INSTITUTUL DE MATEMATICA "SIMION STOILOW" AL ACADEMIEI ROMANE

Seminarul de Teoria Potentialului

Default contagion: a non Markovian approach

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Abstract: In mathematical finance, contagion models are important to estimate default probabilities and to test the resilience of a financial system composed of a class of debtors (the default system). In classical models, default systems are Markovian conditionally on the observation of their stochastic environment, with interacting intensities. This necessitates that the environment evolves autonomously and is not influenced by the history of the default events. We extend the classical literature and allow a default system to have a contagious impact on its environment. In our framework, contagion can either be contained within the default system (i.e., direct contagion from a counterparty to another) or spill from the default system over its environment (indirect contagion). This type of model is of interest whenever one wants to capture within a model possible impacts of the defaults of a class of debtors on the more global economy and vice versa.