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Characteristics of the countries network in the European sovereign debt crisis

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Fears of a sovereign debt crisis developed among investors as a result of the rising private and government debt levels around the world together with a wave of downgrading of government debt in some European states. The aim of this presentation to investigate the characteristics and hierarchical structures of the European sovereign debt crisis by using the debt values and percentage of Gross Domestic Product (GDP) of the countries move together over time. We obtain the topological properties among the countries based on debts of European countries over the periods of 2000-2011 by using the concept of hierarchical structure methods (minimal spanning tree, (MST) and hierarchical tree, (HT)), which were introduced by Mantegna [1] and Mantegna and Stanley [2]. The MST and HT are known as useful tools to perceive and detect the global structure, taxonomy and hierarchy in financial data. We perform the bootstrap techniques to investigate a value of the statistical reliability to the links of the MSTs [3, 4]. We also use a clustering linkage procedure in order to observe the cluster structure much better [3, 4]. From the structural topologies of these trees, we identify different clusters of countries according to their level of debts and economic ties. Our results show that the Eurozone's fiscally troubled economies, specifically Spain, Greece, France, Ireland, Belgium, Italy, Austria and Portugal are located as a cluster with each other in the center of the MST.

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