

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