Discussion of "Asset Pricing Implications of Systemic Risk in Network Economies" by Andea Buraschi and Claudio Tebaldi

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Outline

1. Network and Systemic Risk
2. Asset Prices
3. Comments on Risk Modelling
4. Comments on Asset Pricing Implications

Risk

- Risk: loss of the instantaneous dividend and the probability of loss is correlated captured by the network topology and a network multiplier λ:

$$\lambda^i = \lambda_i + \lambda \sum_{j=1}^{N} \underbrace{\Delta_{ij}}_{\text{Network}} H^j$$

- Underlying Lucas tree is unharmed, only the instantaneous fruits are possibly destroyed
- No typical "default" risks since the "tree" is not in distress, correlated downside risks for dividends.
- Recovery intensity η: no network effect.

Dynamic Dimension of the Risks

- the mean time required to return to the steady state $\mathcal{T}^{\mathcal{G}}$
- which is relates to network(transition matrix) topology (property)

Systemic Risks

- Cascade risk: time required for the shock to die out increases in N
  - The mean return time to steady state $> e^{cN}$
- Two dynamics: λ/η
  - Subcritical: all risks diversified
  - Supcritical: cascade occurs with positive probability

Asset Pricing

- Consumption asset pricing and the pricing kernel is based on the dividend flow.
- Subcritical: the pricing kernel is unrelated to the fruit-destroying process
- Subcritical: the pricing kernel is related to the fruit-destroying process
    - Equity risk premium higher
    - Interbank interest rate spread higher
    - Cross-sectional implications

Comments on Systemic Risks

- Non-linear phrase transion
- λ: network attenuation factor like ϕ in Denbee, Julliard, Li and Yuan (2019) and its magnitude determines whether interbank network magnifies or absorbs risk
- Why SVD? It is a square matrix.
- Denbee, Julliard, Li and Yuan (2019)
    - Row eigenvector centrality: the magnitude of a bank's exposure to the interbank network
    - Column eigenvector centrality: the magnitude of the interbank network's exposure to a bank
    - The latter captures the externality: banks do not internalise their impact on the interbank network when choosing their liquidity provision (or leverage) decision.

Comments on Systemic Risks

- Dynamic definition of systemic risk: novel aka impulse response
- lower-bound of systemic risks since firms do not "default" and past liability does not carry forward
- subcritical regime: $\beta = 1/N$? o.w., risk does not add up to 1
- supercritical regime: novel long-term risk measure
  - relates to rate of decay and two eigenvector centralities
  - more elaboration on the mechanism of the feedback between risk receivers and senders

Comment on Asset Pricing

- Increase in interest rate spread:
  - decompose into the drop in risk-free rate and increase in break-even rate in interbank market
- explore dynamic element of asset pricing:
  - Impulse response: how long does it take the market to recover? (Definition of equity crash possible?)
  - Time to recover as a pricing factor?

Summary

- Novel network metrics
- Very important empirically and policy-wise
- Clarify the loss processes: liability and dividend processes
- Explore dynamic elements of asset pricing