Literature Review

Control effects on cooperation in embedded interactions

Thom Volker (5868777)

Supervisors: Vincent Buskens & Werner Raub

Sociology and Social Research Master's programme

Utrecht University

April 06, 2021

Word count: 1099

Contents

1 Key words

Key words:

- Dyadic + network embeddedness (focus on network embeddedness for thesis itself).
- Use of own (readily available) data
- Try to align the M&S project and SaSR project as much as possible.
- Endogenous + exogenous (might not be fruitful in the thesis itself).
- Note that the two theses are written in parallel, and have to be finished in May 2022.

2 Introduction

Social dilemmas are at the core of everyday life. Students may anticipate a good grade with minimal effort by free-riding on the work of others in their group, researchers could obtain yet another publication by letting their collaborators do the lion's share of the required work (Corten, Buskens, & Rosenkranz, 2020) and a car dealer may hide several vehicle defects when selling a second-hand car to a relatively uninformed customer (Buskens & Weesie, 2000). The benefits of acting opportunistically are amplified in isolated encounters, that is, in one-shot interactions where the actors involved do not have any mutual connections, nor do they have a shared history or a shared future. Because no information about a transaction partner's behaviour can be obtained or transmitted, actors' sole concern is their individual return in a given interaction. However, most interactions do not occur in social isolation, but are characterized by possibilities of future interactions, while the actors involved may share a common network. Thus, these interactions are said to be embedded, dyadically, in a network, or both.

3 Embeddedness

Theoretically, it is well established that in isolated social dilemmas, it is generally hard to establish a cooperative relationship (see Hardin, 1968 for the *Tragedy of the Commons*; Luce & Raiffa, 1989 for the Prisoner's Dilemma; and Buskens & Raub, 2002 for the Trust Game). Consider for example the one-shot Prisoner's dilemma as depicted below (Table 1). According to the pay-off scheme, regardless of the choice of the other player, an individual actor obtains the highest pay-off by acting opportunistically (i.e., choosing D). Defecting when the other cooperates leads to an increase in pay-offs, as well as defecting when the other defects as well. Hence, the Nash equilibrium is

		P_1	
		C	D
P_2	C	$(5, 5)$	$(0, 10)$
	D	$(10, 0)$	$(2, 2)$

mutual defection, even though both players would be better off with mutual cooperation. Indeed, although there is some cooperation in reality, multiple experiments have shown that the amount of cooperative behavior in such settings is minimal, especially after players have gained experience with one-shot games (e.g., Cooper, DeJong, Forsythe, & Ross, 1996; Dal Bó, 2005). **CHECK FOR SOME COOPERATION IN ONE-SHOT PD'S THE ARTICLES Hayashi N, Ostrom E, Walker J, Yamagishi T.1997.Reciprocity, trust and the illusion ofcontrol: a cross-societal study.Work.Pap.Indiana Univ. Orbell J, Dawes R. 1993. Social welfare, cooperators' advantage, and the option of notplaying the game.Am. Sociol. Rev.58(6):787–800** Discouraged, one might conclude that no cooperation is possible, because human beings would exploit one another whenever the opportunity arises. However, cooperative behaviour is not as seldom as this finding would make us believe, as illustrated by various examples ranging from the number of packages that are shipped and paid for each day to research projects that really are a joint effort of multiple scientists. The paramount question then is which conditions make that cooperative behaviour will not be abused.

Critics of this initial theoretical model have rightly noted that most real-life interactions do not take place in social isolation, but are actually embedded. Embeddedness refers to the fact that interactions often occur within a social environment. The actors involved may have interacted in the past, or they may speculate on having future interactions. Additionally, the actors may be connected indirectly, through common acquaintances that have interacted with any of the two in the past, or speculate on doing so in the future.

- Add that embeddedness can foster cooperation through two mechanisms: learning and control.
- Briefly explain learning.
- More elaborately explain control, and remark that this review focuses on control. However, as quite some literature is not able to distinguish learning and control, it is helpful to explain learning as well, so that it is possible to refer back to this section when control and learning cannot be disentangled.
- Explain that control effects can be investigated in experiments looking at the first round of a series of games (no learning yet), by an end-game effect, or by controlling for learning effects.

The latter is generally hard, as it is not known how learning and control effects may affect one another.

4 Control effects in dyadic relations

A first indication on the presence of control effects in repeated interactions can be seen in finite interactions. According to equilibrium behaviour, it follows from backward induction that no cooperation is possible in finitely repeated games (e.g., Luce & Raiffa, 1989). Namely, in the last round, non-cooperative behaviour cannot be punished in any subsequent round, and hence, players profit from defective behaviour. Subsequently, actions in the last but one round do not affect behaviour in the final round, and thus defecting is the pay-off maximizing strategy. This pattern repeats itself to the first round of the game, and thus one would expect no cooperation at all. However, a variety of experiments show that subjects act cooperatively in initial rounds of a finitely repeated game, leading Rapoport (1997, p. 122) to conclude that in practice, subjects do not rely on, or are not capable of backward induction. However, in the final rounds of the finitely repeated games, where actors can not or hardly punish any defective behaviour of other players, cooperation rates decrease substantially.

4.1 Control in exogenously dyadically embedded interactions (repeated games)

- Dal Bo & Frechette
- Buskens, Raub & Van der Veer - the condition without reputation shows a clear end-game effect, indicate for the presence of control effects.

4.2 Control in endogenously dyadically embedded interactions (repeated games)

- Sokolova, Buskens & Raub - show higher cooperation rates in dyadically embedded interactions than in one-shot games.

5 Control effects of network embeddedness

Research on repeated interactions in dyadic relations involve two actors forced into an iterated relation. However, in reality, interaction partners may deliberately choose to engage in a relationship

and have the freedom to terminate the relationship (Yamagishi, Hayashi, & Jin, 1994).

Sánchez (2018) remarks in a review that lattices or networks do not support cooperation at all. Even though cooperation in networks generally starts at a high level, with the majority of the actors choosing to cooperate, cooperation rates generally decrease to a fraction of only 20%.

5.1 Control in exogenously embedded interactions in networks

5.2 Control in endogenously embedded interactions in networks

6 Control effects in iterated interactions embedded in networks

Dyadic and network embeddedness simultaneously.

7 Conclusion

8 Literature

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