Fire sales, indirect contagion and systemic stress testing

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Disclaimer

The views expressed do not necessarily reflect those of the Bank of England.
Why is this important?

• Global financial crisis
• Macroprudential stress testing

⇒ Quantitative framework to study fire sales risks
⇒ Simple and versatile to be taken to data and used in stress tests
Model overview

Trigger

Action

Deleveraging

Impact

Mark to market losses

Market impact

Initial shock
Important contribution to the literature

Extension of Greenwood et al. (2014)
- From leverage-targeting to leverage threshold
- Heterogeneous asset classes (market depth)

Generating more realistic and interesting results:
- Existence of tipping points and non linearities
- Heterogeneous losses, scenario dependency
- Finite fire sales cascade
- Distinction between failures due to insolvency and illiquidity
Policy implications for stress testing

• Indirect exposures matter and cannot be reproduced by imposing a more severe stress scenario
• Even if the total loss is the same, the distribution is different
• Need for macroprudential regulators to model this contagion channel:
  • Relaxing balance sheet constraints in stress tests
  • What-if analysis
  • Risk indicators (Cont and Schaanning (2019), Duarte and Eisenbach (2018))
Trigger and liquidation strategies

• Banks’ sales are driven by solvency shocks and the leverage constraint
• Banks delever their marketable assets proportionally

• Coen, Lepore and Schaanning (2019) studies optimal liquidation strategies when banks are subject to both solvency and liquidity constraints:
  • Risk-based capital requirements and the LCR incentivise banks to sell larger amounts of illiquid assets relative to the leverage ratio
  • Funding shocks tend to generate larger fire sales losses than solvency shocks
  • Combined funding and solvency shocks generate loss distributions that cannot be reproduced by focussing on either shock in isolation
Comparison between proportional and optimal deleveraging

• Proportional deleveraging generates larger fire sales losses
  • Under a proportional deleveraging the assets banks sell are significantly less liquid, while when banks optimise they avoid selling assets that will cause them large losses

• With optimal deleveraging the vast majority of fire-sale losses are incurred in the most liquid asset classes
  • Under proportional deleveraging banks do not avoid selling illiquid assets and the losses are spread out more evenly across different assets
Other comments

• Market depth calibration is highly uncertain
• Partial adjustment model (Duarte and Eisenbach (2018))
• Strategic sales (Braouezec and Wagalath (2019))
Conclusions

• Great paper
• Important academic contribution
• Versatile tool for stress testing

Thank you