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Nota di contenuto	<p>Cover; Abstract; Contents; I. Introduction; Figures; 1. Gross Notional of Financial Derivatives; 2. Gross Market Values OTC Derivatives; II. Systemic Risk in OTC Derivatives: Modeling Challenges; A. SIFIs in Derivatives Markets and Market Concentration; 3. Affiliation Graph of Global SIFI's and United States (U.S.) FDIC FIs as Participants in the Five Financial Derivatives Markets; Tables; 1. Value and Market Share of Financial Derivatives for 202 FIs; B. Market Data Based Systemic Risk Measures and Financial Network Perspective; III. Financial Network Analysis</p> <p>A. Adjacency Matrix and Gross Flow Matrix for Derivatives B. Bilaterally Netted Matrix of Payables and Receivables; C. Topology of Financial Networks Complete, Random, Core-periphery, Clustered, and Small World; 2. Networks Statistics: Diagonal Elements Characterize Small World; D. Economics Literature on Financial Networks; E. Eigenvalue Perspective of Network Stability; IV. Contagion and Stability Analysis; A. Furfine (2003) Methodology: Cascades from Failure of a Trigger Bank; B. Financial Network Stability Analysis; C. Mitigation and Management of Financial Contagion: Super-spreader Tax</p> <p>V. Empirical Results: Network Analysis of the Calibrated Aggregated Global Derivatives Market A. Empirical (Small World) Core-Periphery Network Algorithm; 4. Empirically Constructed Global Derivatives Network (Bilaterally) Aggregated over all Derivatives Products for FIs and Outside Entities: Empirical Small World Network in Tiered Layout; B. Global Derivatives Network Statistics (2009:Q4); 3. Network Statistics for Degree Distribution for Derivatives Network 2009 Q4; C. Eigenvector Centrality and Furfine Stress Test Results; 4. Rich Club Statistics</p> <p>5. 2009:Q4 Derivatives Network Eigenvector Centrality and Furfine First Round Contagion Results for Top 20 FIs5. Furfine Contagion Stress test on Empirical Calibrated Derivatives; D. Quantification and Evaluation of the Super-spreader Tax (2009 Q4); 6. Maximum Eigenvalue (λ_{\max}) (λ_{\min}, Y-Axis) Using Different Values of $\alpha > 0$(Equation); 7. Individual FI Tax Rates Obtained by Multiplying Right Eigenvector Centrality by or Different Values of $\alpha > 0$; VI. Conclusion; 6. Super-Spreader Tax Raised from Top 20 SIFIs; Appendix Tables; A.1 Financial Derivatives for the Top 22 Banks; References</p>

Financial network analysis is used to provide firm level bottom-up holistic visualizations of interconnections of financial obligations in global OTC derivatives markets. This helps to identify Systemically Important Financial Intermediaries (SIFIs), analyse the nature of contagion propagation, and also monitor and design ways of increasing robustness in the network. Based on 2009 FDIC and individually collected firm level data covering gross notional, gross positive (negative) fair value and the netted derivatives assets and liabilities for 202 financial firms which includes 20 SIFIs, the bilateral flows are empirically calibrated to reflect data-based constraints. This produces a tiered network with a distinct highly clustered central core of 12 SIFIs that account for 78 percent of all bilateral exposures and a large number of financial intermediaries (FIs) on the periphery. The topology of the network results in the “Too- Interconnected-To-Fail” (TITF) phenomenon in that the failure of any member of the central tier will bring down other members with the contagion coming to an abrupt end when the ‘super-spreaders’ have demised. As these SIFIs account for the bulk of capital in the system, ipso facto no bank among the top tier can be allowed to fail, highlighting the untenable implicit socialized guarantees needed for these markets to operate at their current levels. Systemic risk costs of highly connected SIFIs nodes are not priced into their holding of capital or collateral. An eigenvector centrality based ‘super-spreader’ tax has been designed and tested for its capacity to reduce the potential socialized losses from failure of SIFIs.
