Discussion of ’Testing Information Diffusion in the Decentralized Unsecured Market for Euro Funds’ by Edoardo Rainone

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Paper overview

► Aim: Test for the presence of information diffusion in the formation of interbank rates.

► Idea: Bilateral interest rate a bank agrees on may be influenced by rates its ‘neighbors’ have agreed on ⇒ ”loan network”.

► Methodology: Spatial autoregressive model for loan prices, with bank characteristics and country dummies as regressors.
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▶ Main findings:
  ▶ Extent of price diffusion is not constant over time, and is particularly high during periods of high market uncertainty.
  ▶ Network of loans becomes sparse after LTROs.
  ▶ Borrower and lender characteristics (partly) impact interbank rates.
Spatial autoregressive model

- Let \( y \) denote a vector of observations of a dependent variable for \( n \) units. Model:

\[
y = \rho \underbrace{Wy} + X\beta + e, \quad e \sim (0, \sigma^2 I_n),
\]

where

- \( W \) is a nonstochastic \((n \times n)\) row-normalized matrix with zeros on the main diagonal, \( X \) is a \((n \times k)\)-matrix of covariates,
- \( \rho, \sigma^2 \), and \( \beta = (\beta_1, \ldots, \beta_k)' \) are unknown coefficients.
Spatial autoregressive model

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y = \rho \underbrace{Wy}_{\text{'spatial lag'}} + X\beta + e, \quad e \sim (0, \sigma^2 I_n),
\]

where

\( W \) is a nonstochastic \((n \times n)\) row-normalized matrix with zeros on the main diagonal, \( X \) is a \((n \times k)\)-matrix of covariates,

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- Model (1) is a nonlinear model that captures feedback:

\[
y = (I_n - \rho W)^{-1}X\beta + (I_n - \rho W)^{-1}e
\]
Comment 1

- Specification of spatial weights matrix
  - Somewhat arbitrary definition of loan neighborhood: Two loans A and B are connected if the borrower of A is the lender of B.

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▷ Somewhat arbitrary definition of loan neighborhood: Two loans A and B are connected if the borrower of A is the lender of B.

⇒ Check alternatives using ML?
▷ Include loan volumes as weights?
▷ Endogeneity due to ordering of loan activities within Maintenance Periods?
Comment 2

Repeated cross-section regressions vs. dynamic panel regression

▷ Dynamic spatial panel model, (see, e.g., Elhorst, 2012)

\[ y_t = \rho W_t y_t + \gamma Y_{t-1} + X_t \beta + e_t, \]

▷ Time-varying spillover strength (see Blasques et al. 2014)

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- Advantages of panel approach:
  - more efficient
  - take information from previous periods into account
  - use data on loans with longer maturities

- Challenge: Missing data (loans between two banks may not exist in each period)
Other questions/comments

- Include aggregate shocks, e.g. via overall market variables?
- Sample sizes over time?
- Residual diagnostics?
- Robustness of other coefficients when network measures are included?
- Amount and length of footnotes (and appendices).
Conclusion

▶ Very interesting paper on a highly relevant topic!

▶ Spatial autoregressive model is a simple and parsimonious choice to incorporate network effects.

▶ Methodology could be extended to exploit the panel structure of the data.

▶ Robustify findings (even further) with respect to the specification of the spatial weights matrix.