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Membership in citizen groups ☆

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ABSTRACT

We analyze the coordination problem of agents deciding to join a group that uses membership revenues to provide a discrete public good and excludable benefits. The public good and the benefits are jointly produced, so that benefits are valued only if the group succeeds in providing the public good. With asymmetric information about the cost of provision, the static membership game admits a unique equilibrium and we characterize the optimal membership fee. We show that heterogeneity in valuations for the excludable benefits is always detrimental to the group. However, in a dynamic contest in which heterogeneity arises endogenously (returning members receive additional seniority benefits at the expense of junior members), we show that, in the ex-ante optimal contract, offering seniority benefits is beneficial for the group, despite the heterogeneity in valuations created.

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1. Introduction

The National Association Study shows the mean and median membership size of US voluntary associations are 27,575 and 750, respectively, suggesting that, although not many, very large associations exist. Examples are environmentalist groups like the National Wildlife Federation (NWF), or the World Wildlife Fund (WWF), professional and business groups like the American Farm Bureau Federation (AFBF), citizens' groups like the American Association of Retired People (AARP), and trade unions.[1] The main activity of these associations is lobbying for public policy, and their financial resources mostly derive from due-paying members (Knoke, 1988, and Walker, 1983). Since the benefits of lobbying (environmental legislation, farm subsidies, tax reliefs, minimum wage laws) are largely non-excludable to non-members, all these groups are able to overcome a severe free-rider problem.

The existence of large voluntary associations can be explained if the group provides selective incentives: goods and services excludable to non-members (Olson, 1965). These benefits can generate utility directly—e.g., publications, information services, insurance policies, legal advice, advocacy—or they can acquire value through social interaction, as for reputation or peer pressure.[2] Interestingly, the value attached to excludable incentives is often correlated with success of the association in providing a collective good. For example, as in the case of discounts, the value of selective benefits may be directly related

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[1] WWF and NWF have more than a million members each. The AARP is the largest nonprofit association in the US with 23 million members. The AFBF has 6 million members. The largest union in the AFL-CIO is the American Federation of State, County and Municipal Employees, with more than a million members. Data for the National Association Study are from Knoke (1989).

[2] Indeed, a majority of voluntary associations that have been successful in providing a collective good offer selective incentives for their members. See, e.g., Walker (1983).

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to the size of the association: larger groups can negotiate better terms with vendors. At the same time, membership size is a critical factor in the group's success in its lobbying efforts. Moreover, success of environmental protection projects—a public good—may enhance the quality of organized hiking and animal watching activities by members—a selective incentive (King and Walker, 1992). As a result, strategic complementarities in joining decisions may arise, i.e., the more people join the association, the higher the value of being a member, a well-known observation. However, models with strategic complementarities are often associated with multiple "extreme" equilibria (i.e., either nobody joins or everybody joins), which are not particularly interesting, not responsive to fundamentals, and not suited to analyze questions of optimal design of a membership contract.

To solve the multiplicity problem, we present a natural application of the global game approach (Carlsson and van Damme, 1993, and Morris and Shin, 2000) to a membership game with strategic complementarities. We study the decision of agents to join a group that uses membership revenues to provide a discrete public good and excludable benefits, in the presence of asymmetric information about the cost of providing the public good. We assume the public good and selective incentives are jointly produced, so that excludable benefits acquire value only if the group is successful in securing enough revenue to cover the provision cost of the public good (Cornes and Sandler, 1984, 1986, 1994). This approach captures a fundamental characteristic of the incentives packages we observe in reality, and uncovers the coordination problem agents face, since their payoff of joining displays strategic complementarities.

The membership game admits a unique equilibrium, with very intuitive comparative statics. Moreover, despite the presence of positive externalities in membership and asymmetric information, finding the optimal membership fee reduces to solving a simple monopoly pricing problem. Our first contribution shows that, in a static context, an increase in heterogeneity among prospective members is always detrimental for the group. To demonstrate this, we first characterize the unique equilibrium of the membership game with two categories of agents: those with high valuation for selective incentives, and those with low valuation. We then consider a mean-preserving spread of valuations, and show such an increase in heterogeneity decreases equilibrium size, the optimal membership fee, and ultimately the probability of success of the group. This results follows from low-valuation agents responding in larger numbers to the perturbation than high-valuation agents thus reducing the group's total revenue, because low-valuation agents face greater strategic uncertainty. They must rely on a larger proportion of agents joining and they must believe the group more likely to succeed than high-valuation agents do, to be willing to pay the same cost of membership. Therefore, because benefits are valued only in case of success, low-valuation members are more affected by the mean preserving spread, coeteris paribus. The negative externality imposed by low-valuation agents lowers the incentive to join for all potential members.

Our second contribution is to show that in a dynamic context some form of heterogeneity may in fact be beneficial for the group. For example, a common practice by citizens groups is the preferential assignment of resources to returning members in the form of seniority benefits.[3] This practice is a choice of the organization's management that endogenously creates heterogeneity among potential members, and it appears surprising and potentially counterproductive in light of our previous result and of the received wisdom on the disadvantages of heterogeneity. To investigate the effects of seniority benefits, we analyze a simple two-period version of the model. The first-period game is our initial membership game with homogeneous agents. In the second-period, heterogeneity arises endogenously: returning members receive additional "seniority" benefits at the expense of junior members. This implies the extra-benefit senior members receive decreases in first-period membership and, as a result, payoffs are not monotonic in membership. In this context, we prove existence and uniqueness of equilibrium in monotone strategies, that is when more favorable information implies that each agent is more likely to join. More importantly, when the group maximizes a weighted sum of the probabilities of success in the two periods, we characterize the ex-ante optimal membership contract, we show that offering seniority benefits is always optimal, and we prove the optimal level of seniority benefits increases when asymmetries in information among agents become small.

The sharp difference in the effects of heterogeneity between the static and the dynamic models arises because in the dynamic model the role played by seniority benefits is twofold. On the one hand, seniority benefits always increase the value of first-period membership. On the other hand, they introduce heterogeneity between second-period prospective members. Offering seniority benefits is always optimal because, when the level of seniority benefits is zero, the negative marginal effect on second-period membership turns out to be zero. In fact, in this case, agents are homogeneous in the second period, and both junior and senior members face the same strategic uncertainty. Therefore, they respond in the same way to the introduction of heterogeneity, and the overall marginal effect on second-period membership is zero.

Three strands of literature are related to our work. First, Cornes and Sandler (1984, 1986, 1994) analyze an impure public good model in which the purchase of an intermediate good makes available, through a joint production function, both a public good and a private characteristic. Strategic complementarities may arise in this framework. However, the issue of coordination among agents is not directly addressed.

Second, relevant papers with dynamic applications of global games include Dasgupta (2007), Heidhues and Melissas (2006), Giannitsaru and Toxvaerd (2004), and Goldstein and Pauzner (2004). Heidhues and Melissas (2006) focus on cohort effects, while Dasgupta (2007) focuses on social learning. In both papers, contrary to our paper, the decision to contribute

[3] A typical seniority benefit is the practice of reserving office positions to returning members (see Moe, 1980). In the case of citizens' groups like Common Cause, where about a third of the members report that they have politicial aspirations (see Rothenberg, 1988), the value of seniority benefits is clearly related to the success of the group in its lobbying effort.

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