Multiplex network analysis of the UK OTC derivatives market
by Bardoscia, Bianconi & Ferrara
Discussion by

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Bank for International Settlements

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Economics of Payments IX, Basel

Disclaimer: The views presented are mine and do not necessarily represent those of the Bank for International Settlements
Overview

[1] **Data** Put together very granular data for the three largest derivatives markets (IRS, CDS, FX); study the properties of the resulting network/s

- Financial multiplex networks (Poledna et al ‘15; Bargigli et al ‘15; Aldasoro & Alves ‘18; Montagna & Kok ‘18)
- Trade repository data (Abad et al ‘16; El Omari et al ‘18)

[2] **Centrality** Extend the Iacovacci et al ‘16 centrality measure to weighted networks (Functional Multiplex PageRank) and compare it to a competing measure

[3] **Contagion** Extend the contagion mechanism of Paddrick et al ‘16 to study liquidity contagion after VM shocks (Eisenberg & Noe ‘01; Heath et al ‘16)
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- Breadth of the paper impressive (data, centrality, contagion)
  - Well written, careful analysis
  - Work with TR data: hats off!
  - But ...
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Data  Centrality
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- But ...
I was expecting *much* more detail on the data

- TR data are a *diamond in the rough*
  - Unless you polish it (and document the polishing!) people might see a *stone* rather than a *jewel*

- How much of the raw data you have to discard and why?
- Quality issues? Quality checks using double reporting obligation for UK counterparties?
- Matching between TRs (critical for IRS, ie LCH)?
- Unit of observation: LEIs? Analysis at entity level or some consolidation done? Why/why not?
Data - From Trade State Reports to usable data

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- Not entirely clear how networks are constructed
- “aggregate net mark-to-market value of the outstanding contracts”
  - I have no reason to believe that you construct MTM yourself as Paddrick et al ‘16 do
  - How confident are you in the quality of data on MTM?
    ⇒ In Abad et al (2016), using a superset of your data as of Nov15, we find that about 20% of raw data useless on account of MTM alone
  - Net of what? Collateral? (if so big red flag; netting sets, quality of data especially before RTS/ITS in Nov17)
  - If position between $i$ and $j$ is ITM for $i$ then it is OTM for $j$, so matrices built from this are antisymmetric (against claim of directionality in the paper)
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Data - Descriptives

- Low clearing in CDS makes me suspicious (Aldasoro & Ehlers ‘18)

- Suggest to look at number rather than % of institutions active in 1/2/3 layers (Table 3; role of dealers and CM)

- Which type of institutions?
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- Extends Functional Multiplex PageRank to weighted networks
- Shorten the discussion of eigenvector versus PR centrality (made extensively before)
- Suggest to ↑ the economics and ↓ the technicality
  - What makes FMP suitable in economics terms? Centrality usually reflects a process in the network; how does your measure reflect a meaningful economic process?
  - In other words, starting point should be: what is it that you want to capture that made you develop the measure? and, how well does the measure capture this?
  - How does interaction between PR in single layers, aggregated layer and “full multilink” layer add to our understanding?
  - How is one to economically interpret the “influences” $z$?

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VM shocks drawn from N distribution (Heath et al ‘16)
Pre-default analysis (no waterfall)
But, ideally, include IM as in Paddrick et al ‘16
Why consider only network of CCPs and CM?
⇒ Key finding of Paddrick et al ‘16 is most problematic players are non-CM with highly unbalanced positions
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  - Systemic players as those that are key to this propagation?
  - Shock one layer at a time?

- Insights additional to market size? (deficiencies by market seem proportional to size, Fig8)

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