Quantifying the differences between the auction and the negotiated market: the role of the structure of interactions

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It is commonly admitted among economists, that a market with a centralized structure (like an auction market) is more efficient than a decentralized one. The reason for this, being the fact that in the former, all the actors dispose of the same information while the negotiations remain private in the decentralized one. There is a large number of works comparing both types of market and recent studies start paying attention to the structure of the interactions [1-2].

The *Boulogne-Sur-Mer Fish Market*, the most important one of France in terms of quantity, is an excellent case study to investigate this problem. This old market, which had operated in a decentralized way for long time, was led by UE regulations to adopt a centralized structure. However, this new way of functioning did not convince the economic actors and it was finally admitted, in 2006, to allow the two forms of market (auction and bilateral negotiation submarkets) to coexist in the same place. Detailed data concerning the daily transactions is available, allowing for a comparison of the behavior both sub-markets under similar economic, seasonal, climatic and social, conditions.

In this work we are interested in the structure of the social interactions that take place among the actors of both submarkets. These interactions can be described by the means of a complex network where the nodes are of two different kinds, (representing buyers and sellers), and the links, that stand for the interactions, only connect nodes of different kinds. The network so obtained is *bipartite*. This network has weighted links when one takes into account the interactions of the whole period.

We study this problem applying the tools and concepts commonly used to study ecological mutualist systems [3]. In these systems the interactions between actors of two different guilds brings a mutual benefit to both, like in *plant-pollinator*, or *plant-seed-dispersers* networks. We investigate if some similar mechanism structures the negotiated market where the actors come to know each other after a repeated number of visits and transactions.

Our results show that the structures of the social interactions developed in both submarkets are different. In particular, we define an index that accounts for the “fidelity” of the interaction between the different couples of actors in both markets. The probability distribution of this fidelity index looks scale free in the negotiated market while it shows a sharper decrease in the auction one, suggesting that there is a threshold for the fidelity of the agents in the latter.

References

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