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Title: Computation of Systemic Risk Measures

Abstract:

Systemic risk is concerned with the instability of an interconnected financial system. In the literature, several systemic risk measures have been proposed to determine capital requirements for the members subject to joint risk considerations. We address the problem of computing systemic risk measures for networks with sophisticated clearing mechanisms. More precisely, going beyond the standard Eisenberg-Noe model, we consider default costs as in Rogers-Veraart model as well as operating cash flows that are unrestricted in sign. We propose novel mixed-integer programming problems for calculating clearing vectors in this signed Rogers-Veraart model. By combining the network model with a polyhedral acceptance set for total payments, we obtain a set-valued systemic risk measure which has nonconvex values in general. On a general probability space, we provide theoretical results for the weighted-sum and Pascoletti-Serafini scalarizations of the systemic risk measure. Then, through computational experiments on a finite probability space, we assess the sensitivity of the systemic risk measure with respect to structural parameters. This is a joint work with Nurtai Meimanjan (Vienna University of Economics and Business).

Time: Sep 26, 2022 02:00 PM Pacific Time (US and Canada)

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