GENERAL APPROACH TO MARKET NETWORK ANALYSIS

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Stock market as a complex network attract an important attention last decades. Network model of a stock market is a complete weighted graph where the nodes
are the stocks and weights of edges reflect interconnection between corresponding stocks. The most popular measure of interconnection is Pearson correlation. Network structure in this model is a characteristic of the complete weighted graph and its sub graphs. In the paper [1] the authors consider minimum spanning tree and planar maximally filtered graph as a market network structures. This approach allows to detect some hierarchical structures connecting clusters of stocks. Different approach was taken in [2] where the market graph was introduced. Market graph is obtained from the complete weighted graph by deleting all edges with weight inferior to a given threshold.

Despite the growing number of publications on the subject there is a big gap in theoretical foundations of applied techniques. In the present paper we develop market network analysis in the framework of the theory of multiple decision statistical procedures. In particular we consider the following problems:

- Choice of multivariate distribution and of measure of similarity.

- Statistical analysis of existing algorithms of network structures construction.

- Development of optimal statistical procedures.

- Statistical uncertainty of network structures.

Some results in this direction are published in the papers [3], [4].

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