



Discussion for:  
What drives pricing in interbank markets?  
Second Conference on Network Models and Stress Testing for  
Financial Stability

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# Quick Summary

- Main findings:
  - First of all, very nice paper.
  - It builds on an area that hasn't been extensively covered by theory, which is applying IO models to bank competition in the interbank market.
  - In the paper a theoretical model is presented that accounts for some empirical facts that are not well explained by most models, namely:
    - Interbank lending and deposit rates are different.
    - There are also differences between bank rates.
    - The interbank market is modeled with richer features. It is not only a residual market, it can be used by banks to grow their balance sheet.

# Quick Summary

- Using this model, equilibrium conditions are found and these conditions are hence used to determine a reduced form estimation equation with clear links to fundamental parameters.
- Additionally, it includes some network centrality measure as explanatory variables to improve the model's fit.

# The model

- Banks optimally choose their interbank lending and deposit activities.
- This decision is constrained by a balance sheet condition:

$$\max_{\{p_L^i, p_D^i\}} \Pi = p_L^i q_L^i(p_L^i | \cdot) - p_D^i q_D^i(p_D^i | \cdot) \quad (1)$$

s.t.

$$L_i + q_L^i(p_L^i | \cdot) = D_i + E_i + q_D^i(p_D^i | \cdot)$$

- Where  $p_K, q_K$  (for  $K = \{L, D\}$ ) are prices and quantities for interbank loans and deposits; L are external loans, D external deposits and E equity (all for bank i).

# The model

- The functions for interbank deposits and loans are given by:

$$q_D^i = a_D^i + a_D X_D^i + b_D p_D^i - c_D p_L^{-i} \quad (2)$$

$$q_L^i = a_L^i + a_L X_L^i - b_L p_L^i + c_L p_D^{-i} \quad (3)$$

- Where  $X_D$  and  $X_L$  are control variables shifting the deposits and loans functions;  $p^{-i}$  are the average rates for deposits and loans of all competitors and  $a_D^i$  and  $a_L^i$  are bank fixed effects.
- The model is estimated using quarterly data.

# Some questions

- How are rates actually computed? Do you average all transactions?
- You are using quarterly data, that means that some of the intraquarter variability in rates is lost?
- When you substitute the competitor's prices with reference rates, you use short term and long term. Why the difference?

# General comments

- About the structural model:
  - The argument supporting the relatively simple objective function (equation 1) is the short term nature of most interbank transactions. However, there are two comments there: first, the quarterly frequency may be too long to be unambiguously considered “very short term”. Secondly, the framework is a relatively long panel data.
  - One of the key contributions of the paper is providing a more complex structure to interbank market strategic interactions, going beyond the usual treatment as a residual market.
  - Not fully considering the strategic interactions in the external credit and deposits markets may undermine these achievements.

# General comments

- Regarding the supply and demand functions (equations 2 and 3), these equations imply that cross-price elasticities are identical. Is this a desirable feature?
- One of the claims of the paper is that the different rates arise from the Bertrand competition process. Though this is formally true, the fact is that the way competitor's price interact lead to a very mild effect of individual banks' prices in other banks.
  - This feature is actually explicitly acknowledged in the estimation when the competitors' prices are substituted by other reference rates.
- The implication of the previous point is that the main drivers of different rates are product differentiation in features other than competitors' prices.

# General comments

- For exposition purposes the problem could be easily framed in a closer way to those of horizontally differentiated products, where the final decision depends on prices and other product's characteristics (or in this case, producers' characteristics).
- The fixed effect in equations 2 and 3 can be interpreted as an unobserved bank characteristic that may be affecting lenders/borrowers decisions.

# General comments

- Another of the nice features of the paper is the inclusion of network centrality measures.
- However, this could be exploited more: competitive interactions are hardly being driven by prices, but could it be something in the exposures network? Centrality measures could be helpful in these matters.



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