

Discussion of Systemic Risk¹

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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.

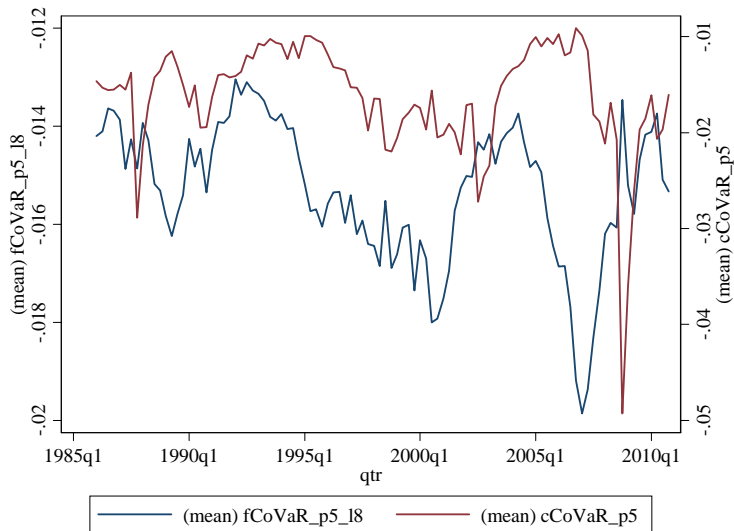
Giglio's Network Measure

- ▶ 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

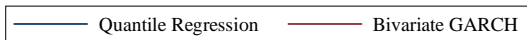
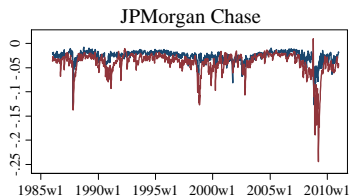
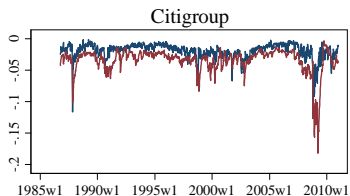
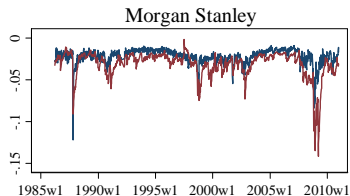
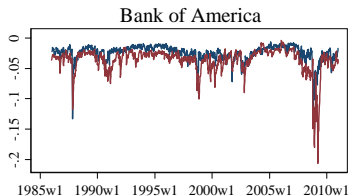
- ▶ State of the art of contemporaneous systemic risk measurement.
 - ▶ Daily updates on the NYU website.
 - ▶ Based on state of the art volatility, correlation, and tail risk modeling.
- ▶ Comparison of *MES* to *CoVaR*:
 - ▶ *ES* versus *VaR*
 - ▶ Direction of conditioning: *CoVaR* does both
 - ▶ Total assets versus equity
 - ▶ Countercyclical *CoVaR*

Countercyclical CoVaR



Quantile versus GARCH CoVaR

5% $-\Delta$ CoVaR: Alternative Estimation



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.