A lending scheme for a system of interconnected banks with probabilistic constraints of failure

Abstract:
We derive a closed form solution for an optimal control problem related to an interbank lending schemes subjected to terminal probability constraints on the failure of banks which are interconnected through a financial network. The derived solution applies to a real banks network by obtaining a general solution when the aforementioned probability constraints are assumed for all the banks. We also present a direct method to compute the systemic relevance parameter for each bank within the network. In particular, latter parameter can reduce the cascade of failures in the network, since, when linked to the failure accepted probability, it plays a key role for the optimal control strategy adopted by financial supervisor aiming at (financially) control the banks network.

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