

## **Weak time-derivatives and pricing equations**

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The talk regards the illustration of a novel mathematical tool for the characterization of martingales in continuous time: the 'weak time-derivative' of Marinacci and Severino (Finance & Stochastics, 2018). Weak time-derivatives capture the drift of special semimartingales and permit a clear-cut identification of martingales, submartingales and supermartingales. Specifically, martingales feature null weak time-derivative. In asset pricing, weak time-derivatives allow a general formulation of the no arbitrage pricing differential equation for marketed payoffs.

Moreover, different changes of numéraire originate different martingale processes that can be identified. A noteworthy example is given by forward prices.