Title: When do operational events become a systemic concern: an agent-based model of the LVTS

Abstract

The author attempts to demonstrate that agent-based models can help understand payment systems by generating realistic outages from normal days and taking into account the behaviour of participants. Traditional simulator analysis at the Bank of Canada has used a fixed order of payments to assess the impact of outages on Canada's Large Value Transfer System (LVTS). However, behavioural response of participants during outages has been an important caveat of these analysis. To better define areas of concerns related to operational events, the author developed an agent-based model of the LVTS in which participants face partial outages and have to submit real LVTS payments according to an assumed behaviour. Simulations are run over a month for a given set of parameters. Results indicate that although the LVTS is quite resilient to outages, the longer that participants wait before holding back payments to the impacted participant, the greater the network effects. By isolating the network effects, the author can illustrate the indirect payment delays between non-impacted participants.