Dottorato in 'Development Economics and Local Systems' - DELOS
Curriculum in Economics of Local Systems

STATISTICAL ANALYSIS OF NETWORK DATA

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Network analysis has attracted considerable interest from the social, behavioural and other research communities in recent decades. This interest can be attributed to the importance and need to analyse relations among units, to detect any underlying structural patterns, and to infer implications of these relationships.

The relationships linking units may be of many sorts: economic, political, interactional or a affective to name just a few.

Conventional data focuses on units or actors and their attributes, network data focus on actors and relations. Relational data can be represented as a network, or mathematical graph, consisting of a set of nodes and a set of edges.

Statistical models (for the probability of a tie) applied in social network analysis are typically non-standard because the common assumption of independent observations does not hold: the multiple ties to and from the same node (actor) are related. Moreover, the popular assumption of continuous normally distributed variables does not hold when tie variables are binary, nominal, ordinal, or count variables.

This short course provides an overview of (social) network modelling, with some applications. In particular, the main modelling approaches for networks observed in cross-section or longitudinal studies will be considered.

The course will also provide practical applications through statistical software (the \statnet" open-source suite -http://statnet.org- and the RSiena package - www.stats.ox.ac.uk/snijders/siena/).