

# Interbank credit network formation under Basel III

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FinMap Policy Clinic 2016

November 29, 2016

The views expressed do not necessarily reflect those of the Bank of Italy or of the Eurosystem.

# CONTRIBUTION

“Emergence of a core-periphery structure in a simple model of the interbank market” (Lux 2015, JEDC).

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Basel III requirements

## THE PREVIOUS PAPER IN A NUTSHELL

- ▶ Simple dynamic model of interbank credit relations.
- ▶ Stylized fact: Largest banks tend to be in the core and act as money centers.
- ▶ To deliver a **core-periphery structure** like in the data we need:
  1. initial “random” network (complete topology, random link weights),
  2. initial Pareto-distributed bank sizes (node-specific weights),
  3. idiosyncratic (node-specific) liquidity shocks,
  4. and **preferential reinforcement mechanism** of links (based on liquidity-to-assets ratio).

## IMPLICATIONS OF THE PREVIOUS PAPER

- ▶ **Systemic 1:** There is a “natural” tendency to converge towards a core-periphery structure.
- ▶ **Systemic 2:** Convergence towards “long-run” survival rate of links (Jaccard index).
- ▶ **Across links:** Negative assortativity in total (in- + out-) degrees.
- ▶ **Across nodes:** Positive correlation between centrality and size (or net lending).
- ▶ *(Distributional: Relationship lending reduces dispersion of equity.)*

# THE CURRENT PAPER IN A NUTSHELL

**Main question:** What happens if we change the preferential reinforcement mechanism?

- ▶ From a stylized liquidity-to-assets ratio constraint,
- ▶ to a detailed Basel-III collection of requirements.

## SOME POSSIBLE RESEARCH QUESTIONS

- ▶ What network topology emerges with Basel III requirements?  
→ Probably the same: we are only changing the preferential reinforcement.
- ▶ Does the steady-state Jaccard index increase? Not sure.
- ▶ Does the assortativity in degrees increase? Not sure.
- ▶ Does the correlation between centrality and size (or net lending) increase? Not sure.

(The catch of the paper could be: **From micro regulations to macro consequences.**)

## COMMENTS IN GENERAL

- ▶ Blurry **primitives** of banks' behavior: endowments and incentives.
- ▶ Lack of **robustness to** (even stylized) **strategic behavior**.
- ▶ Uncertain nature of **risky assets** and their prices.

## COMMENTS IN DETAIL

1. Trust.
2. Balance-sheet structure.
3. Basel III requirements.
4. Repayment algorithm.
5. Basel III compliance and bank closure procedure.



# TRUST

- ▶ If credit is denied, trust in creditor from debtor decreases. By how much? What is the function? Are there non-linearities associated with a nil trust?
- ▶ We are accustomed to think of trust in the interbank market to go from (potential) creditors to (potential) debtors, not the other way around. Is there any survey evidence/practitioners' experience that suggest otherwise?

## BALANCE-SHEET STRUCTURE

- ▶ It seems that there is really no reason why banks would hold risky assets in the first place: there are only disadvantages.  
  
→ Why not to introduce heterogeneous rate of returns on assets and dividends from equity?
- ▶ Counterintuitive distinction between “risk-free” interbank loans (subject to shocks) and risky assets (not subject to shocks).
- ▶ Shock magnitude proportional to bank size but time-varying: An innovation wrt to Lux (2015)?
- ▶ There seems to be a market for the risky assets, as there seems to be a (separating) “fire-sale” price. Why can't banks sell low-risk assets and buy high-risk assets?

## BASEL III REQUIREMENTS

- ▶ Why so precise? Add to a stylized model not-so-stylized constraints does not help the closeness of the whole exercise to the data.
- ▶ What is the economic rationale behind the exercise? Do Basel III regulations generate a different network structure that is more/less resilient to shocks or subject to systemic instability?
- ▶ The relevance of “initial” requirements like the CConB and the CCycB is trivial.
- ▶ Bummer: You have a network model and you don't exploit it to talk about interconnectedness in the capital surcharge for SIBs.
- ▶ Not clear what disciplines the denominator of the LCR.

## REPAYMENT ALGORITHM

- ▶ What does it mean to reclaim a credit from an interbank peer?  
Do you have in mind credit lines rather than term loans?
- ▶ Not clear the origin of all the calibration. E.g.:

$$\text{Reclaims}_i = \min\{1.10 * \text{Liquidity lack}_i, 0.70 * \text{Interbank borrowing}_i\}.$$

- ▶ Why to avoid mutual repayment claims? What about cycles in general?

## COMPLIANCE AND BANK CLOSURE PROCEDURE

- ▶ Not clear why banks would get rid of the low-risk assets first. It seems that nowadays banks try to do the opposite (write off high-risk assets), especially in order to comply with regulations.
- ▶ Selling risky assets impacts equity but improves the denominator of the CAR.
- ▶ Why does (positive) equity of the defaulted banks disappear, unlike deposits? Are there “sanctions” for not respecting regulatory requirements?

## CONCLUSION

Interesting and topical idea, with potentially important policy implications.

Looking forward to reading future drafts!