

FIM

Nachdiplomvorlesung

Tom Hurd (McMaster University)

Mathematics of Financial Systemic Risk

September 23 - December 16, 2014
Tuesdays 10.15 - 12.00h
HG G 19.1, ETH Zürich, Rämistrasse 101

Abstract

The economic crisis of 2007-08 was first and foremost a crisis of the financial system, a particularly complex example of a complex adaptive system. This course will take a three-stranded approach to understanding the scientific and economic foundations for the transmission of dangerous shocks between financial institutions, and determining conditions under which these shocks can amplify into a network wide disruption. The first strand will consider the structure and dynamics of banks, their balance sheets, and their interconnections. The second strand will review and extend the general probability theory of information cascades in random networks, and to determine the different ways a financial crisis can be considered as a network cascade. The final strand will develop analytical and simulation-based algorithms for large scale computation of such idealized cascades. By the end of the course, we will have the means to model and test financial networks to determine their susceptibility to systemic collapse.

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