

Hong Kong - Singapore joint Seminar Series in Financial Mathematics/Engineering

Equilibrium concepts for time-inconsistent stopping in continuous time

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Abstract

A new notion of equilibrium, which we call strong equilibrium, is introduced for time-inconsistent stopping problems in continuous time. Compared to the existing notions of mild equilibrium and weak equilibrium, a strong equilibrium captures the idea of subgame perfect Nash equilibrium more accurately. When the state process is a continuous-time Markov chain and the discount function is log sub-additive, we show that an optimal mild equilibrium is always a strong equilibrium, and thus obtain the relations between mild, optimal mild, weak, and strong equilibria. Next, we consider the case when the underlying process is one-dimensional diffusion. We provide necessary and sufficient conditions for the characterization of weak equilibria. The smooth-fit condition is obtained as a by-product. Based on the characterization of weak equilibria, we show that an optimal mild equilibrium is also weak. Then we provide conditions under which a weak equilibrium is strong. We further show that an optimal mild equilibrium is also strong under certain conditions. Finally, we provide several examples including one shows a weak equilibrium may not be strong, and another one shows a strong equilibrium may not be optimal mild.

About the speaker

Dr. Zhou Zhou is a senior lecturer in the School of Mathematics and Statistics at the University of Sydney. Dr. Zhou received B.S. in Mathematics from Nankai University in 2010, and Ph.D. in Applied and Interdisciplinary Mathematics from the University of Michigan in 2015. He was a Postdoctoral Fellow at the Institute for Mathematics and its Applications in the University of Minnesota during 2015–2017. His research interests include mathematical finance, optimal stopping, stochastic control and games.

Date

May 4, 2022 (Wed)
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Time

3:00pm – 4:00pm (HK
Time)

Zoom

<https://polyu.zoom.us/j/94684554790?pwd=MFcvVldkQVlyc1lUSldubmYxRVdLdz09>

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