

Applying Agent Based Modelling to Larger Financial Networks

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Motivation: Systemic Risk and Financial Vulnerability

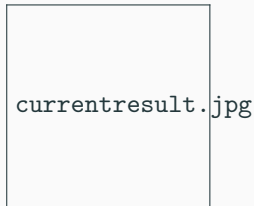
Network Analysis Approach

Cont-Schaaning 2016, Elliot-Golub 2012, Nier et al 2009, etc...

- Mostly analytical.
- Uses different centrality metrics to capture network structure.
- Can be overly-simplified/idealistic.
- Hard to reflect dynamics.

Agent Based Modelling

- Allows dynamics and feedback.
- Heterogeneity.
- Realistic.



Objective Overview

Extend the Current Scale

Can we run the simulation on 30 banks, 100 hedge funds, or even larger?

How to design larger, more complex networks to run our ABM?

Multi-layer Network



sketch.jpg

- Network of asset holdings(overlapping)
- Network of trading counterparty
- ...

Initiase

Agents' features should be related to network structure.

E.g. Degree (number of links) \propto Diversification of asset holdings

Challenge: Metrics

How do we measure contagion?

What I Have Done...

... (include some analysis and comparison on the networks)

Next Step

Learn the Fire Sale framework on Simudyne. Try extending the network to a medium size.

Data collection: what do we have? How to make the most of the available data?

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