# Essays on the economics of social networks

# Impact

This dissertation started with the assertion that theoretical models are not a perfect representation of reality. Their findings usually do not provide exact predictions about the world, but rather produce the spectrum of possible outcomes and factors which should be taken into account in decision-making. However, this is exactly where their main utility lies, as they provide the necessary context in which (empirical) results can be interpreted and understood.

The findings in Chapter One aim at contributing to the fundamental understanding of the nature of altruistic behaviour and the circumstances which are most favourable towards it. This is of interest to economists because they investigate systems which rely on cooperative behaviour, such as the financing of public goods. The chapter also comes close to the strand of literature related to evolutionary (biological and game theoretic) models which consider the survival of altruistic behaviour when faced with the (short term) dominant strategy to free-ride. Chapter One also seeks to expand the possible types that are considered in economic models beyond the binary representation of constant cooperators (altruists) and non-cooperators (egoists), by providing an alternative type of agent, one who cooperates only partially.

The findings of Chapter Two have a twofold purpose. Firstly, social network formation and specifically the role of heuristics in it has not been a prominent topic in the economic literature on networks. By showing that the model produces non-trivial stable networks with properties similar to real social networks, the chapter shows that heuristics are a plausible factor for network formation. Secondly, the chapter is especially interesting in the fact that starting from the same conditions, without initial differentiation between agents or employing complicated optimisation, but only following a random matching process, a diverse set of stable outcomes emerges. Specifically, networks formed by the simple heuristic can stabilise at states in which many individual agents get unequal outcomes, but the overall utilitarian welfare is close to maximum. These results can alert policy-makers to the possibility that when observing interconnected groups which are not well integrated with each other this is not *necessarily* harmful to welfare.

The research in the first two chapters also tries to strengthen the position of computer simulations in theoretical economic modelling. As some of the most interesting observations

in the chapters come from their simulation parts, they show that simulations are a viable option when the questions are not fully within the reach of a purely analytical approach.

The findings in Chapter Three readily bridge the gap between theory and the real world. The increased use of social media and its growing influence as a source of information, as opposed to traditional channels and mainstream media, make an investigation into the power of persuasion of a single entity over a wide range of users a straightforward application. Moreover, as already mentioned, the model assumes that the agents *know* that they are targeted with a persuasion campaign and also *how* this is done. While this is unlikely in real life, the fact that in theory the persuasion campaign can nevertheless be quite successful raises a lot of relevant questions about the *actual* persuasion power of social media giants, especially when people are *not* always cognisant of the fact that they might be targeted. This is exacerbated by the fact that many markets related to social media have a single dominant actor. Therefore, research modelling a single sender persuading multiple receivers like the one in Chapter Three can inform policy-makers' deliberations when considering whether and/or how to regulate such markets.