

# Towards a Network Description of Interbank Payment Flows

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## Main Conclusions

- ◆ Analysed Dutch payment system TOP (btw. June '05 – Mai '06)
  - No persistent net payers or receivers identified
  - Circular flows revealed (between big banks and on EU-level)
- ◆ Network measures change considerably, depending on the chosen time frame
  - Fast development at beginning then slowing down
  - Development of network structure is slower than of network size
  - Network proved to be small, compact and sparse
- ◆ Vulnerability of payment system
  - Removing highly connected banks has strong impact on a set of network measures (e.g. value transferred, degree, path length etc)
  - “Subprime” turmoil had no impact on network measures (only slightly higher payment activity registered)

## Discussion

- ◆ Analysing Networks over diff. time frames gives new insights
  - Impact of failure of highly connected nodes confined to one time frame only (one day)
  - Would analyzing the impact of removing highly connected nodes at different points of time gain insights?
- ◆ Effect on systemic stability / vulnerability
  - How do you define systemic stability / vulnerability?
  - Paper showed: removing highly connected nodes has significant effect on network measures
  - But what does it tell us about systemic stability or vulnerability?
  - Are the circle flows you identified a threat to systemic stability?

## Further Research: Some Ideas

- ◆ Deepen the analysis of networks at different points of time
  - Consider the impact of nodes removal at different points of time during the day
- ◆ Improve understanding of interaction between network measures and system stability
  - Consider liquidity flows and direction of payments in your analysis
  - Analyse contagion with stress scenarios
  - Scenarios would include available liquidity in the system
  - Combine results of stress scenarios and of network measures: Are certain network types more vulnerable? (see Boss et. al. (2008), *Systemically Important Accounts, Network Topology and Contagion in ARTIS*)
  - High complexity: Model bank-behaviour