

Network Connectivity and Systematic Risk

Monica Billio* Massimiliano Caporin[†] Roberto Panzica[‡]
Loriana Pelizzon[§]

August 2014

PRELIMINARY AND INCOMPLETE. DO NOT QUOTE

Abstract

The need for understanding the propagation mechanisms behind the recent financial crises lead the increased interest for works associated with systemic risks. In this framework, network-based methods have been used to infer from data the linkages between institutions (or companies). Part of the literature postulates that systemic risk is strictly related (if not equal to) systematic risk. In this work, we elaborate on this hypothesis and introduce a modelling framework where systemic and systematic risks co-exist. The model is a variation of the traditional CAPM/APT model where networks are used to infer the exogenous and contemporaneous links across assets. The systematic risk component acts in an additive way on both the systematic and idiosyncratic risk components. Our proposed methodology is verified both on simulations as well as on real data.

Keywords: CAPM, Volatility, Network, interconnections, systematic risk, systemic risk.

JEL Classification: G10, G12, F35.

*University Ca' Foscari Venezia (Italy)

[†]University of Padova (Italy)

[‡]Goethe University Frankfurt (Germany)

[§]Goethe University Frankfurt (Germany)