Multiplex network analysis of the UK OTC derivatives market

by Bardoscia, Bianconi & Ferrara

Discussion by

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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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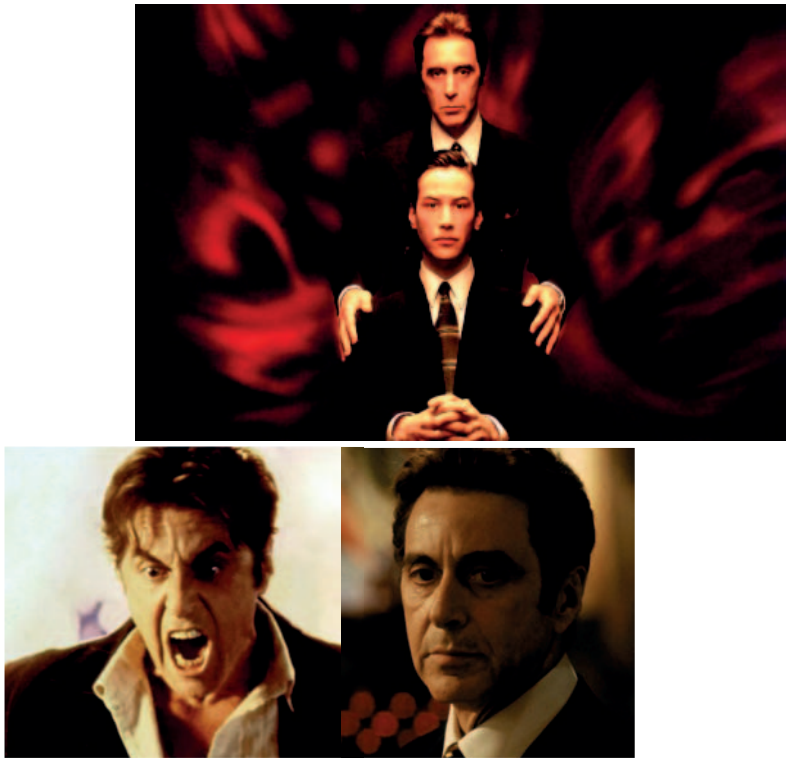

Data Centrality

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Data Centrality Contagion

[1] Data - From Trade State Reports to usable data

- I was expecting *much* more detail on the data
  - TR data are a *diamond in the rough*
    $\Rightarrow$ 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?

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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?
    $\Rightarrow$ 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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- 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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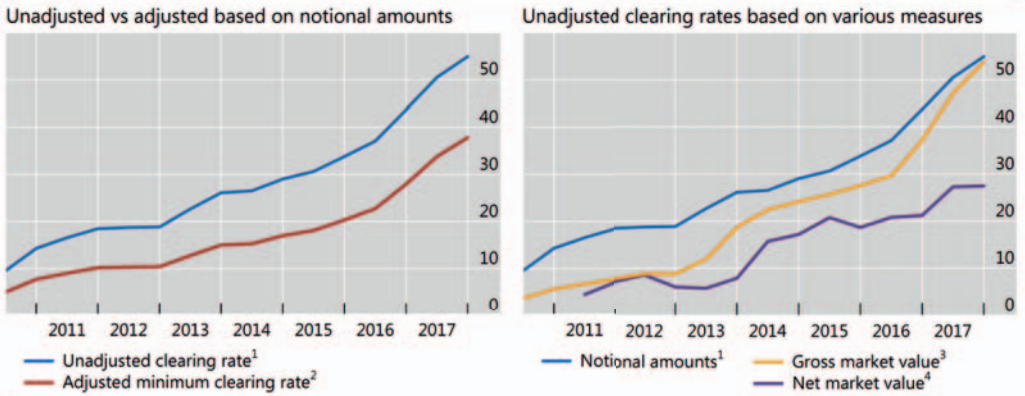
	Centrally cleared	Non-centrally cleared
IR	68.69%	31.31%
CD	8.47%	91.53%
FX	0.92%	99.08%

Clearing rates on the rise, regardless of the measure used

In percentage points, end of period — Graph A1



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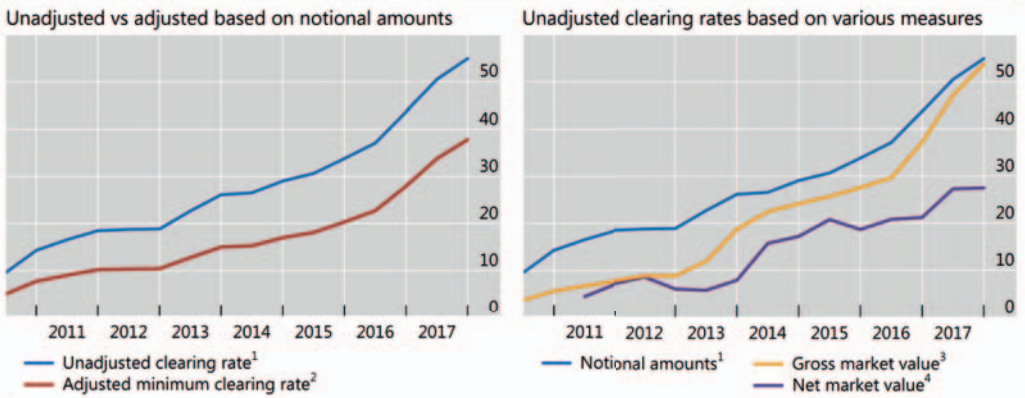

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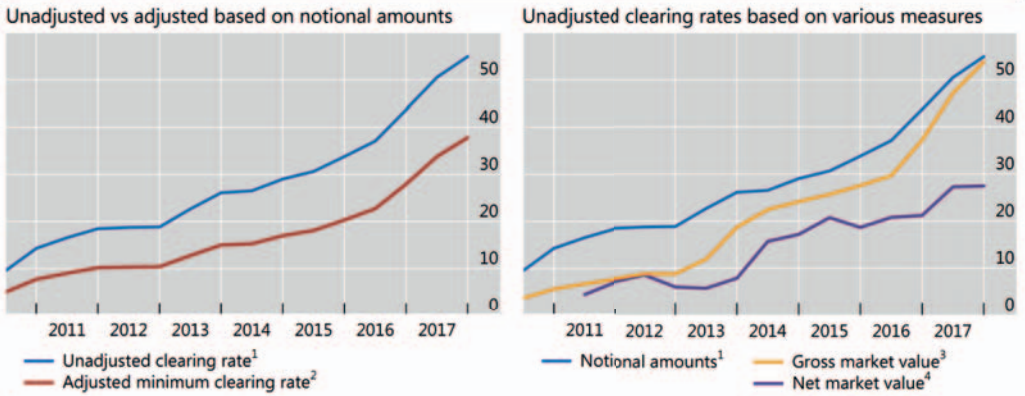

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- Shorten the discussion of eigenvector versus PR centrality (made extensively before)
- Suggest to ↑ the economics and ↓ the technicality
  - What makes FMP suitable in economics terms? Centrality usually reflects a process in the network; how does 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?
  $\Rightarrow$ Key finding of Paddrick et al '16 is most problematic players are non-CM with highly unbalanced positions
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- Model seems designed for one CCP; how many do you have? how do you map model and data in this regard?

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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)
- *"it is possible to show that (18) leads to the same aggregate payments that we would get if we aggregate all the VM payments across all layers from the start"*
  $\rightarrow$ *Value added of multiplex analysis?*
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THANK YOU FOR YOUR ATTENTION!

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