UNIVERSIDAD DE GRANADA

Departamento de
Teoría e Historia
Económica

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Título: Degree Centrality and Externalities in Networks" (joint work with Agnieszka Rusinowska)

Sala: E22

Hora: 12.30

Resumen: In this paper, we aim at incorporating externalities into centrality measures. We characterize axiomatically a class of measures based on the degree measure in weighted networks and modified for an externality. We give a foundation of these measures as utility functions over network positions, expressing preferences over positions in networks, and bringing externalities of connections between other positions. Other nodes being more connected can have positive as well as negative externalities. Our class of measures contains two parameters, in particular, an externality parameter. Depending on these parameters, we can recover some specific measures, e.g., the degree measure if the externality parameter is equal to zero. By considering some additional axioms on the preferences, we can specify the range for the parameters in the utility functions. Negative (respectively, positive) values of the externality parameter express negative (respectively, positive) externalities. Negative externalities of other nodes being connected to each other always occur when the sum of the values assigned to all nodes is a constant. This is the case, for instance, for the average degre externality measure which assigns to every node in a network its degree minus the average degree over all nodes, and therefore leads to the sum of the values equal to zero.

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