SEMINARIO DE MATEMÁTICAS

Departamento Académico de Matemáticas
del ITAM

Deflators, Log-Optimal Portfolio and Numeraire Portfolio for Markets under Random Horizon

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Abstract

My talk addresses two important topics of deflators and log-utility-related optimal portfolios for markets stopped at a random time T. This random time can model the death time of an agent in life insurance or the default time of a firm in credit risk. For the topic of deflators, it elaborates extensively an explicit parametrization of the set of all deflators, which constitutes the dual set of all admissible wealth processes. I describe explicitly both cases of local martingale deflators and supermartingale delators as well.

Concerning the second topic of optimal portfolios, I focus on quantifying the impact of random time on these portfolios. In fact, I consider log-utility maximization problem, whose solution relies and is intimately related to the optimal deflators. Thus, I start by describing the optimal deflator for stopped models at random time T, and then elaborate the duality which lead to the log-optimal portfolio. In meantime, as an important intermediate result, I characterize the log-optimal deflator and log-optimal portfolio for general semimartingale market models without the no-free-lunch-with-vanishing-risk assumption. Finally, the numeraire portfolio for model stopped at T is also detailed and fully described indifferent manners.

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