



The effect of social fragmentation on public good provision: An experimental study[☆]



Surajeet Chakravarty, Miguel A. Fonseca^{*}

University of Exeter, United Kingdom

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ABSTRACT

We study the role of social identity in determining the impact of social fragmentation on public good provision using laboratory experiments. We find that as long as there is some degree of social fragmentation, increasing it leads to lower public good provision by majority group members. This is mainly because the share of those in the majority group who contribute fully to the public good diminishes with social fragmentation, while the share of free-riders is unchanged. This suggests social identity preferences drive our result, as opposed to self-interest. Importantly, we find no difference in contribution between homogeneous and maximally-fragmented treatments, reinforcing our finding that majority groups contribute most in the presence of some diversity.

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1. Introduction

We live in an ever increasingly diverse world, whether measured in terms of ethnicity, religion or language. For instance, in the US there has been an increase in the proportion of ethnic minorities: while currently accounting for roughly one third of the population, they are expected to become the majority in 2042 (US Census, 2008). Increasing social and ethnic diversity in societies may have important economic consequences, namely on public good provision. Ethnic or social fragmentation has emerged as a potential explanation for low public good provision in settings as

diverse as African countries (Easterly and Levine, 1997) and US cities (Alesina, Baqir, and Easterly, 1999). A fundamental question is why this is the case. The literature on the effect of social fragmentation on economic performance has identified two main causes for the negative relationship between higher fragmentation and public good provision. On one hand, different social or ethnic groups may prefer different public goods (Poterba, 1998). On the other hand, different social groups may dislike sharing a public good with one another (Luttmer, 2001).

Our paper investigates, using laboratory experiments, whether higher social fragmentation leads to lower public good provision and to what extent identity-based discrimination can explain such behaviour. We eliminate the possibility that different groups may prefer alternative public goods by allowing for only one public good to which members of both groups may contribute. We generate two artificial groups in the lab, and we exogenously change the degree of fragmentation by varying the relative size of each group playing the public good game. This allows us to measure the interaction between social identity and fragmentation on public good provision cleanly.

Theories of inter-group relations in social sciences have argued that discriminatory behaviour across ethnic or religious lines stem from competition for resources (Allport, 1954; Sherif et al., 1988). Economists have broadly taken two approaches to model the role

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^{*} Corresponding author. Tel.: +44 1392722584.

E-mail addresses: s.chakravarty@exeter.ac.uk (S. Chakravarty), m.a.fonseca@exeter.ac.uk (M.A. Fonseca).

of social affiliation. The first approach emphasizes that group affiliation is an important tool to overcome market imperfections by promoting trust among members of a given social group and therefore be able to overcome moral hazard problems (e.g. Bowles and Gintis, 2004). At the core of this approach is a game-theoretic argument based on repeated interaction, in that more identical groups should be able to achieve and sustain cooperative outcomes as equilibria via internal mechanisms of monitoring and social norm enforcement. The second is to assume that a sense of group identity enters individual preferences. In this sense, individuals define themselves as a function of the group(s) to which they belong.¹ As such, an individual may shape his behaviour as a function of group norms (Akerlof and Kranton, 2000); or care not only about his well-being, but also about the well-being of his fellow group members (Alesina and La Ferrara, 2000). This approach is in the spirit of social identity theory, which explains the basis for discriminatory behaviour across groups (Tajfel and Turner, 1979).

In the spirit of the minimal group paradigm (Tajfel et al., 1971), subjects in our experiment selected their social group based on their preferences for paintings by two artists (Klee or Kandinsky).² We then randomly assigned subjects to six-player public good games, who then played in a fixed matching protocol for twenty periods. The main treatment condition was the degree of social fragmentation, which ranged from fully homogenous (e.g. six 'Klee' players) to the fully fragmented case (e.g. three 'Klee' players and three 'Kandinsky' players). We find that a higher degree of social fragmentation leads to significantly lower contribution levels by members of the majority group and the highest contribution levels by the majority are observed in the treatment with the lowest level of fragmentation. Interestingly, this result comes from a drop in the share of players who contribute maximally, rather than an increase in the fraction of free-riders, which remains roughly constant across treatments. However, subjects in the fully homogenous treatment do not contribute more than subjects in highly fragmented treatments and contribute less than the majority group members in treatments with minimal levels of fragmentation. This implies that an in-group affiliation is a powerful driver for cooperation, such that some diversity may be beneficial; however, such an affiliation only works in the presence of an out-group.

The remainder of the paper is organized as follows. The following section briefly reviews the empirical literature on fragmentation, as well as the experimental literature on social identity. Section 3 outlines the experimental design and procedures and Section 4 presents the results. Section 5 concludes the paper.

2. Summary of the literature

Recently, economists have started to study the broader economic impact of social and ethnic fragmentation on economic performance see Alesina and La Ferrara, 2005 for an extensive review). Alesina, Baqir, and Easterly (1999) find the provision of public goods on a cross-section of U.S municipalities is inversely related to ethnic fragmentation. Khwaja (2009) finds that there is a negative relationship between social heterogeneity and successful maintenance of public projects in rural Pakistan. Finally Miguel and Gugerty (2005) find that schools in Kenya from fully homogeneous communities have 20% higher funding levels than schools in communities with the highest degree of heterogeneity. They attribute this finding to the fact that social sanctioning

of free-riders in those communities is easier *within* a social group, rather than *across* groups. Other papers analyzing social fragmentation and economic outcomes include La Porta et al. (1999) and Alesina et al. (2003) which find that ethnic fragmentation is negatively correlated with infrastructure quality, literacy and positively correlated with child mortality. Easterly and Levine (1997) find a negative correlation between growth and ethnic fragmentation.

Tajfel and Turner (1979) first demonstrated the effect of group affiliation on behaviour using experimental data. They showed that subjects playing simple distribution games as a third-party, neutral dictator would discriminate in favour of in-group members (and thus violating basic norms of equality), even when the basis for the existence of the group was quite minimal – in this case, it was based on subjects' preferences over paintings from two artists.

Most economics experiments focusing on the impact of group identity on cooperation have looked at pure in-group/out-group differences in two-player cooperation games, where a subject either plays against an in-group member or an out-group member.³ Notable exceptions are Eckel and Grossman (2005), Smith (2011) and Drouvelis and Nosenzo (2013). Eckel and Grossman (2005) looked at a team production experiment with groups of five. Their research question was whether eliciting a common identity within a group would raise effort levels. They found identity matters most when there is inter-group competition, i.e. when an out-group is made salient. Drouvelis and Nosenzo (2013) look at a three-person public goods game in which one player contributes first and the other two make their decision knowing what the first player has contributed. A common identity between the leader and the two followers results in significant increases in contributions vis-à-vis the case where no identity is present. Like our paper, Smith (2011) looks at the impact of diversity in a six-player public good games, ranging from low levels of diversity (five players from one social group and one of the other) to high (three players from each group). Smith (2011) however does not include a treatment with full homogeneity, or a treatment where group identity is absent. Moreover, this experiment is implemented in a within-subjects design, where all subjects play in all diversity conditions, while ours which is implemented in a between-subjects design. Smith (2011) experiment also directly measures beliefs about the contributions by the other players in the public goods game. He finds players in the majority group contribute more than those in the minority group, but that beliefs about in-group members are the principal driver of contributions, rather than majority or minority status.

We note there is a parallel literature focusing on homophily as a potential explanation for in-group biases. Homophily differs from social identity theory in that it assumes individuals have an intrinsic preference to interact with similar people, as opposed to those preferences emerging through group processes. Currarini, Jackson, and Pin (2009) study the effects of homophily preferences in the context of racial bias in friendship formation using survey data from US high schools. They find that members of larger groups tend to form more friendships per capita; members of larger groups tend to form more same-type friendships and fewer other-type friendships than people in smaller groups. Finally they find that although all groups are biased towards making inward looking friendship ties, the most biased groups are the intermediate-sized groups. Currarini and Mengel (2013) propose an experiment where

³ In the experimental economics literature on social identity, group affiliation is induced using either pre-existing identities such as gender (Brown-Kruse and Hummels, 1993; Cadsby and Maynes, 1998; Croson, Marks, and Snyder, 2008), membership of social groups (Solow and Kirkwood, 2002; Goette, Huffman, and Meier, 2006), or artificially-induced identities (Kramer and Brewer, 1984; Wit and Wilke, 1992; Eckel and Grossman, 2005; Charness, Rigotti, and Rustichini, 2007).

¹ Tajfel (1970) argued that membership of social groups had an effect on individual behaviour even if such membership had no survival benefit.

² Note that in Tajfel et al. (1971), unlike our experiment, the decisions subjects made had no material consequences to themselves.

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