Systemic resilience of networked commodities

Roy Cerqueti (Sapienza University of Rome and University of Angers), Raffaele Mattera (Sapienza University of Rome) and Saverio Storani (Sapienza University of Rome)

ABSTRACT

This paper develops a class of complex network-based models whose interconnected nodes are commodities. We assume that the considered commodities are linked on the ground of the similarities of risk profiles and correlations of their returns. In this framework, we explore the resilience of the networks -- i.e., their ability to absorb exogeneous microscopic shocks. To this aim, we assume that high levels of resilience are associated with small variations of the community structure of the network when an exogenous shock occurs -- hence, assuming that the stability of the networked commodities is measured through the maintenance of their connection levels. Shocks are conceptualized as impulsive modifications of the links among the considered commodities. The employed methodological instrument is the clustering coefficient, which is a nodal centrality measure describing the way the adjacent nodes are mutually connected. The theoretical proposal is empirically tested over a large set of commodities of different nature.