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Inefficiency and social exclusion in a coalition formation game: experimental evidence

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Abstract

This paper experimentally investigates the impact of reciprocal behavior in multilateral bargaining and coalition formation. Our results show that reciprocal fairness strongly affects the efficiency and equity of coalition formation. In a large majority of cases, inefficient and unfair coalitions are chosen when their coalition values are relatively high. Up to one third of the experimental population is excluded from bargaining and earns nothing. In monetary terms economically significant efficiency losses occur. We find that the interplay of selfish and reciprocal behavior unavoidably leads to this undesirable consequences. We also compare the predictions of recently developed models of social preferences with our experimental results. We find that some of these models capture the empirical regularities surprisingly well.

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1. Introduction

Bargaining is one of the central aspects in economic activity. Some bargaining is bilateral and negotiations take place only between two economic agents such as a buyer

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and a seller. There are, however, many multilateral bargaining situations in which agents are free to form coalitions. Examples are abundant: private-ownership firms, cartel of firms, labor unions, clubs, networks, international trading blocks, coalitions of political parties, etc. An important aspect in multilateral bargaining is the possible conflict in coalition formation. In particular, it may play an important role for the efficiency and equity of agreements. Standard literature on bargaining theory analyses this conflict under the assumption of narrow selfishness of bargainers. The literature on bargaining experiments, however, leaves little doubt that behavior of people is also influenced by considerations of fairness and reciprocity.¹ The main purpose of this paper is to experimentally investigate the impact of reciprocal fairness on multilateral bargaining.

To experimentally study coalition-forming behavior in the most clear-cut way, we introduce a simple non-cooperative bargaining procedure of a three-person super-additive game in coalition form. In the game, a group benefit is assigned to each possible coalition while any single player produces zero benefit. In the experiment a ‘proposer’ has to choose between the efficient three- and an inefficient² and unfair two-person coalition. Thereafter, the proposer makes a proposal about the division of the coalition value. Only if all members of the chosen coalition accept the proposal the allocation is implemented. Otherwise the surplus is destroyed and nobody earns anything. Subjects who are not members of a coalition earn nothing for sure. This set-up not only allows us to investigate (ultimatum) bargaining behavior in two- and three-person coalitions within one setting but also whether people are ready to forgo resources and increase inequality simultaneously.

To investigate the effect of different gains from cooperation on coalition choices and payoff distributions we systematically varied the value of an inefficient coalition, keeping the value of the efficient coalition unchanged. We implemented four different values of two-person coalitions within four experimental conditions. The conditions differed only with respect to the value of the two-person coalition. The grand coalition was always worth 3000 points and the two-person coalition values varied between 2800, 2500, 2100, and 1200 points.

Our results indicate a clear link between two-person coalition values and coalition formation. In the two conditions with efficiency losses of 7 and 17 percent, respectively, an overwhelming majority of up to 95 percent of ‘proposers’ take up the inefficient two-person coalition. They thereby exclude almost one third of the population from participation. In the condition where the two-person coalition induces an efficiency loss of 40 percent still about 40 percent of the proposers choose this small coalition. The actual behaviorally induced efficiency losses are economically significant and vary between 6 and 15 percent. We provide evidence that these economically and socially undesirable results are an

¹ When using the terms reciprocity, reciprocal behavior, or reciprocal action we do not only mean reciprocity in the narrow sense of responding (un)kindly to (un)kind behavior but also behavior that may be interpreted as reciprocal though it is not driven by intentions. The reason is that some purely outcome-based models of social preferences predict behavior that is not distinguishable from intentional rewarding or punishment. We discuss these models in Section 4.2.

² As an anonymous referee rightly remarked one has to be careful when talking about inefficiency in the presence of social or other regarding preferences. Whenever we are using this term it should be interpreted in the material or monetary sense, which we believe is in terms of forgone resources an economically important measure.

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