

Title: An Exploration of Systemic Risk in Random Financial Networks

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Abstract: Since the financial crisis of 2008, regulators have become increasingly concerned about systemic risk of both banks and insurance companies. We study the probability of a systemic event occurring within a financial network through different levels of connectivity between institutions and the probability of multiple institutions defaulting. We accomplish this using a mathematical model that connects the structure of financial networks to systemic risk. In particular, we are interested in the non-negligible tail of the loss distribution and how this tail is impacted by changes in the model parameters. We begin by interpreting a stochastic model that calculates the effects of a small change in the wealth of each institution and we advance the model to include an additional element of randomness to capture the variability of lending and borrowing in a financial system.