Continuous-time Optimal Dynamic Contracts
by

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Date	:	**24 November 2020 (Tuesday)**
Time	:	**9:00 - 10:30 pm**
Venue	:	**Online via Zoom**

Abstract: The talk draws from two papers in dynamic contract design. The first paper considers a basic model, in which a principal incentivizes an agent to exert effort to increase the instantaneous arrival rate of a Poisson process. The effort is costly to the agent and unobservable to the principal. Each arrival yields a constant revenue to the principal. The principal, therefore, devises a mechanism involving payments and a potential stopping time to maximize her profits.

The second paper builds on the first paper's framework and considers a more complex setting where a principal hires an agent to run a local service store. Customers request service in one of two ways: either via an online or a traditional walk-in channel. The principal does not observe the walk-ins, nor does she observe whether the agent exerts (costly) effort to increase customers' arrival rate. This creates an opportunity for the agent (i) to divert cash (that is, to underreport the number of walk-in customers and pocket respective revenues) and also (ii) to shirk (that is, not to exert effort). This leads to a novel so far unexplored double moral hazard problem. We also present dynamic contracts that maximize the principal's profit.

In both papers, we derive the optimal contracts which have simple and intuitive structures. Further, in the second paper, we extend the model to allow the principal to either (i) monitor the agent or (ii) manipulate the relative attractiveness of the online- against the walk-in- channel (by allowing the use of dynamic price discounting). Both tools help the principal alleviate the double moral hazard problem: we derive optimal strategies for using those tools to guarantee the highest profits.

Biography: Feng Tian is a fifth-year PhD candidate in Technology and Operations at the Ross School of Business, University of Michigan, advised by Professors Izak Duenyas and Ekaterina Astashkina. His research interests are centered around mechanism design problems (including contract design, contest design and information design) and their applications in operations management and operations research. Before joining Ross, he earned a Master of Economics from Duke University and a Bachelor of Economics from Nankai University.

All interested are welcome!
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