BANK FOR INTERNATIONAL SETTLEMENTS

Measuring and testing for the systemically important financial institutions

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Discussion:
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The views expressed in this presentation need not reflect those of the BIS.

System-wide risk: how do we measure it ?

- The ultimate goal is to minimize system-wide risk (while promoting growth)

- System-wide risk
  ≈ risk of severe economic losses due to malfunctioning of the financial system

- Imperfect proxies: VaR, ES, etc
  - probability distribution of losses generated by banks
    - balance sheet data
    - missing data on interconnections and off-balance sheet positions
  - price-based indicators of distress
    - CDS spreads: short history
    - equity prices: loose link with financial stability

- No consensus on operational definition of system-wide risk

From system-wide risk to systemic importance

- Starting point: measures of system-wide risk
- Allocate measured system-wide risk across individual institutions
  - Marginal expected shortfall (MES)

  Acharya et al (2010), Brownlees and Engle (2011), Huang et al (2010)
  - Shapley values

  Tarashev et al (2010), Drehmann and Tarashev (2011)
- Estimate relationship between individual distress and system-wide risk
  - CoVaR

  Adrian and Brunnermeier (2010)
- Each of the three measures could make sense: *Drehmann and Tarashev (2011)*

Estimating systemic importance delivers … *estimates*

- The paper by Castro and Ferrari:
  - focus: CoVaR
  - How does the noise in CoVaR estimates affect statistical inference?

- CoVaR:

  system-wide losses in an infrequent, extremely bad *systemic* event, conditional on one *institution* experiencing an infrequent, extremely bad event

- A priori, estimates of CoVaR would be extremely noisy

Castro and Ferrari: CoVaR estimates are extremely noisy

- Statistical significance
  - 12 out of 26 large European banks have a statistically significant contribution to systemic risk, as measured by CoVaR
  - Point estimates are misleading
  - Size is a poor proxy: NB Greece (√), while Unicredit (X)
- Rank-ordering
  - There are 325 bank pairs. Rank-ordering is possible in 27 cases only
  - Statistical significance results not helpful for rank-ordering

Specific comments

- Paper is a pleasure to read
  - Good balance between methodology and empirical application
  - Many results but nicely presented
- How does the size of the cross section affect estimation noise ?
- Does it make sense to abstract from commonality of exposures?
  - Policy authorities care about all drivers of systemic importance
  - Being in distress when the system is in distress → systemically important

Comment on policy implications

- Implicit policy message:

  Regulatory requirements should react weakly to point estimates

- What should a follow-up paper try to do?

- What to do with estimation noise
  - Castro and Ferrari: design a better indicator (relax linearity assumption)
  - In addition and more generally:
    - incorporate estimation noise in prudential regulation
    - estimation noise → the systemic importance of a bank could be high

Step back: estimation noise in portfolio risk

- Micro-prudential goal:
  - limit probability of a bank's failure below a certain level: VaR
- Noise in estimates of: (i) exposure-specific PDs; (ii) asset-return correlations
- Estimation noise is part of the VaR: *Löffler (2003), Gössl (2005), Tarashev (2010)*
  - A bank can fail because of:
    - exceptionally bad (financial) shock to its exposures
    - ordinary shock from an uncertain distribution that turned out bad
  - Thus, estimation noise is just another risk factor
- Evidence that estimation noise is an important risk factor empirically:

  calls for 20 to 90% higher capital requirements

From portfolio risk to system-wide risk

- Need a well-defined macro-prudential objective. For example:
  - "non-digestible" losses to happen only with a small probability: **VaR**
  - insurance scheme for "non-digestible" losses: **ES**
- The distribution of system-wide losses should reflect estimation noise about
  - PDs of individual banks
  - Probability of joint failures, etc.
- **CoVaR**, **MES**, or **Shapley values**:
  - incorporate estimation noise as a risk factor
  - a more opaque bank is more systemically important, ceteris paribus
- Should be able to assess estimation noise
  - high disclosure requirements: off-balance sheet positions, bilateral links
  - create private incentives to disclose information

Concluding remarks

- Policy messages
  - Castro and Ferrari: regulatory requirements should respond weakly to point estimates of systemic importance
  - Next step: systemic-risk measures to treat estimation noise as a risk factor
- Of course, the devil is in the detail, but
  - Having identified the issue, we must look for an answer
  - Since the answer will be far from perfect → risk-insensitive backstops

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