1800		<i>Conference Dinner (by invitation only)</i>

Program Details:

Title:	Dynamic agency in a multi-division firm
Speaker:	Prof. Neng WANG
Abstract:	We develop a continuous-time agency model of a two-division firm where each division manager (DM) can divert privately observed cashflows of his division for his own consumption. The firm optimally compensates each DM based on not only his division's reported cashflows but also the other division's, provided that the two divisions' cashflows are correlated. Liquidating one division not only destroys this division's going-concern value but also reduces the effectiveness of contracting for the other division, due to the loss of information extraction. The firm's contracting problem boils down to a risk-management problem where the firm chooses state-contingent cross-division hedging and payout policies for DMs while holding DMs' incentive constraints binding at all times. Firm value and hedging policies, as functions of the two DMs' continuation values, are characterized by a tractable partial differential equation and associated first-order conditions subject to 1.) smooth-pasting and super-contact conditions for endogenous payouts to DMs and 2.) the boundary condition that payoffs upon involuntary liquidation equals the value of the surviving single-division firm given in DeMarzo and Sannikov (2006). To preserve the cross-division information provision, the firm's optimal hedging policy deviates from the first-best (Holmstrom, 1982): It under-hedges when the divisions are complements and over-hedges when they are substitutes.
Title:	A Q-theory of Token Platforms with Search and Matching
Speaker:	A/P Shengxing ZHANG
Abstract:	This paper presents a novel theory on a trading platform that facilitates bilateral trade between buyers and sellers through the use of tokens issued by the platform. Specifically, the platform invests in customer capital and devises an optimal token policy, while taking into account the associated adjustment costs. The paper analyzes the trade-off between the seigniorage obtained from existing users and the demand for tokens from new users. Additionally, the theory elucidates the value of the token platform, as well as the value of active users for the platform. Overall, this study offers insights into the design of effective token policies and the factors that underpin the success of token-based trading platforms.
Title:	Attention to Inflation
Speaker:	Asst Prof. Chang LIU
Abstract:	Using a novel high-frequency city-level grain price data set in 1940s China, we examine the impact of inflation on price dispersion when inflation is very high. We provide robust evidence that in this high-inflation environment, city-level grain prices converged faster to the national average as the inflation rate climbed up. As such, price dispersion decreased with inflation. This novel finding is illustrated in a pricing model with state-dependent "attention to inflation": agents pay more attention to overall prices when inflation is higher, altering the relationship between price dispersion and inflation. The strong comovement between newspaper coverage of prices and inflation itself lends support to our attention theory

Title: Large Ranking Games with Diffusion Control
Speaker: **A/P Chao ZHOU**
Abstract: We consider a symmetric stochastic differential game where each player can control the diffusion intensity of an individual dynamic state process, and the players whose states at a deterministic finite time horizon are among the best of all states receive a fixed prize. Within the mean field limit version of the game we compute an explicit equilibrium, a threshold strategy that consists in choosing the maximal fluctuation intensity when the state is below a given threshold, and the minimal intensity otherwise. We show that for large n the symmetric n -tuple of the threshold strategy provides an approximate Nash equilibrium of the n -player game. We also derive the rate at which the approximate equilibrium reward and the best response reward converge to each other, as the number of players n tends to infinity. Finally, we compare the approximate equilibrium for large games with the equilibrium of the two-player case. This talk is based on the joint work with Stefan Ankirchner, Nabil Kazi-Tani and Julian Wendt.

Title: Distributionally Robust Auction Design
Speaker: **Prof. Yi-Chun CHEN**
Abstract: A single unit of a good is sold to a group of risk-neutral bidders whose private values are drawn independently from an identical distribution. The seller has limited information about the value distribution and believes that the value distribution is designed by Nature adversarially to minimize her revenue. For the two-bidder case, we construct a strong maxmin solution, consisting of a mechanism, a value distribution, and an equilibrium in undominated strategies, such that neither the seller nor Nature can move revenue in their respective preferred directions. The mechanism and value distribution solve a family of maxmin mechanism design and minmax information design problems, regardless of how an equilibrium in undominated strategies is selected. The maxmin mechanism is a second-price auction with a random reserve price and the minmax value distribution is a Pareto distribution that induces virtual value zero or one.