The multiplex structure of interbank networks

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Discussion by Serafín Martínez Jaramillo

The paper

- The authors construct different layers of the interbank market
- By using supervisory reports of the bilateral exposures between Italian banks broken down by maturity and by the secured and unsecured nature of the exposure.
- Different layers have different topological properties and persistence.
- Such differences could lead to biased estimations of systemic risk.

Contributions

- The paper points out clearly important aspects of banking networks (interbank networks) under the perspective of systemic risk.
- The paper makes good use of a very rich database of bilateral exposures, considering differences in the collateral and maturity structure.
- The Multiplex nature of the interbank market is clearly exposed and some implications for systemic risk analysis.

Some interesting questions

- Are the layers of the multiplex topologically different?
- Is there a specific layer that leads the topological properties of the total network?
- Is the occurrence of a link in a layer predictive of the occurrence of the same link in another layer, or in the same layer at a different point in time?

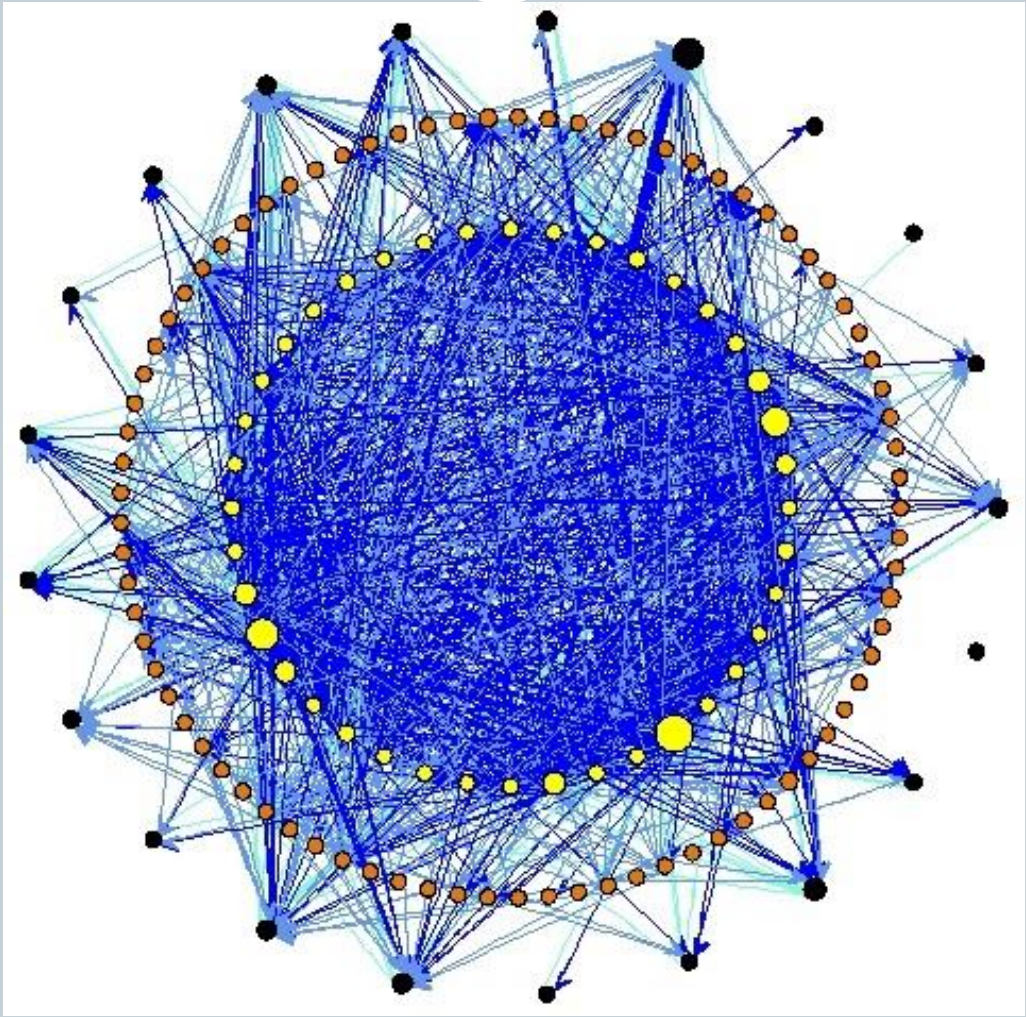
Main results

- Different layers of the interbank posses different level specific topological and metrics, while there are some other properties which are “universal”
- The total interbank market network is close to the overnight layer but both are not informative about other layers.
- High order topological properties in some layers are explained by random models while the others are not.

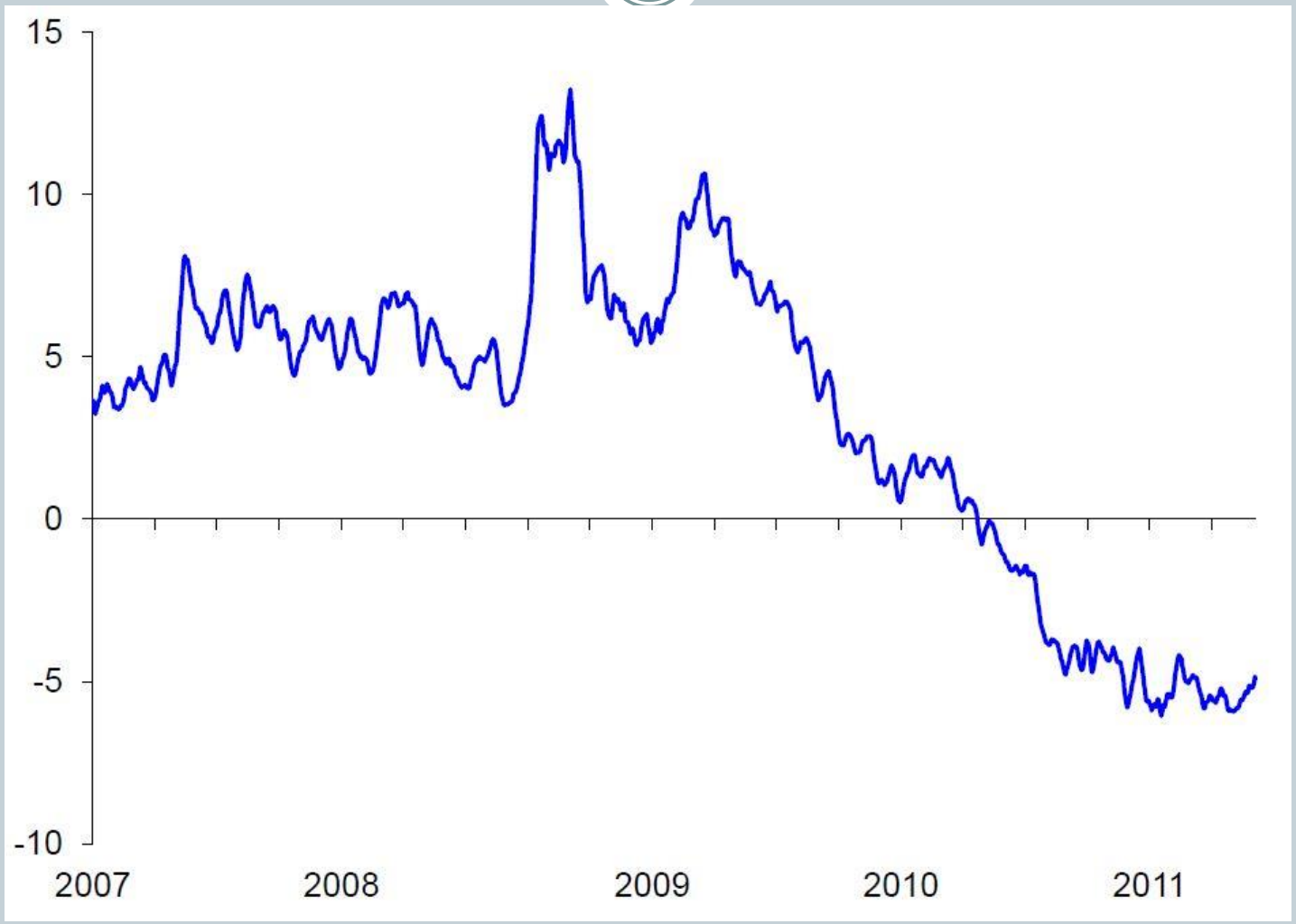
Relevant aspects

- According to the authors, existing empirical literature either:
  - Disregard the heterogeneity of credit relations
  - Focuses only in one type, assuming that the network of selected (available) type of credit relations is a good proxy for the networks of other types
  - The vast majority of contributions focus on the overnight unsecured market.

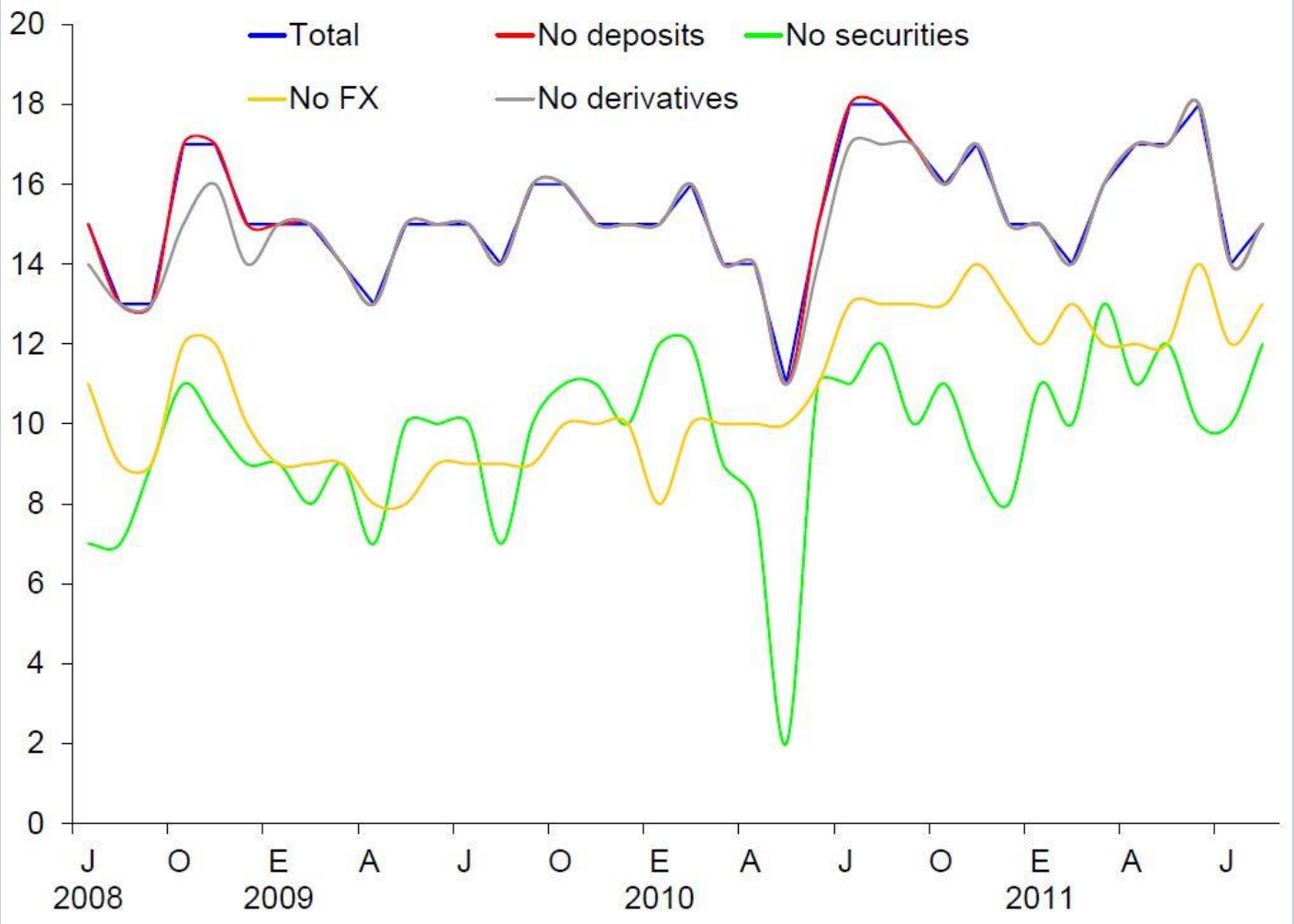
The interfinancial exposures network



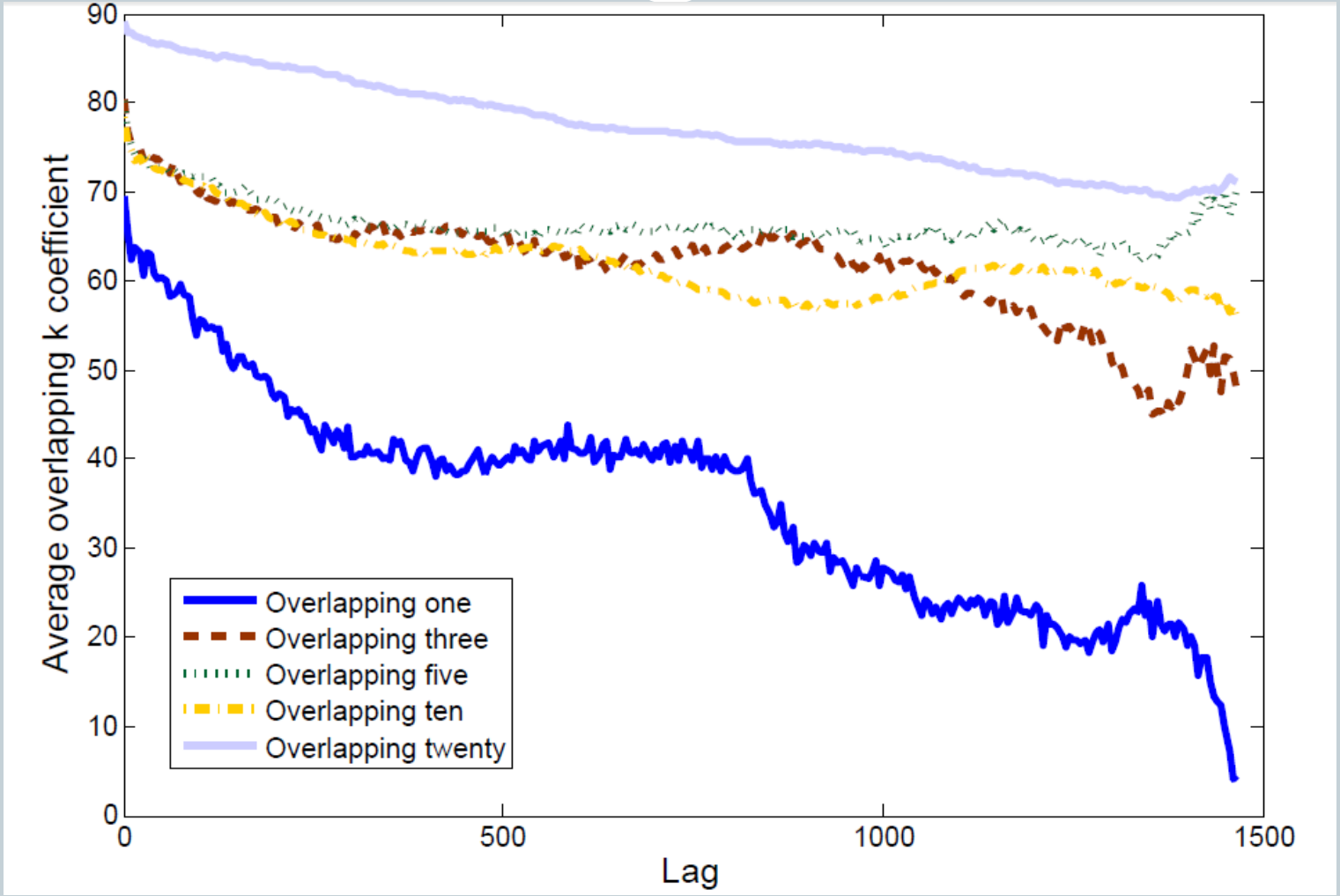
Net position of the Mexican banking system



Over-exposure



Congruence


Average overlapping k coefficient
Lag
0
10
20
30
40
50
60
70
80
90
0
500
1000
1500
Overlapping one
Overlapping three
Overlapping five
Overlapping ten
Overlapping twenty

Some minor comments

- Heterogeneity of layers is good news for financial stability as it is likely to slow contagion across participants in the different layers of the market.
  - The authors are in the best position to prove it as this is not obvious for me.
  - For this reason it might be difficult to model and understand contagion, the lack of data and the lack of more complete models.

Minor comments

- Banks also report transactions with foreign institutions. However this information cannot be employed in assessing the characteristics of the interbank network for several reasons.
  - Could you please clarify this as it is not obvious for me.
- … we assume that the relevant economic agents lie at the group level
- A very large fraction of the interbank network is due to intragroup lending.
  - Isn't this contradictory?
  - For example, this could be important for cross border resolution.

Minor comments

- The similarity study is an important contribution of the paper.
  - What is the feeling of the authors about increasing the frequency of the data? In which sense the results would benefit from having more data? Would the most important results still hold?
- Section 5 is full of relevant results, by highlighting a detailed account of the results at the beginning of the paper and at the conclusions section the paper would distinguish itself even more.
- Some multiplex networks related references are missing

- Thank you!

Related literature

- Solorzano-Margain, Martinez-Jaramillo & Lopez-Gallo (2013), Financial contagion: Extending the exposures network of the Mexican financial system, Computational Management Science, Springer.
- Martinez-Jaramillo, Alexandrova-Kabadjova, Bravo-Benitez & Solorzano-Margain (2012). An Empirical Study of the Mexican Banking System's Network and its Implications for Systemic Risk, Working Paper Banco de México.
- Bravo-Benitez, Alexandrova-Kabadjova & Martinez-Jaramillo (2013), Centrality Measurement of the Mexican Large Value Payments System from the Perspective of Multiplex Networks, presented at the 19th Conference Computing in Economics and Finance, Vancouver Canada.