Enlargements of Filtrations and Financial Applications

Université d'Évry Val d'Essonne, University of Zurich

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Abstracts

Causal optimal transport and its links to enlargement of filtrations and stochastic optimal control

by Beatrice Acciaio, London School of Economics

Abstract: I will introduce the concept of causal transport plan in the framework of filtration enlargements. For this kind of transports, a primal and a dual problem are formulated in the same fashion as in classical optimal transport, and the absence of duality-gap is proved. I will illustrate the relation between certain minimization problems over sets of causal transport plans and semimartingale decompositions in enlarged filtrations. The formers are also used in order to give an estimate of the discrepancy between several optimization problems for agents with different sets of information.

Joint work with Julio Backhoff and Anastasiia Zalashko.

Default contagion with interacting intensities: a non Markovian approach

by Delia Coculescu, University of Zurich

Abstract: In this presentation we are interested in default models with interacting intensities. In this class of models the impact of defaults on the default intensities of surviving firms is exogenously specified. We show that using successive enlargements of a reference filtration and suitable changes of the probability measure, we are able to build models that are non Markovian conditional to the reference filtration, therefore extending the classical literature (see Davis and Lo (2001), Jarrow and Yu (2001), Frey and Backhaus (2004), to name only a few). Introducing this

technique is of interest whenever one wants to capture in the model feedbacks from the defaults of companies to the real economy and vice versa. On the downside, the calibration of the model can be more complex.

Asymmetric information in trading against disorderly liquidation of a large position

by Caroline Hillairet, ENSAE

Abstract: We consider trading against a hedge fund or large trader that must liquidate a large position in a risky asset if the market price of the asset crosses a certain threshold. Liquidation occurs in a disorderly manner and negatively impacts the market price of the asset. We consider the perspective of small investors whose trades do not induce market impact and who possess different levels of information about the liquidation trigger mechanism and the market impact. We classify these market participants into three types: fully informed, partially informed and uninformed investors. We consider the portfolio optimization problems and compare the optimal trading and wealth processes for the three classes of investors theoretically and by numerical illustrations.

Joint work with Cody Hyndman, Ying Jiao and Renjie Wang.

New results on enlargement of filtration theory with application to finance and some open problems

by Monique Jeanblanc, Université d'Évry

Abstract: In that talk, results on existence of arbitrages in enlarged filtration are presented, for initial enlargement and progressive enlargement. The case of honest time is presented, as well as successive enlargement with random times. The stability of predictable representation property is also studied.