PANTHÉON-ASSAS UNIVERSITÉ PARIS

PANTHÉON-ASSAS UNIVERSITÉ PARIS | LEMMA
Laboratoire d'économie mathématique et de microéconomie appliquée

SÉMINAIRE

A DYNAMIC CHOQUET PRICING RULE WITH BID-ASK SPREADS UNDER DEMPSTER-SHAFER UNCERTAINTY

13 February 2024
Lemma - Salle Maurice Desplas 4 rue Blaise Desgoffe 75006 PARIS

Séminaire du Lemma

Le LEMMA organise un séminaire, sur le thème ***« A dynamic Choquet pricing rule with bid-ask spreads under Dempster-Shafer uncertainty »*** le mardi 13 février à 11h.

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Résumé :

The aim is to face pricing in a multi-period binomial market model, allowing for frictions in the form of bid-ask spreads, by modeling both "real-world" and "risk-neutral" uncertainty through Dempster-Shafer belief functions. To this purpose, we introduce and characterize DS-multiplicative binomial processes together with the induced conditional Choquet expectation operator. Next, we consider a market formed by a frictionless risk-free bond (whose price is modeled by a deterministic process) and a non-dividend paying stock with frictions (whose lower price is modeled by a DS-multiplicative binomial process). In this market we prove an analog of the classical theorem of change of measure relying on the notion of equivalent one-step Choquet martingale belief function. We then propose a dynamic Choquet pricing rule with bid-ask spreads showing that the

discounted lower price process of a European derivative contract on the stock is a Choquet super-martingale. We also provide a normative justification in terms of a dynamic generalized no-arbitrage condition relying on the notion of partially resolving uncertainty due to Jaffray. Finally, we introduce a market consistent calibration procedure and show the use of the calibrated model in bid-ask option pricing.