# Risk endogeneity at the lender/investor-of-last-resort

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### Discussion

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# This paper's contribution

**Big-picture question: Did the ECB/Eurosystem in its role as IOLR and LOLR take too much credit risk during the euro-area crisis?**

- The authors calculate credit risk measures (expected loss and expected shortfall) for the Eurosystem around the announcement/implementation of several unconventional monetary policies.

- To model credit risk, they use a high-dimensional dependence copula (9 country-level banking sector and 5 sovereign sector). This methodology accounts for:

  $\Rightarrow$ Fat tails

  $\Rightarrow$ Time-varying volatility

  $\Rightarrow$ Time-varying and asymmetric correlations

# This paper's main findings

- "Risk is nonlinear in exposures": (i) some announcements/operations increased exposure but reduced risk (ii) there are credit risk spillovers between IOLR/LOLR announcements/implementations.

- Some unconventional policies were more "risk efficient" than others: they were more effective relative to the risk incurred.

- Spillovers from international unconventional monetary policy announcements were small.

# This paper's main challenges

- Central banks are not your "traditional" bank (no liquidity constrains and their announcements can influence their own risks, among others).

- Data availability: specific exposure and physical probabilities of defaults are not observable. The authors find clever ways to approximate for these.

- Computational burden increases rapidly as you consider more sovereign/banking sectors. The authors propose a variance-covariance structure that reduces the dimension of the problem.

# Comments

- Very interesting and ambitious paper (see the main challenges)

- Policy relevant:

  $\Rightarrow$ When is the central bank taking too much risk?

  $\Rightarrow$ Which measures are more cost/risk effective?

  $\Rightarrow$ Is communication an effective monetary policy tool?

- My main comments:

1. Differentiating amount-of-risk from price-of-risk
2. Differentiating announcements from implementations of unconventional policies
3. Aggregating bank default probability at the country level

# Comments

## 1. Amount-of-risk versus price-of-risk

- Sovereign probability of default is inferred from CDS spreads. Therefore, the authors need to translate risk-neutral to physical probabilities of default.

- Does the method in Heynderickx et al (2016) allow for conditional (available at each point in time) risk aversion?

- Monetary policy announcements have an effect on risk aversion.

- Can the effect of policy announcements on sovereign yields be used to disentangle the effect on risk aversion? risk-free rate can be used to infer the properties of SDFs, but which risk-free rate?

*Overall, can you then disentangle the effect of unconventional policies on risk aversion (price of risk) from that on the amount of risk the central bank is taking?*

*Credit Losses = F(Exposures at default (EAD), probability of default (PD), and loss given default (LGD))*

- **Any announcement**: EAD is constant, PD might change but most of this change should be attributed to changes in risk aversion.

- **LOLR or allotments**: EAD increases, PD decreases because central bank provides liquidity to banks in trouble (closer to credit risk).

- **IOLR or asset purchases**: EAD increases, PD decreases but mostly through a discount-rate or risk aversion channel (not so much credit risk).

- **Pure signaling effect**: announcements not followed by implementation (OMT).

*Overall, what are the channels through which announcements and the implementation of monetary policies affect the central bank's balance sheet risk?*

# Comments

### 3. Country-level bank default probability

- How does Moody's probabilities of default account for simultaneous defaults (systemic risk events)?

- Are you underestimating the risk of systemic events by aggregating bank-level probabilities of default at the country level?

- Which banks should the central bank be assisting? Banks more in trouble (in which case, PDs are higher than the median), banks that stand a chance recover (PDs might be lower than the median), or banks that are systemically relevant.

*Overall, although I understand the computational limitations of considering bank-level PDs, the authors should consider the effect of the country-level aggregation or assess the robustness of their results to alternative aggregation methods.*

# Other comments

- Can this exercise be extended to other central banks?

- Does the "credibility" of the central bank matter for the effectiveness of its policies?

- Is communication an effective tool? How else can you explain the results around OMT announcements?

- When analyzing the risk efficiency of measures, LOLR and IOLR seem to have two somewhat different goals: the former seems to be mainly a financial stability tool (to provide liquidity to banks in trouble), while the latter seems to be more a monetary policy tool (to reduce interest rates at longer horizons).

- Would going below the ZLB be a better alternative in terms of cost effectiveness? Does this only apply to asset purchases?