Discussion of Systemic Risk

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1The views in this presentation do not necessarily represent those of the Federal Reserve Bank of New York or the Federal Reserve System.
The Economics of Systemic Risk

1. **Cross Section of Systemic Risk:**
   - **Fire-sale externality**: deleveraging spills across institutions due to market illiquidity.
   - **Hoarding externality**: institutions hoard lending capacity.
   - **Runs**: e.g. money market deleveraging.
   - **Network Externality**: building up of counterparty credit risk due to interlocking of claims.

2. **Time Series of Systemic Risk:**
   - Systemic risk buildup occurs when measured risk is low.
   - Monitoring, macroprudential policy, and regulation require forward looking measures.
   - Much work remains to be done here ...
Usage of Systemic Risk Measures

1. **Systemic Risk Monitoring:**
   - Develop early warning indicators to detect imbalances that potentially give rise to systemic risk.
   - This is done in conjunction with funding structure monitoring, asset valuation monitoring, etc.
   - Foundation for macroprudential policy.

2. **Regulatory Focus on Systemic Risk Contribution:**
   - Capital surcharges for systemically important institution.
   - Internalize systemic risk externalities (pollution analogy).

3. **Identification of SIFIs:**
   - Systemic risk measures can give an indication of SIFI-ness.
   - Objective criterion that can be applied across industries: Banks, broker-dealers, insurance companies, hedge funds.
   - State contingencies key challenge for measurement.
BGK Liquidity Mismatch

- Liquidity based accounting system.
  - Flavor of stress testing assets and liabilities.
  - This might provide early warning indicators as well as a foundation for regulation.

- Liquidity mismatch is an improvement over maturity mismatch, leverage, or risk weighting.

- BGK is complementing accounting providing natural foundation for systemic risk measurement.
Giglio’s Network Measure

- Unlike most systemic risk measures, Giglio’s measure is largely model free.

- Giglio’s measure provides an explicit role for counterparty credit risk analysis.
  
  - A question I have is about CDS-bond basis—and basis more generally—are usually interpreted as a funding liquidity indicator, not a counterparty risk indicator, e.g. FX swap basis.

- Data on the network of CDS contracts would greatly improve Giglio’s ability to measure systemic risk.

- Indication of potential usefulness of data aggregation role of the OFR.
Brownlees-Engle MES Measurement

- State of the art of contemporaneous systemic risk measurement.
  - Daily updates on the NYU website.
  - Based on state of the art volatility, correlation, and tail risk modeling.

- Comparison of MES to CoVaR:
  - ES versus VaR
  - Direction of conditioning: CoVaR does both
  - Total assets versus equity
  - Countercyclical CoVaR
Countercyclical CoVaR

The graph illustrates the countercyclical CoVaR over time, with several quarters marked: 1985q1, 1990q1, 1995q1, 2000q1, 2005q1, and 2010q1.

The (mean) fCoVaR_p5_l8 and (mean) cCoVaR_p5 series are depicted with blue and red lines, respectively.

- The (mean) fCoVaR_p5_l8 line shows fluctuations from 1985q1 to 2010q1, with peaks and troughs indicating changes in the countercyclical CoVaR over time.
- The (mean) cCoVaR_p5 line similarly reflects these changes, with a focus on the co-movement of variables over the specified quarters.
Quantile versus GARCH CoVaR

5%-ΔCoVaR: Alternative Estimation

Bank of America

Morgan Stanley

Citigroup

JPMorgan Chase

Quantile Regression Bivariate GARCH

5% Δ CoVaR: Alternative Estimation

Quantile Regression Bivariate GARCH
Direction for Future Research

- Systemic risk based accounting systems.
- Incorporation of networks in systemic risk analysis.
- Real time systemic risk measurement.
- Forward looking systemic risk measurement.