

# Contests for public goods

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# Valorization

In the Valorization Addendum I discuss the societal and economic opportunities which can be derived from the implications of my research. This is in accordance with Article 23 of the “Regulation governing the attainment of doctoral degrees” at Maastricht University. Knowledge valorization refers to the “process of creating value from knowledge, by making knowledge suitable and / or available for social (and / or economic) use and by making knowledge suitable for translation into competitive products, services, processes and new commercial activities” (adapted definition based on the National Valorization Committee 2011:8). This Chapter is structured as follows: First I discuss what valorization means for research in general and how this concept has guided my approach towards this study. In the following three sections I describe the societal and economic implications which directly relate to the respective chapter. In the final section I will bring together the threads and provide some outlook for future research.

## General

In my understanding of knowledge valorization, the term is akin to ‘innovation’. Innovation is crucial to the continuing success of any organisation in the broadest sense – from small and medium sized enterprises to whole economies. Innovation means converting inventions to reality by applying them to a product or process. An invention alone is not considered an innovation; the invention has to be used (or at least be usable) in practice.

In this dissertation I use experiments to understand if and how simple institutions – which we use every day – help groups coordinate in a competitive environment. The broader implications of my results can be applied to discussions surrounding political interference of lobby groups and detrimental dynamics in socio-political conflicts. Of course, policy recommendations based on my results (and to some extent the results themselves) should be taken with some caution, keeping in mind that they have been generated from moderate sized student samples in a laboratory setting. There is a certain degree of ambiguity as to whether the interventions in this kind of experiments can be generalised.

## Chapter 2

In Chapter 2 we study individual willingness to cooperate in a public good game after an initial team contest phase in an experimental study. While subjects in the treatment

setup make a conscious decision on how much to invest in the contest, this decision is exogenously imposed on subjects in the control setup. As such, both groups of subjects incur sunk costs and enter the public good game with different wealth levels. Our results indicate that the way these sunk costs have been accrued matters especially for groups on the losing side of the contest: Given the same level of sunk costs, contributions to the public good are lower for groups which failed to be successful in the preceding between-group contest. Furthermore, this detrimental effect is more pronounced for subjects playing a contest with deliberate contributions before.

Insights from this chapter can be of interest for the design of tendering processes for commercial covenants. Especially if both candidates dispose of comparable productivity levels, the harm to the losing party is not met by an analogous positive burst of the winning party. From an overall social welfare perspective, devising a method of arbitration which avoids a between group contest would be favourable.

## Chapter 3

In Chapter 3 we set up an experimental study to analyse behaviour in a team contest when allowing to punish or to reward other group members. A team contest entails both public good characteristics within the teams as well as a contest across teams. Moreover, we compare two types of contest environment: One in which two groups compete for a prize and another one in which we switch off the between-group element of the team contest. Unlike what experimental studies in isolated public goods games indicate, we find that reward giving, as opposed to punishing, induces higher contributions to the group project. Furthermore, expenditures on rewarding other co-players are significantly higher than those for punishing. This is particularly pronounced for the between-group contest.

The primary application of this study is twofold: *First*, there is scope for operationalisation in the context of socio-economic conflict or between-country struggles for a natural resource. *Second*, in a corporate context, commercial tenders are of widespread use for the procurement of public projects, like major or medium-sized construction ventures. In fact, public procurement represents more than 10 % of EU GDP as of 2007 (source: Bovis, Christopher H. (2007). *EU Public Procurement Law*. Elgar European Law Series. Edward Elgar Publishing. ISBN 978-1-84720-947-4). Given the starkly contrasting nature of these two fields of application, policy recommendations, based on insights gained in this chapter, would fundamentally differ with respect to which goal is considered achievable. While in the former scenario, a de-escalation of conflict expenditures would be desirable, firms in the latter scenario might wish to increase engagement into the procurement tender.

## Chapter 4

In Chapter 4 we present an experiment designed to examine whether the existence of a leader can curtail over-contribution and improve group welfare in a team contest. Furthermore, we compare different levels of leader authority and the effect of communication between leaders of competing groups with respect to conflict potential and social welfare. Our results indicate that contest expenditures in treatments with a leader are higher, unless

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there is communication. Moreover, leaders with authority fan the flames of between group competition by allocating a relatively larger share of the prize to subjects that have delivered more input to the competition. When allowing for communication between leaders of competing groups, those who manage to agree on taking turns for delivering input to the contest, exert a mitigating effect on spending levels.

Valorization opportunities of this study relate closely to the applications outlined in the previous section. The hierarchical nature of the group setup in this experiment has potential for a closer resemblance to group structures which are characterised by having a superordinate leader. Examples for this are most businesses, political parties or sports teams. In a competitive scenario, a proper understanding of the role of managers in a firm or commanders in a military platoon, can be of utmost importance for a smooth functioning of the group as a whole.

## Conclusion and Outlook

Competitive situations are ubiquitous in society. From international conflicts for resources to the daily competition for clients, a finite amount of wealth (and attention) has to be allotted between stakeholders. This happens on various layers of society and with different degrees of hostility. Using the controlled environment of laboratory experiments, I investigate the role of fundamental institutions in situations where groups compete for a prize of fixed or endogenous size.

Globally there exists a total military budget of \$1,676 billion in 2015 (source: Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database), which is equivalent to 2.3 per cent of global gross domestic product (GDP). This enormous sum of money is not spent to care for the older or to educate the younger generation, but in order to be adequately equipped to face outside (or inside) challenges to the national interest. Insights contributing to a better understanding of group dynamics in a competitive environment can serve to reduce this sum and in the process give fiscal room for welfare enhancing public expenditures instead.

In this context, my research has shown that in a competitive environment, groups often-times do not use interaction mechanisms to coordinate towards a more efficient outcome. Instead, participants incentivise their teammates to pursue a more aggressive strategy to outdo the opposing group, beyond a financially prudent level of appropriation. This is in contrast with established findings on how interaction mechanisms pan out in cooperative environments. Hence, policy recommendations can substantially differ, depending on the economic environment under consideration.

