

2018 EBA Policy Research Workshop

Discussion of "Bank risks and liquidity dynamics: Evidence from the euro area financial crisis" by Giuseppe Maddaloni

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The issue and the paper

- The issue: how to measure the size of liquidity shocks, banks' and the central bank's reactions to liquidity shocks; how to calibrate liquidity buffers?
- Important contributions of this paper:
 - Modelling of banks' and the central bank's reactions to liquidity shocks;
 - Original measurement of liquidity risks as unexpected changes of traded liquidity amounts and reserves changes, from the interbank market and monetary policy perspective, using publically-available data only;

This paper

- Main findings:
 - Liquidity shocks can be measured by the changes in banks' reserves at the central bank and modelled as the linear combination of central bank's money supply, assets bearing financial risks, yields on financial assets, opportunity cost of holding cash and interaction terms between rate and volume changes;
 - Significant and positive impact of central bank's refinancing operations, amount of domestic credit, repo rate, Eonia rate, sovereign default probability and bond market stress index on banks' liquidity reserves;
 - Significant and negative impact of the 12-month Euribor rate spread over AAA-rated euro area sovereign 1-year yield and overnight transactions volume;
 - Albeit significant at the 95th confidence level, no large impact of repo transactions volume.

Literature review

- The literature review needs to be expanded:
 - Easier for the reader to see all references in a dedicated section which would need to be structured: what is the common view in the literature? are there opposite findings?;
 - For a useful literature review on liquidity risk determinants, see Basel Committee Working Paper No.24 (2013), "Liquidity stress testing: a survey of theory, empirics and current industry and supervisory practices", October

Theoretical model

- Bank's optimisation programme includes the illiquidity costs and the opportunity costs of holding cash:
 - Fine but in reality banks maximise profit under capital and liquidity constraints.
 - Both approaches might be equivalent provided that the variable capturing opportunity costs of cash is comprehensive. This has to be demonstrated.
- What role does the bank's sensitivity to innovation play in the model?
- How is bank's risk aversion captured in the model whereas it is explicitly captured in the empirical estimation?
- The central bank's loss function should be clarified:
 - the decomposition of the liquidity shock ξ_{s+1} as the sum of banks' reaction to innovation ϵ_{s+1} and a term including financial risks θ_{s+1} needs to be explained as θ_{s+1} is not observed.

Empirical model

- Need to better justify and explain the choice of a GARCH(1,1) process:
 - Why is a GARCH(1,1) process better suited than a VAR?
 - Let's accept the assumption of a time-varying error variance and volatility, common when modelling financial time series.
 - But why is an autoregressive moving average model (ARMA) model assumed for the error variance?
 - Has heteroskedasticity been tested? White test? Use of autocorrelation and partial autocorrelation functions? Have GARCH errors been tested?
- How are non-linearities of liquidity risks captured in the model? Why is the quadratic term present in the theoretical model not used in the empirical model?
- Have some robustness checks been carried out by estimating an alternative specification or testing alternative variables?

Empirical model

- The choice of the explanatory variables in the empirical model needs to be better explained and the variables matched with the theoretical model parameters:
 - to clear the money market, every central bank's operation impacting on its balance sheet should be included. Therefore, the exclusion of the ECB's targeted operations from the analysis might be a problem, in particular when their design is close to open market operations, such as TLTROs;
 - Some variables might be missing, which might create a bias in the measurement of liquidity shocks:
 - why no rate on domestic credit included?
 - can the 12-month Euribor rate spread over AAA-rated euro area sovereign 1-year yield be considered as representative of all the opportunity costs of banks' liquidity holdings?
 - what about the Eurostoxx 50 return or the NPL rate, for example? Why is the deposit facility rate or the rate of minimum reserve requirement not included whereas they directly impact the amount of central bank deposits?
 - where can we see the interaction terms from the theoretical model in the empirical model?

Policy implications

- Interesting proposal to complement current regulatory liquidity framework with additional buffers and daily liquidity reserves to cover liquidity shortages
- But several frictional problems with current framework:
 - how to ensure complementarity and consistency with LCR whose definition of liquid assets goes beyond banks' mere deposits at the central bank ?
 - underlying question: is the paper's focus on banks' liquidity reserves at the central bank not too restrictive to assess banks' capacity to cope with liquidity shocks?
 - how would daily liquidity reserves interact with already existing minimum reserve requirements? Would you suggest imposing these requirements on a daily basis instead of a six-week maintenance period?

Conclusion

- Promising paper with an original perspective on banks' liquidity shocks;
- The link between the theoretical and the empirical models should be strengthened;
- Policy implications might be targeted to monetary policy and liquidity crisis management by central banks.