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2007–2014: LESSONS FROM THE CRISIS FOR SYSTEMIC BANKS AND CENTRAL BANKS

A well-functioning financial system allows: ways of clearing and setting payments to facilitate trade; a mechanism for the pooling of resources and for subdividing shares in various enterprises; ways to transfer economic resources through time, borders and industries; ways to give price information to coordinate decentralized decision; ways of managing risk.

Systemic important financial institutions (SIFIs): any firms whose collapse would pose serious risk to the economy. In 2007–2008 economic risk came exclusively from regulated sector not from the shadow banking sector.

Symptoms of difficulties for SIFIs internal to the firm: having a power-hungry and authoritarian leader (Fuld at Lehman, Sean Fitzpatrick at Anglo Irish Bank); failed internal governance systems, always involving the board of directors either incompetent or subservient to the leader.

Symptoms of difficulties for SIFIs: financial environment massive investment of short-term borrowings in high yield assets with overestimated safety and liquidity; between 2002–2006 direct or indirect investments in property, mortgage back assets or CDOs, subprime etc.

Symptoms of difficulties for SIFIs from the regulator: excessive complicity between regulators, government and SIFIs (Iceland, Ireland); incompetent regulators; insufficient monitoring (the light regulation of the bank of England); the restricted mission of central banks (by law).

More constraints on the big banks: by dividing the banking businesses into investment banks and retail banks; by enhancing the buffers of banks and insurance companies.

A new framework in the process: controlling the prominent actors; new institutions and new missions; enlarging the mission of central banks; tackling dangerous asset bubbles; assuming financial stability.

Improving the governance of SIFIs: having internal controllers report to the board of directors; reinforcing the board's competency over market operations; establishing specialist committees.

Avoiding future financial failures: ensure large banks provide transparent information; reinforce board's authority and ability to control corporate strategy; enhance regulatory quality.

Enlarging the mission of central banks and governments: central bank still lender of last resort; government becomes buyer of last resort.

To conclude we would like to highlight the fundamentals of healthy regulation:

- managing intelligently financial innovations;
- understanding the business of finance;
- reducing opacity;
- reducing leverage;
- keeping an insurer of last resort alive;
- using academic research.

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FINANCIAL NETWORKS AS DIRECTED CYCLIC GRAPHS – DRAFT

The study of financial networks is not new and neither the awareness of its importance. In late 2009 the European Central Bank (ECB) hosted a workshop called “Recent advances in modelling systemic risk using network analysis” (see ECB (2010)) which gathered practitioners and academics from around the world to share and discuss advances in network theory. At that time the organization of such discussion can be seen a little bit as post factum given that the contagion started by a few defaulted SIFIs had already spread. The importance of the discussion was not to acknowledge that the world is vastly interconnected – this is a well-known fact – but rather to attract the attention around the need of more systematic investigative approach to the properties and sources of instabilities that such interconnectedness can entail.

Directed Cyclic Graphs (DCG) are a subset of the more general toolkit of Probabilistic Graphical Models which has already found applications in Finance, Engineering, Computer Science and Medicine. Unlike Bayesian Networks (BN) and Markov Random Fields (MRF), they allow both directed and undirected edges in the graph as well as cycles. This provides a natural representation of a network of debt relations where an institution can have debt with a chain of other institutions and some of them can be in turn indebted with it, something that cannot be represented by acyclic graphs. Neither a structure which allows cycles but with fully undirected edges (like MRF) can be satisfactory since it precludes to account for interventions and manipulations in the network.

The model we are going to introduce here is a simple static one period model which will provide us with the distribution of defaults, let’s say, over 1 year horizon, given the mutual debt structure in the network. We thus ignore the complication of a dynamic multi-period model which can complicate the entire apparatus by introducing difficult to calibrate, difficult to manage