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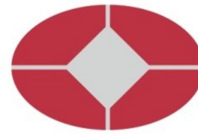

BANK FOR INTERNATIONAL SETTLEMENTS

Thoughts on the Proper Design of Macro Stress Tests and Their Usefulness in Measuring, Monitoring and Controlling Systemic Risk (joint with Petr Jakubík)

Gregory Sutton
Financial Stability Institute
Bank for International Settlements
SBIF 90th Anniversary Conference
Santiago, Chile
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Disclaimer

- The views expressed are mine and may not be shared by the European Insurance and Occupational Pensions Authority, Charles University in Prague or the Bank for International Settlements

Outline

- Why macro stress tests can help measure, monitor and control systemic risk
  - Failure of popular systemic risk indicators
  - Weaknesses in bank stress testing practices
- Desirable elements of macro stress tests
  - Scenarios should reflect large, but plausible, shocks
  - Jointly estimate trading book and loan book losses
  - Cautious use of macroeconomic models

Failure of Popular Systemic Risk Indicators

- Rodriguez-Moreno and Peña (2013, JBF) show that none of the most widely used systemic risk measures based on the prices of financial instruments showed significantly elevated systemic risk prior to mid-2007
  - Macro stress tests that exploit confidential information in the balance sheets of financial institutions have the potential to provide an earlier warning about a dangerous build-up of systemic risk

Weaknesses in Bank Stress Testing Practices

- In the run-up to the international financial crisis of 2007–08, banks' stress tests **were too mild**
  - This is a serious problem because the other main method banks use to measure and manage their credit and market risks, the use of quantitative risk management models (such as value-at-risk), does not measure well the risks associated with extreme events

Why Banks Failed the Stress Test

- In this speech, Andrew Haldane gives several reasons why banks' stress testing practices failed, including "short memories" and incentive problems
  - After a prolonged period of benign economic conditions, bankers began to underestimate risk
  - "Too-big-to-fail" considerations led them to expect bailouts in response to large shocks
    - This led to an inadequate consideration of large shocks in their internal risk management practices

Short Memories

- More than a half century ago, Kates (1962) suggested that short memories work to undermine the successful management of flood risk: “Another obstacle to more refined emergency actions lies in the progressive atrophy of any disaster preparations with time”
- It has been shown with Spanish data that loans granted in good times have a higher probability of default than loans made in recessions

Short Memories (cont.)

- Malmendier and Nagel (2011) find that the annual returns on the S&P 500 Americans experience over their lives are positively associated with the chosen level of exposure to stocks taken by these individuals
  - Evidence for short memories arises because more recent returns matter more

Significant Diversification Benefits?

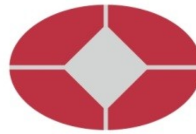
- In their stress tests run for internal risk management purposes, some banks with large trading books assume significant diversification benefits across their trading portfolio and loan or banking book
  - Yet significant diversification benefits might not arise during periods of substantial macroeconomic stress

Key Desirable Elements of Macro Stress Tests

- They require banks with large trading portfolios to estimate jointly the sum of stress losses for both their trading portfolio and loan or banking book
- The macro stress tests are based on severe, yet plausible, scenarios
- Cautious use of macroeconomic models

Macroeconomic models can understate systemic risk

- Alfaro and Drehmann (2009) show that simple autoregressive models have difficulty generating the output declines experienced during crises
- Self-reinforcing feedback loops, typically absent from macroeconomic models, can amplify systemic risk
  - GDP↓→bank profits↓→bank lending↓→GDP↓
  - Fire-sale effects: credit spreads↑→trading portfolio losses↑ →risky bonds are sold→credit spreads↑
- The output of macroeconomic models should be combined with expert judgment



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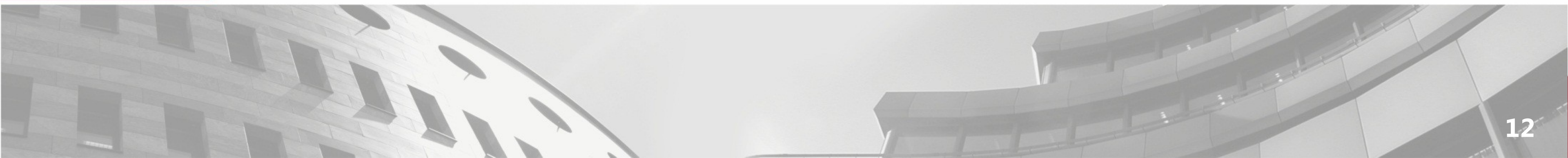

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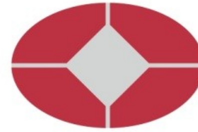

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