The Department of Economics at Monash University invites you to attend a one-day conference on

MARKET DESIGN

Friday 19th December 2014

At the forefront of economic research in recent decades has been the design of resource allocation mechanisms when conventional markets are absent. The field came to be known as market design with its significance recognized by the 2012 Nobel awarded to Al Roth and Lloyd Shapley. This conference brings together cutting-edge research in market design and other microeconomic issues by economists from Australia and abroad.

Conference Program

8:45 – 9:15am Arrival and Registration

Session 1
9:15 – 10:00am Chair: Chongwoo Choe (Monash University)
Presenter: Yinghua He (Toulouse School of Economics)
Title: Estimating Preferences in School Choice Mechanism: Theoretical Foundations and Empirical Approaches
(joint with Gabrielle Fack and Julien Grenet)

10:00 – 10:45am Keynote by Yeon-Koo Che (Columbia University)
Title: Optimal Design for Social Learning
(joint with Johannes Horner)

10:45 – 11:15am Morning Tea

Session 2
11:15 – 12:00pm Chair: Stephen King (Monash University)
Presenter: Georgy Artemov (University of Melbourne)
Title: School Choice Mechanisms, Information Acquisition and School Rankings

12:00 – 12:45pm Presenter: Ching-Jen Sun (Deakin University)
Title: Designing Fair Tiebreak Mechanisms: The Case of FIFA Penalty Shootouts
(joint with Nejat Anbarci and M. Utku Unver)

12:45 – 1:45pm Lunch

Session 3
1:45 – 2:30pm Chair: Vai-Lam Mui (Monash University)
Fuhito Kojima (Stanford University)
Title: Stable Matching in Large Economies
(joint with Yeon-Koo Che and Jinwoo Kim)

2:30 – 3:15pm Presenter: Jinwoo Kim (Seoul National University)
Title: Efficient Assignment with Interdependent Values
(joint with Yeon-Koo Che and Fuhito Kojima)

3:15 – 3:45pm Afternoon Tea

Session 4
3:45 – 4:30pm Chair: Nejat Anbarci (Deakin University)
Presenter: Jun Xiao (University of Melbourne)
Title: Ability Grouping in All-Pay Contests

4:30 – 5:15pm Presenter: Birendra Rai (Monash University)
Title: Event Subscription and Network Formation
(joint with Vai-Lam Mui and Chiu Ki So)

5:15 – 5:30pm Closing remarks
Abstracts

As the Deferred-Acceptance (Gale-Shapley) mechanism has been implemented in more and more centralized school choice systems, many attempts have been made to estimate student preferences from rank-order school choice data that have become increasingly available. Under the assumption that students rank schools truthfully, discrete choice models as those in the product-demand estimation are usually applied. However, this approach requires truth-telling to be the unique equilibrium, which the mechanism does not guarantee. We present a model where students in school choice games face personalized prices that are their perceived probabilities of being admitted by each school. Acknowledging such prices are unobservable to researchers, we identify restrictions which are implicitly imposed on student behaviors by commonly used empirical approaches, and we further propose new methods that require fewer and more plausible restrictions. Our results are then illustrated by Monte Carlo simulations.

**Optimal Design for Social Learning (Yeon-Koo Che)**
This paper studies design of a recommender system for organizing social learning on a product. The optimal design trades off fully transparent social learning to improve incentives for early experimentation by selectively over-recommending a product in the early phase of the product release. Under the optimal scheme, experimentation occurs faster than under full transparency but slower than under the first-best optimum, and the rate of experimentation increases over an initial phase and lasts until the posterior becomes sufficiently bad in which case the recommendation stops along with experimentation on the product. Fully transparent recommendation may become optimal if the (socially-benevolent) designer does not observe the agents' costs or the agents choose the timing of receiving a recommendation.

**School Choice Mechanisms, Information Acquisition and School Rankings (Georgy Artemov)**
In this paper, I study costly information acquisition in a school choice problem with no priorities. Applicants' valuation of a school consists of a common and a private component. The common component is known to applicants, while private component can be learned at a cost, which is different for different applicants. If Deferred Acceptance (DA) mechanism is used, I show that fewer applicants acquire information than is socially optimal. I also construct a simple tax/subsidy policy that leads to a Pareto improvement. Finally, I show that more applicants acquire information under Immediate Acceptance mechanism than under DA.

**Designing Fair Tiebreak Mechanisms: The Case of FIFA Penalty Shootouts (Ching-Jen Sun)**
In the current penalty shootout mechanism in major FIFA soccer tournaments, a coin toss decides which team will kick first and each team alternately takes five penalty kicks. Worldwide empirical evidence, however, suggests the team taking the first kick has a higher aggregate probability to win a shootout, although different soccer tournaments/ traditions, such as the World Cup, Champions League, etc. may exhibit differing degrees of first- and even second-mover advantage. We consider designing sequentially-fair shootout mechanisms such that in all Markovian equilibria each of the skill-balanced teams has exactly 50% chance to win a shootout whenever the score is tied at any round. Consistent with the empirical evidence, we first show that the current mechanism has multiple equilibria, most of which are not sequentially fair. We then characterize all sequentially-fair mechanisms and, taking additional design objectives and desirable properties into consideration, propose a practical mechanism that can be used in real life.

**Stable Matching in Large Economies (Fuhito Kojima)**
Complementarities of preferences have been known to jeopardize the stability of two-sided matching, yet they are a pervasive feature of many markets. We revisit the stability issue with such preferences in a large market. Workers have preferences over firms while firms have preferences over distributions of workers and may exhibit complementarity. We demonstrate that if each firm's choice changes continuously as the set of available workers changes, then there exists a stable matching even with complementarity. Building on this result, we show that there exists an approximately stable matching in any large finite economy. We apply our analysis to show the existence of stable matchings in probabilistic and time-share matching models with a finite number of firms and workers.

**Efficient Assignment with Interdependent Values (Junwoo Kim)**
Abstract: We study the "house allocation" problem in which n agents are assigned n objects, one for each agent, when the agents have interdependent values. We show that there exists no mechanism that is Pareto efficient and ex post incentive compatible, and the only mechanism that is group ex post incentive compatible is constant across states. By contrast, we demonstrate that a Pareto efficient and Bayesian incentive compatible mechanism exists in the two agent house-allocation problem, given sufficient congruence of preferences and the standard single crossing property.

**Ability Grouping in All-Pay Contests (Jun Xiao)**
This paper considers a situation in which participants with heterogeneous ability types are grouped into different competitions for performance ranking. A planner can allocate both the participants and a fixed amount of prize money across all-pay contests in order to maximize a weighted sum of total performance subject to individual minimal performance requirements. Both the weights and requirements are type-specific. We show that, whatever the weights and requirements are, separating -- assigning participants with the same ability together -- is superior to mixing -- assigning participants with different abilities together. Moreover, we also characterize the associated optimal prize structures.

**Event Subscription and Network Formation (Birendra Rai)**
Communication opportunities provided by conferences, Facebook groups, and hobby clubs play a role in determining the structure of social networks. We refer to such entities as events and study the non-cooperative formation of agent-event networks. In contrast with existing network formation models where agents directly choose to link with other agents, in our model agents incur costs in subscribing to exogenously given events and derive benefits from being connected with other agents through events. We use this framework to investigate how efficient and stable network architectures vary in response to informational decay with distance, unreliability of events, and heterogeneities across agents and events. We also highlight how the tension between efficiency and stability can be attributed to conflict of interest between agents and/or coordination failure among agents.