



Cooperation and distributive conflict



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ABSTRACT

If either property rights or institutions are weak, agents who create wealth by cooperating will later have an incentive to fight over the distribution of it. In this paper we investigate theoretically and experimentally the circumstances under which welfare losses from investment in distributional contests destroy welfare gains from voluntary cooperation. We find that in situations, where the return to cooperation is high, subjects cooperate strongly and welfare exceeds the predicted non-cooperation levels. If returns to cooperation are low, then subjects still cooperate, but the resources wasted in the distributional conflict lead to lower welfare than if subjects had followed the theoretical prediction of not cooperating.

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1. Introduction

Whenever the cooperation of individuals generates surpluses for which no well defined property rights exist, a distributive conflict might arise. If rational actors foresee that the distributive conflict could become very severe they might refrain from cooperating in the first place. This creates a hold-up problem. However, one can also imagine that actors do not foresee the damaging nature of distributive conflict over the surplus created by cooperation, such that they end up worse off than if they had not cooperated at all. Some historical examples like the Balkan conflict, the Aceh wars or the Sri Lankan civil war come to mind. Initial cooperation and the following conflict or civil war left these regions much worse off.¹ The same phenomenon is observed in other, smaller environments. After a bitter divorce battle the parties are often worse off than before they entered a marriage. The same is true for many joint ventures in the business world that have gone sour. This is even more often the case in criminal joint ventures, where property rights are not enforceable at all. Distributive conflicts over the proceeds from criminal activity often lead to considerable collateral damage.²

The contribution of this paper is a clean investigation of the impact of cooperation and consecutive fighting for its proceeds on welfare. Compared to other studies our main methodological advancement is that we are shutting down other mechanisms that could have an impact on welfare. In order to achieve this, we develop a simple model capturing the essence of the problem. The empirical evaluation is made possible by taking the model to the laboratory. Our study is in the spirit of other recent papers that use laboratory experiments with contests in order to study conflict situations (like Kimbrough and Sheremeta, 2013, 2014; Kimbrough et al., 2014).

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¹ See Hirshleifer (2001), Grossman (1991, 1999), Grossman and Kim (1995) and Collier and Hoeffler (2004) for theories on the impact of material objectives on violent conflicts and civil wars. See also the econometric study and the case studies in Sambanis and Collier (2005a, 2005b) for a comprehensive investigation of "greed versus grievance" as causes of civil wars, which shows that material objectives are important.

² For a beautiful dramatic illustration of this mechanism at work, watch the movie "The Treasure of the Sierra Madre" with Humphrey Bogard, which was suggested to me by Phil Grossman.

Our simple model has two stages. In stage one two players invest simultaneously into a group project, where the resulting value of the project is a multiple of the total investment. In stage two, after observing the total value of the group project, players simultaneously exert costly effort with the aim to secure a share of the created value. The share a player receives is equal to her share of total efforts exerted.

First, we analyze a situation, where initial investment does not restrict the amount of effort available in the distributional contest. This is the case if, e.g., investment and effort are not taken from the same budget. One can think of situations, where efforts are physical and investments are financial or vice versa. Examples are illegal joint ventures such as drug syndicates with violent distributional battles or group production with court battles over the distribution of the returns. Cooperative investments do also not reduce the budget available for fighting in cases where both investments and efforts are financial but the maximum investment is small compared to the total budget. Take multinationals investing in a joint venture for example. There the maximum amount reasonably invested in a joint venture is often small compared to the total assets of a firm. Then investing an extra Dollar into the joint venture will not significantly reduce the resources available for a potential court battle over the proceeds.

Our analysis shows that up to very high social returns for contributions a rational player would not cooperate (i.e. invest in the group project). We know from many experimental studies that subjects often cooperate in social dilemmas, though (Ledyard, 1995; Chaudhuri, 2011). It is interesting to explore the consequences for subjects that cooperate in the investment stage. For low social returns cooperation is actually welfare damaging when followed by optimal efforts, since the resources burned in the contest are greater than the surplus created from cooperating. Cooperation in the investment stage is only welfare enhancing if followed by efforts well below the equilibrium level. For higher social returns cooperation followed by equilibrium efforts is welfare increasing but still not individually rational.

The insight that the inability to commit to not fighting in the future is a major cause of a severe hold-up problem motivates a variant of our model with constrained fighting efforts. Here the players have to finance their investment and their fighting effort from the same limited pool of resources. This is not only of theoretical interest but also describes many real world situations. For example, in contrast to multinationals, venture capitalists often only raise a certain amount of capital they can use in a joint venture. The investment into the joint venture and also potential fees for lawyers in subsequent distributive conflicts have to be paid out of it. Sports is another area where both investments into the joint project and efforts to secure the largest share of the proceeds come from the same pool of resources. Players have to invest from their pool of physical stamina into the team success as well as into their own fame, which influences the share of the team surplus they receive through salaries, etc. A more specific example are break-aways in cycling. Riders in a breakaway have to use their legs when cooperating with the aim to stay away from the peleton. However, they will lack the power expended, when the final sprint comes along, which decides who wins and who gets how much of the prize money.

While the same zero-contribution equilibrium as in the unconstrained case exists for the same range of social returns, the resource constraint also allows for other more efficient equilibria. The intuition is the following: if both players invest a relatively high level of their resources into the joint project then they cannot fight very hard anymore as they do not have much resources left. This might make investing worthwhile. Investing the full endowment is not an equilibrium though, as then the opponent could invest a little less and steal the whole surplus with a little bit of effort.

With these theoretical predictions in hand we implement a two-by-two experimental design in the laboratory. We vary the marginal social return to investment (low vs. high). On the other dimension we vary if the efforts in the conflict stage have to come out of the same endowment as the first-stage investment (constrained vs. unconstrained). We find in contrast to much of the contest literature that subjects' average efforts are remarkably close to equilibrium. As subjects – this time contrary to equilibrium predictions – also contribute, we observe welfare damaging play in the low return treatments. Subjects learn with repetition and reduce their contributions such that the welfare losses become small in the final stages of the experiment. For high social returns without constraints on effort, subjects overcome the social dilemma and social welfare is about 50 percent above the prediction. In the constrained case subjects also make positive contributions. These are lower than in the unconstrained case, as subjects are careful not to become defenseless in the distributive conflict. The lower resulting efforts cannot fully compensate for the lower surplus generated and so contrary to the theoretical prediction welfare is lower than in the unconstrained case. The constraints, on the one hand, are useful to limit welfare reducing cooperation when the social return to cooperation is low. On the other hand, constraints are hindering subjects to fully realize welfare gains from cooperation when the returns are high.

The remainder of the paper is organized as follows. The next section lays out the underlying model and derives equilibrium predictions. Section 3 describes the experimental design. Section 4 reports and discusses our results. We end with some concluding remarks in Section 5.

2. The model

In what follows we lay out our model. We combine a simple version of a cooperation game (a linear two-player voluntary contribution mechanism) with the simplest version of a distributional contest (a two-player Tullock contest, Tullock, 1980). In the first stage, players voluntarily invest in a group project. Then in the second stage, after observing the value of the group project, players simultaneously exert costly effort in a distributive contest. The share of value from the group project a player receives is proportional to the ratio of her own effort to the total effort exerted.

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