

# Insights into Regional Economic Risk Through the Lens of Network Analysis

*The Case of Southeast Asia*

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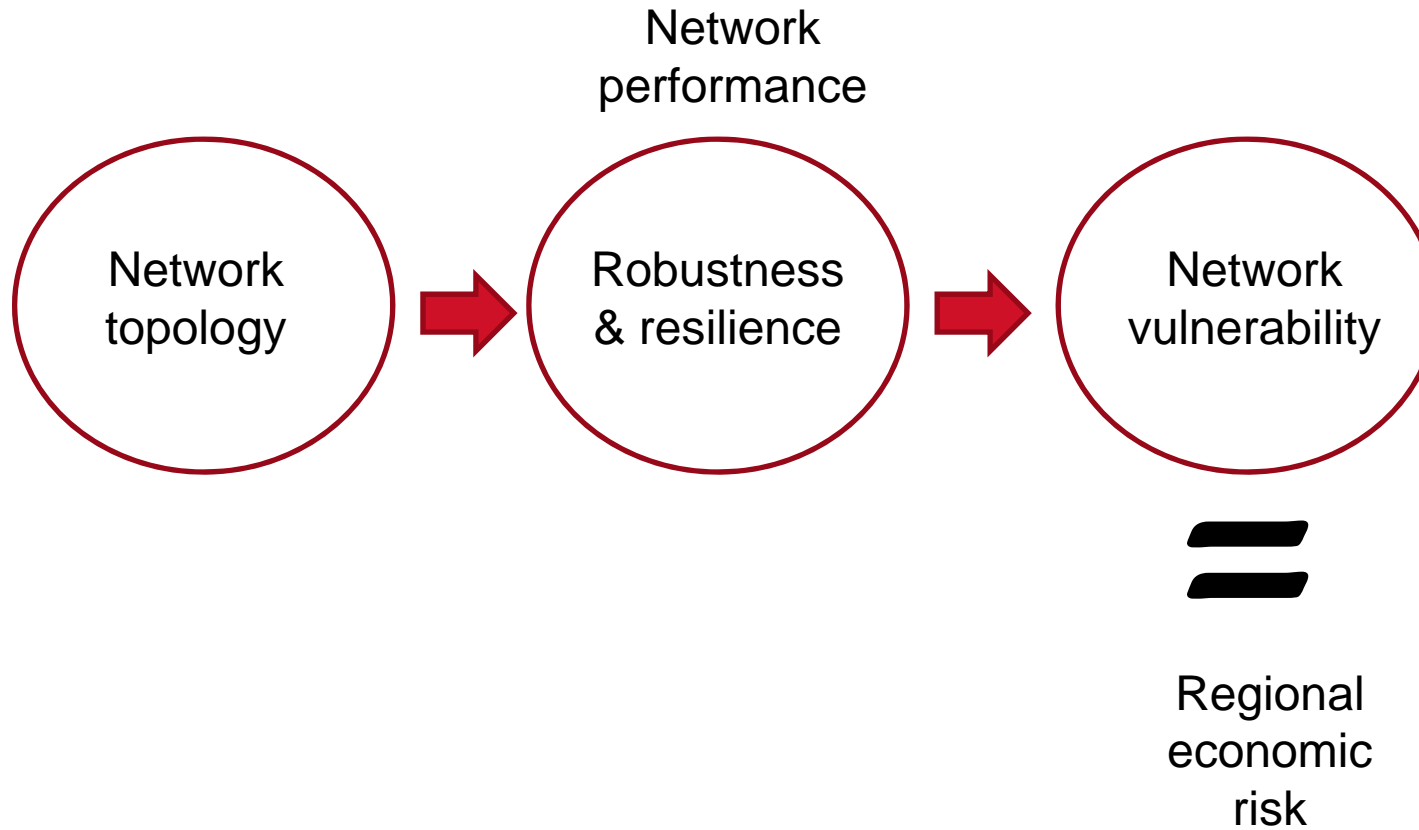
## › Asian Financial Crisis (1997)

- *Growth of the Asian tigers (early 1990s)*
- *Inflow of foreign capital (dollar denominated debt)*
- *Overheating economies*
- *Currency collapse (Thai baht)*
- *Regional contagion*

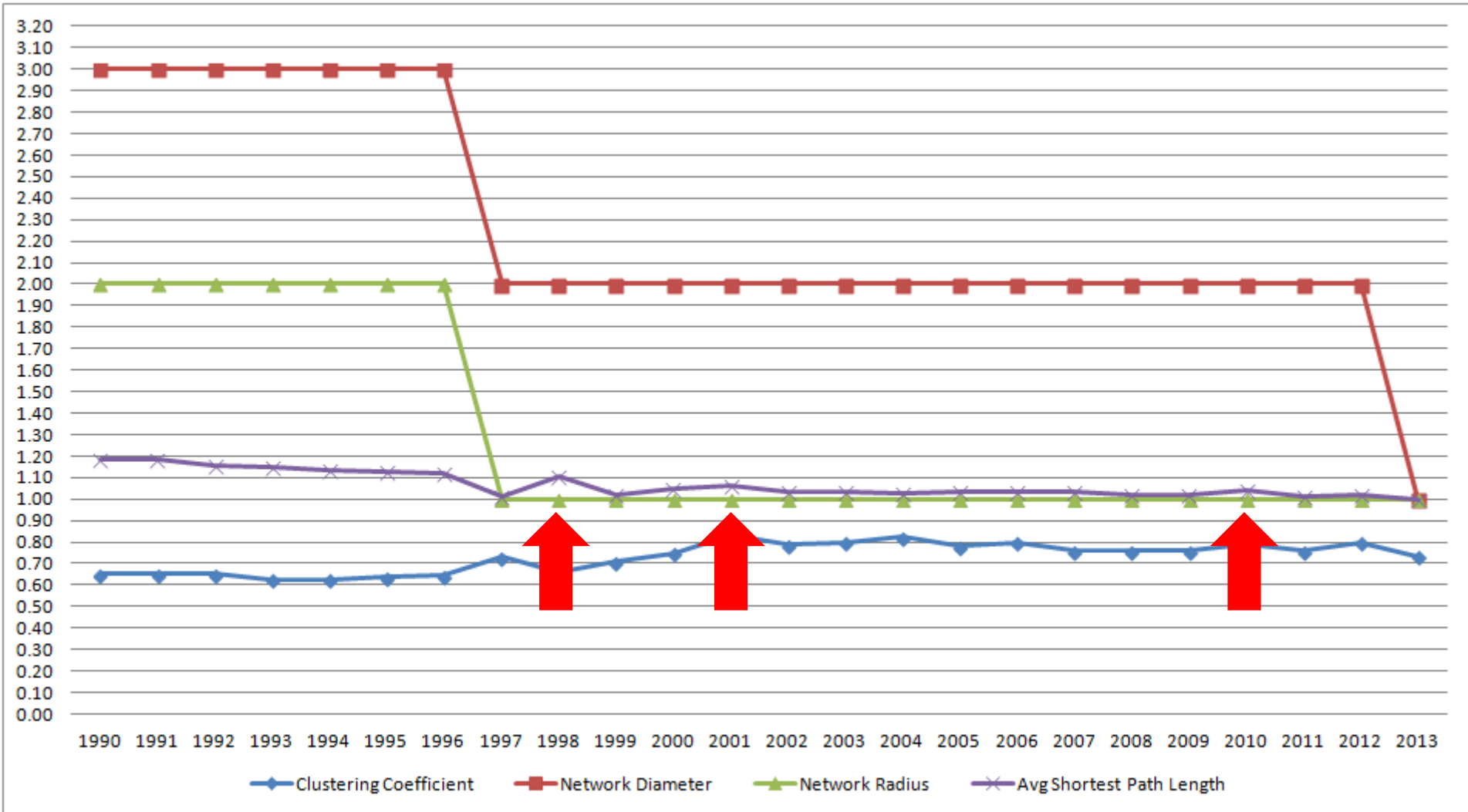
How vulnerable is the regional Southeast Asian economy to a similar crisis?

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- › Describe the properties of the Southeast Asia trade network from 1990 to 2013, with a particular focus on:
    - ➔ Network *robustness*
    - ➔ Network *resilience*
  
  - › Explore implications on regional economic risk
  
  - › Countries included:  
*Australia, Brunei Darussalam, Indonesia, Cambodia, Lao, Myanmar, Malaysia, Philippines, Singapore, Thailand, East Timor, Vietnam*
  
  - › Network visualisation & analysis software  
*Cytoscape*
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- › Trade network = social network
  - › Nodes = countries
  - › Edges = trade flows (exports and imports)
    - ➔ Trade flows = USD
    - ➔ Further breakdown by product code
  - › Directed network
  - › Failure = node (country) failure
  - › Robustness – system will retain its structure & function when exposed to perturbations (Holmgren 2006)
  - › Resilience – system can adapt and regain stability after perturbations (Holmgren 2006)
  - › Network performance = average shortest path length (Jeong & Barabasi 2000)
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- › Southeast Asian trade network topology has changed from 1990 to 2014
    - *Increasingly connected*
    - *Greater clustering*
    - *Greater robustness*
    - *Greater resilience*
  
  - › The Southeast Asia trade network has become less vulnerable to regional economic shocks compared to 1997, 2000, 2008
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- › BUT need to look at degree distribution to determine random vs scale-free properties
    - *Jeong & Barabasi 2000 > scale free networks more vulnerable to attack (or failure of very specific nodes) due to degree distribution*
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