

# RELATIONAL GOODS AND ASSOCIATIONAL PARTICIPATION\*

by

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**ABSTRACT\*\*\*:** *In this paper, we focus on the role of interpersonal contact and the possibility of a relational motive to explain participation and volunteering in associations. Drawing on the relational goods theory, we show that associational activities are favorable to production and consumption of such goods. So, associational participants are expected to have more personal interactions. This theoretical hypothesis is tested using a cross-sectional data set conducted in France in 1999. Our econometric analysis, which controls for endogeneity of associational participation using a simultaneous equations model, emphasizes a significantly positive relationship between this participation and preferences for relational goods.*

## 1 Introduction

Associational participation is a matter of interest for both political science and sociology. Its extent and its intensity are useful indicators for observing trends in ‘social capital’, which may be seen

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\*\*\* *Résumé en fin d'article; Zusammenfassung am Ende des Artikels; resumen al fin del artículo.*

as a set of norms and connections among individuals and groups that facilitate cooperation and efficiency (Putnam, 19-95, 2000; Costa and Kahn, 2001). Changes in the means of participating provide worthwhile information about shifts in individual involvements in the public sphere (Barthélémy, 2000; Ion, 1997). However, the study of associational participation is not restricted to these disciplines, partly given the growing interest in social capital in economics, but also because associational activities often appear as volunteering. Formal volunteer work, defined as unpaid and voluntary activity performed in organizations (principally associations), is a quantitatively significant resource in developed countries. Recent evidence originates from the John Hopkins Comparative Nonprofit Sector Project concerning 24 countries (see Salamon and Sokolowski, 2001). According to this survey, in the mid nineties, volunteer work represented 7.5% of non-agricultural employment in the Netherlands, 5.2% in France, 4.9% in the United Kingdom, 4.6% in the United States and 3.3% in Germany.

Given that the explicit money wage for volunteer work is zero, economists strive to understand motivations at the root of these time-consuming activities. So far, three main theoretical hypotheses have been suggested to explain such behavior. First, according to the 'public goods' model (Schiff, 1990; Duncan, 1999), time donors are only concerned with the associational output that their contributions help to increase. Consequently, unpaid work is an input and nothing else. Altruistic voluntary work is an example of this model insofar as volunteers have a common concern about the well-being of the same output recipients. Nevertheless, volunteers and their families may also derive direct benefits from this output. For instance, adults involved in parent teacher associations can closely monitor the schooling of their children.

Second, the 'private goods' model of volunteering suggests that the time donor is motivated by the act of giving *per se*. In this case, volunteers enjoy prestige or renown that this sort of activity may bring (Schiff, 1990). They may also enjoy the pure satisfaction of doing their own good deed, so volunteer workers are prompted by a desire for the 'warm glow' feeling such as that described by Andreoni (1990).

Third, volunteer work is often considered as a kind of investment, i.e. an activity performed by individuals to enhance their human capital and to increase their employability as well as their future earnings (Menchik and Weisbrod, 1987; Schiff, 1990). Volunteer activities make it possible to learn new skills and to gain experience that may be useful for both workers and job-searchers in the labor market. It also provides opportunities to acquire private

information about the existence and characteristics of vacant jobs. Finally, unpaid work may also be a signal used by volunteers to reveal to employers certain abilities that can only be guessed at.

Despite the magnitude of voluntary activities in developed countries, there is no clear consensus concerning the motives for volunteer work. Broadly, it can be claimed that empirical investigations result in mitigated support for each of these three theoretical models.

In the public goods model, a donor places a value upon the associational output, and not upon his individual donation (either monetary or time-related). Therefore, he is inclined to get a free ride out of the other contributors, and government expenditure is expected to crowd out volunteer involvement if it works towards the same aim. In addition, money and time transfers may be considered as pure substitutes, since they are given for the same purpose. From an empirical perspective, the results of several econometric studies indicate that the crowding out effect is not systematic, and in any case crowding out remains incomplete. For instance, Menchik and Weisbrod (1987) and Day and Devlin (1996) find that government expenditure and voluntary work are complementary in several areas of activity. In addition, money donations and volunteer work are regularly found to be complementary, which contradicts the prediction of the public good approach.<sup>1</sup>

Empirically speaking, the other models are difficult to distinguish because both hypotheses share certain common predictions (Menchik and Weisbrod, 1987).<sup>2</sup> Direct tests about the 'warm glow' motive are uneasy to implement, because this hypothesis has a feeble predicting power and is compatible with many patterns of behavior (Bardsley, 2000). Concerning the investment model, Mueller (1975) finds that women who intend to hunt for a job volunteer more, but Schram and Dunsing (1981) do not observe this for married women. The investment motive should be more significant for younger people, since the payback period is longer. Menchick and Weisbrod (1987) find a life-cycle pattern for volunteering which peaks in the early forties.

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1 Nevertheless, using a sample of American married women, Carlin (2001) finds that gift of money and gift of time are substitutes. A more accurate investigation is made by Andreoni et al. (1996), who show that both types of transfers are in fact gross complements, but Hicksian substitutes.

2 Menchick and Weisbrod (1987) do not differentiate between a 'public good' and a 'private good' model, but they instead propose a model where volunteer has a consumption motive. However, in essence, it is a private one (see the related discussion in Duncan, 1999).

They consider that this profile gives credible grounds for the investment hypothesis. However, there is no convincing argument in favor of such a delayed peak. Day and Devlin (1998) explicitly test pecuniary returns from voluntary work upon the labor market, and show that volunteer earnings in Canada are about 7 per cent higher than non-volunteers. This wage premium seems consistent with an investment or signaling model, but the analysis is restricted to individuals who are the sole wage earner in the household.

Although formal volunteering takes places in collective environments, the relational dimension for such activities is rarely evoked by economists, and this omission is highly questionable with respect to the motives for volunteer work. For instance, according to the investment hypothesis, contacts with others persons should provide additional information about the existence and characteristics of jobs. However, personal relations are only considered in this case as a means to achieve an individual's aims which are extrinsic to these relations. It is also worth mentioning that in 'private goods' models, interaction with others (Schiff, 1990) or camaraderie (Clotfelter, 1985) are sometimes mentioned as a motive for volunteer work, but they are not really analyzed *per se*. It is therefore our belief that this interpersonal aspect of volunteer involvement, and generally of associational participation, deserves a more sustained attention.

During the last few years, economists have taken a growing interest in social relations. The concept of social capital is spreading in economic literature (see for instance DiPasquale and Glaeser, 1999; Glaeser et al., 2002). By analogy with physical and human capital, social ties are subsequently considered as resources, either presently or potentially productive, that make the achievement of the various targets easier.<sup>3</sup> However, from this point of view, interpersonal contacts are purely instrumental. On the contrary, the recent idea of relational goods developed by Uhlaner (1989) and Gui (2000) is particularly stimulating, because it emphasizes that such interactions are needed for themselves and not for other ends. In so doing, individuals are induced by what Frey (1997) calls intrinsic motivations. Clearly, these relational motivations have so far been disregarded by economists.

The aim of the present paper is to focus on this sort of non-pecuniary and non-material benefit, in particular by adding empirical

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3 Some authors consider this analogy with physical capital as debatable (Sobel, 2002). Others doubt whether such borrowing from sociology is relevant for economists (Manski, 2000).

evidence to the question. Specifically, we study whether a motive based on relational goods is or is not a credible hypothesis to explain associational participation and volunteer work. As the concept of relational goods emerges, our research remains exploratory and our econometric analysis draws on reduced-form specifications. The empirical investigation is conducted using a nationally representative survey conducted in French, which gives information about the various uses of time, including the associational involvement of respondents and their practice with regard to sociability. We clearly show that the relational goods hypothesis may be fruitful when explaining individual behavior in associations and that as regards social relations, further attention should be given by the economists to such an issue.

The remainder of the paper is organized as follows. In the next section, we resume what is known about the relational goods, and we show that associations are places where production and consumption of such goods are more likely to occur. In Section 3, we describe the French data set that we use for our empirical analysis, and we also present our indicator built to show individual tastes for relational goods. Results of the econometric analysis are analyzed in Section 4, where we find a positive and significant correlation between associational participation and preferences for relational goods. In Section 5, we discuss interpretations of this positive correlation which is consistent with a relational goods motive for associational participation. Section 6 concludes.

## **2 Associations and production of relational goods**

For a long time, psychology has emphasized the relational nature of certain human needs. For instance, Maslow (1954) placed belongingness and love needs in the middle of his pyramidal hierarchy of needs, above physiological and safety needs and under esteem and self-actualization needs. More recently, Baumeister and Leary (1995, p. 497) stressed that ‘human beings have a pervasive drive to form and maintain at least a minimum quantity of lasting, positive and significant interpersonal relationships’. Conversely, the usual conceptual tools employed by economists do not prepare them to consider such needs.

Indeed, interpersonal contacts are generally seen as purely instrumental and not intrinsically valued. On this point, the research conducted by Kolm (1984, 2000) is an exception since this author

distinguishes between allocation preferences, transfer preferences and process preferences.<sup>4</sup> For Kolm, relations matter for themselves and, thus, they are objects of choice. In line with this pioneering work, the emerging concept of relational goods is a worthwhile attempt in economic analysis to enrich the understanding of human behavior. Relational goods are intangible outputs of a communicative and affective nature, produced through interactions (Gui, 2000). The production process requires a combination of inputs of different types, tangible and intangible, specific to the protagonists of the interaction or more transferable.<sup>5</sup> Two characteristics of these particular outputs stand out.

First, they are local public goods, that is they are non rival and non exclusive for the protagonists. On the other hand, they are different from traditional public goods since production and consumption are simultaneous and joint (Uhlener, 1989; Sacco and Vanin, 2000). People cannot enjoy the advantage of a relational good without participating in its production. It makes no sense to consume a relation alone. Consequently, relational goods are not exposed to the free rider problem in the academic way. Second, contributions to their production depend on mutual agreement among individuals (Uhlener, 1989). Goodwill is a necessary ingredient. Relational goods can neither be bought, nor imposed. In essence, they are nor contractual (Gui, 2000), but they are undoubtedly based upon reciprocity (Uhlener, 1989; Sacco and Vanin, 2000).

Nevertheless, the concept of relational goods requires maturation since its definition is not always clear. As a consequence, Gui (2000, p. 154–155) warns us against several confusions. From his own viewpoint, relational goods are defined by objective characters and they have to be distinguished from the subjective effects on people. Although relational goods are produced through interactions, they should not be confused with interactions themselves. In addition, the diversity of this type of good demands documentation. The needs for love or to some degree friendship require frequent joint consumption of relational goods with partner(s). They suppose interaction of

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4 There are others exceptions. Juster (1985) notes that what he names ‘process benefits’ of activities is connected to density of interactions between individuals. Bolnick (1975) also cites social interaction as sources of gratification.

5 The identity of the interactants is very important in the production process of relational goods. Individuals are not (or at least not easily) interchangeable.

high emotional intensity and intimacy based upon strong ties (Granovetter, 1973). Camaraderie and the desire for a sound reputation or social approval probably involve relational goods of other types, based upon less frequent interactions and weaker ties.

Albeit not stabilized, the concept of relational goods is a promising one. These outputs can be produced in many environments, but some circumstances seem more convenient. The less the relation between people is constrained, the more it fosters this production. Associational participation and formal volunteering are fundamentally voluntary.<sup>6</sup> As a result, these activities are expected to be particularly propitious to the production and consumption of relational goods as specified by Gui (2000, p. 160) and Ben-Ner (2002, p. 12). However, this hypothesis has not really been examined from an economic viewpoint, namely in a setting where individuals are utility-maximizers, though the rational choice approach can be extended to these goods.

Nevertheless, it should be noted that relational goods cannot easily be accommodated with the existing models of volunteer work. On the one hand, they are not private consumption goods, but public goods. On the other hand, the predictions of the standard public goods model are inappropriate. The problem of free-riding vanishes insofar as production and consumption are simultaneous and joint. If volunteer work creates a pleasant environment, the presence of other volunteers may stimulate the unpaid participation of an individual who feels interested in relational goods. Donations of money and the giving of time have no reason to be substitutes in the production of such goods, because time is a much richer input in relational potentiality.<sup>7</sup>

Until now, to the best of our knowledge, Enjolras (2002) has been the sole economist to rely on the concept of relational goods when empirically investigating the factors that influence associational participation. Using a Norwegian cross-sectional survey, the author finds that the more such goods are available in sports associations, the more the members are inclined to attend the general meetings of these associations. With respect to the underlying theoretical framework, this is an edifying result, but the conclusion seems precarious since the positive effect no longer holds when the sizes

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6 Although they may be influenced by collective norms and prompted by a feeling of moral obligations, volunteers are not subject to the subordination relation which defines the wage earner condition.

7 Money may be an input to produce relational goods, but it involves time. Conversely, time does not necessarily require the presence of money for relational goods to take place.

of associations are introduced as covariates into the econometric regression. In addition, the empirical analysis is restricted to only one type of association, dealing with sport activities, so the conclusions cannot be extended to other types of associational activities.

Additional and more descriptive evidence reinforces the idea that there is actually an interest in relational goods among associational participants. For instance, in specific surveys concerned with associational involvement, respondents regularly quote their interest in establishing and developing interpersonal ties. In France, 21 per cent of the members of associations express the wish 'to do something with other people' (Loisel, 1999). The 1997 National Survey of Volunteering shows that 52 per cent of the British volunteers considered it was very important (33 per cent judged it fairly important) to meet people and to make friends through their voluntary activities (Davis Smith, 1998). In the sociological literature, associational involvement also appears to be correlated with neighborhood interaction, friendship activities and informal helping (Smith, 1994). With a sample of older volunteers, Chambré (1987) finds that volunteering is part of a larger pattern of social relationships. Finally, Heran (1988b) notes that associational membership is on a par with various components in sociability such as relations with friends, colleagues and neighbors.

Of course, the relational goods hypothesis may coexist with other motives to explain associational membership. Yet it is likely to become increasingly significant as the involvement develops, meaning that participation certainly affects individual motivations. Managers of nonprofit organizations know that 'attracting volunteers is a problem, but retaining them is another' (Thomas and Finch, 1990, p. 57). Pearce (1983) finds that, once they became involved, volunteers tend to place more emphasis on the satisfaction from their immediate work experience, on the quality of their interaction with the co-workers (either volunteers or paid worker) and on the opportunity to meet people. Omoto and Snyder (1995) also point out that the personal development motive, which includes a relational dimension, significantly predicts the duration of services among AIDS volunteers.<sup>8</sup> This suggests that more generally, benefits derived from relational goods

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8 In Omoto and Snyder (1995), a personal development motive pools the following responses given by individuals when asked about their reasons for voluntary work: to get to know people who are similar to myself; to meet new people and make new friends; to gain experience dealing with emotionally difficult topics; to challenge myself and test my skills; to learn about myself and my strengths and weakness.

induce participants not only to decide to participate, but also to continue their associational activities.

To summarize, we are convinced that both production and consumption of relational goods may be a significant motive for devoting time to associational involvement. If this hypothesis is correct and since appreciated relations inside associations may be extended outside with the same persons, associational participants are expected to have more personal relations than non participants *ceteris paribus*. We now turn to an econometric analysis where we investigate the possible relational benefits of associational membership.

### 3 Data and descriptive statistics

For our empirical analysis, we use the Time Use survey ('enquête Emploi du Temps') conducted by INSEE in France from February 1998 to February 1999. The aim of this survey, which draws on a nationally representative sample of households, concerns the allocation of time for individuals and it includes accurate measures of daily activities. Three data sets can be distinguished in the data.

In the first questionnaire, the head of each household provides detailed information on the whole family make-up, including age, marital status, education and occupational status for each member living in this household. Several socio-economic characteristics of the household are also communicated such as a description of the dwelling, the level of family income, and the frequency of various time-related transfers with other households (family, friends, neighbors). This sample includes 8186 households. The second questionnaire concerns the different family members over 15 years of age, with individual interviews about their daily lives compiled by 15441 respondents. It includes an exhaustive description of employment status and primary activity, but it also contains questions dealing with training, housework and related domestic tasks, leisure and other nonworking activities. Finally, in the third questionnaire, respondents report their different activities on the day of the survey and they indicate time values spent on different activities.<sup>9</sup>

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9 This activity base includes 316097 observations (there is one observation per individual activity) and 144 types of activities are listed in the survey.

Our empirical analysis seeks to determine the effect of associational membership on the household relational goods consumption. We now present the relevant information found in the French survey pertaining to associations and relational goods.

In the questionnaire, respondents are asked about their associational membership at the date of the survey and they indicate the number of associations in which they currently participate. For the two associations that require more time, these individuals also indicate their degree of involvement following an ordered variable with three classes. Specifically, respondents may participate irregularly in associational activities, participate regularly in an activity of the association, or assume responsibilities.<sup>10</sup> There are also certain indications relating to the type of association. Four classes are distinguished, namely parent teacher, sports and cultural, religious and humanitarian, union-related and political associations. Unfortunately, several fields of activities are not really identified and it seems that these classes pool certain types of association that are quite different. Finally, for the two principal associations, the survey records the number of times the respondents frequent the association.

Two comments are in order. First, the quantification of time devoted to associational membership remains imperfect. Indeed, we are unaware of the true amount of time individually spent in the association. The frequency of participation does not bring any information on the daily length of associational activities. This poses problems within a context of significant fixed transport costs, whose heterogeneity can be imperfectly controlled for.<sup>11</sup> As a consequence, in our econometric analysis, we are mainly concerned by the positive effect of the associational participation (discrete choice) in terms of relational goods. Although we have also attempted to estimate the impact of the degree of involvement, our empirical conclusions are undoubtedly less robust for this aspect of associational activities.

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10 In the survey, there are also certain members that do not take part in associational activities, so these individuals are included in the non participant category (since we are interested in the impact of associational participation).

11 For instance, in urban areas, members certainly prefer to come less frequently but stay a longer period of time owing to increased time-transport costs, while members in rural areas are expected to have more frequent, but less time-intensive participations. The data set does not contain any information on these transport times.

Second, the data allow us to somewhat determine the impact of voluntary activity on the relational goods. There are several means of participation for respondents, but some of them may be seen as pure leisure activities (for instance recreational or sporting activities organized by the association), while others clearly fit in with volunteer tasks. This is especially the case for individuals who take on certain responsibilities as managers or committee members in associations. In compliance with French law, people in charge of an association must refrain from any financial gain, so these managers may necessarily be seen as volunteers. Although associational membership is the cornerstone of our paper, the focus on volunteer activities (for the subsample of individuals who perform managerial tasks) is important given the controversial debate on the motive for volunteer work.<sup>12</sup>

Of course, production and consumption of relational goods occur during associational activities themselves. However, the data do not provide any information about interactions inside the associations and satisfaction provided by membership. But if individuals enjoy interactions in the course of their associational participation and if they make friends with other participants, we can hypothesize that they will be likely to meet them outside the associations, in order to go on with the appreciated relations. In the data, respondents are asked about the frequency of any social gatherings with others for lunch or dinner, whether with family members or friends. Specifically, we use several indications in the questionnaire to construct an aggregate indicator of inclination for relations. First, we keep only meetings with friends. Second, we calculate the sum of meetings that take place respectively at home and outside to account for possible reciprocities with friends. In so doing, we obtain an accurate measure of the annual number of gatherings with friends.

This indicator refers to what Larmet (2002) names 'nutritional sociability'. We can consider that some gatherings represent opportunities for discussing associational issues and for reaching agreements, particularly when individuals assume responsibilities in their association. In such cases, as pointed out by an anonymous referee, gatherings are just an extension of formal associational participation. However, the content of these meetings (meal at home) implies that both hosts and guests have a certain degree of intimacy and mutually appreciate their relations. Therefore, these cases do not exclude consumption of relational goods. Since gatherings may be seen as a public

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12 In his survey, Smith (1994) considers that associational participation and volunteering have a similar pattern of determinants.

good within the household, we consider the effects of associational membership in terms of relational goods at the household level.<sup>13</sup> Thus, the prediction of our theoretical framework is that households with at least one member who takes part in associational activities are expected to have more frequent receptions with friends than households without participant.

Our indicator of informal sociability has certain limitations. In particular, a large value for the total number of gatherings may refer to several situations. Households may have very few friends, say one or two, whom they meet very frequently (many times per week). On the contrary, they may have a lot of friends who they meet more rarely. In the first case, the friendship network is restricted, but ties are strong. In the second one, the network is wider, but the relational ties are weaker. Unfortunately, from our indicator, we cannot discriminate between these two situations, so we are not able to further examine the effect of associational participation on the friendship network size.

In our empirical analysis, we focus on two specific subsamples from the data set. Since we treat the problem at the household level, we attempt to minimize heterogeneity by considering only couples with a head of household aged between 20 and 60. In the first sample that comprises exactly 3073 observations, we consider only households whose head is currently working. However, associational membership and gatherings with friends may be seen merely as leisure activities, so it seems important to control for any substitution effects with labor supply. In a second sample, we consider only couples with both partners working full-time. There are now 979 households, who are more homogeneous with respect to their free time.<sup>14</sup>

To study the possible effect of associational participation on the frequency of gatherings with friends, we first present some basic descriptive statistics. For the sample of households with at least one working spouse, the mean value for annual gatherings is around 35.3 when the household is a member of an association, and 29.2 otherwise. The difference between these two values suggests that there is

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13 Knowing whether gatherings are pure or impure public goods remains questionable, but unimportant for our purpose. To our opinion, we believe that both partners are usually present when having dinner with friends.

14 Selection of couples in which both partners work full-time is standard when one intends to remove any substitution effects between commodity demands and labor supply (see for instance Browning and Meghir, 1991; Browning et al., 1994).

a positive relationship between both variables of interest. Calculation of the corresponding correlation coefficient leads to a value of 0.082, significant at the 1 per cent level. If we turn to the sample with full-time working spouses, the link between the two variables appears to be weaker, albeit still significant. The correlation coefficient is now equal to 0.064, with a significance level of 4.5 per cent. The average numbers of annual gatherings are now equal to 37.5 with associational membership and 30.7 otherwise, so that the gap remains of same magnitude for the two selected samples (between five and six additional gatherings per year).

Nevertheless, looking at mean values for gatherings may be inappropriate for our analysis, since the variable may take zero values. There may also be a bias if some households are used to having dinner with their friends very frequently, for instance because they live near these friends. In order to control for possible outliers, we report in Table 1 the distribution of annual gatherings within both populations. According to the data, the two distributions are different depending on whether households take part in an association or not, especially when the number of gatherings is low. In particular, the frequency of households with annual gatherings between zero and four is much lower with associational membership (respectively 10.9 per cent instead of 22.5 per cent).<sup>15</sup> The differences are less marked for the highest values of gatherings, suggesting that the relational goods benefit of associational activities is less significant for people who have frequent contact with others.

**Table 1 – Associational participation and gatherings with friends**

Number of annual gatherings	0–4	5–9	10–19	20–29	30–49	50 more
<i>Households in couple, head between 20 and 60, at least one spouse works</i>						
All (N = 3073)	17.3	10.3	16.5	22.7	17.2	16.1
Associational participation (N = 1388)	10.9	9.2	17.1	25.9	19.4	17.5
No participation (N = 1685)	22.5	11.1	16.0	20.1	15.3	15.0
<i>Households in couple, head between 20 and 60, both spouses work full-time</i>						
All (N = 979)	13.5	10.8	16.8	25.9	16.9	16.1
Associational participation (N = 452)	8.6	9.7	18.1	28.1	18.4	17.0
No participation (N = 527)	17.6	11.8	15.6	24.1	15.6	15.4

Source: INSEE 1998–1999 Time Use survey.

15 Conversely, the share of households undertaking associative activities increases when the number of gatherings is between 20 and 50. The same results are obtained for the sample with full-time employed spouses.

Obviously, with these descriptive results, we do not account for observed differences in the characteristics of the selected households. Thus, we turn to a multivariate analysis to further examine the impact of associational membership on gatherings with friends. We account for the censoring of the dependent variable and control for simultaneity of associational activities and gatherings by estimating a joint model using the maximum likelihood method.

#### 4 Econometric analysis

We now examine the effects of associational membership on the number of annual gatherings using several econometric models. Ideally, panel data are required in order to evaluate how changes in associational status affect the frequency of gatherings over time. Since we use a cross-sectional data set and since there is no retrospective information on previous memberships for the household, an alternative method is to estimate an aggregate measurement of associational activities on gatherings. As a consequence, the effect of membership that we obtain is the sum of an instantaneous effect plus a permanent effect resulting from the mean duration of past memberships of the households, which may be interpreted as an adjustment effect for people who had been consuming associational activities in the past. Such a limitation has to be kept in mind when interpreting the results.

We begin our econometric analysis by assuming that the associative involvement of respondents is exogenous with respect to the frequency of get-togethers with friends. This is a convenient assumption, since it allows us to include the associational decision as an explanatory variable in a gathering equation, but we relax this assumption later in this section. Other covariates used in the regression are age and level of education (five classes) for the head of the household, number of children and income (four classes) of the household, along with certain features describing the habitat. We add two dummy variables that indicate whether the household possesses a microwave and a dishwasher, since these appliances may facilitate invitations of friends to dinner.<sup>16</sup> We also control for the size of the

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16 However, the relational goods indicator is defined as the sum of annual gatherings both at home and outside, but there are no characteristics of friends' dwellings in the data.

dwelling using an indicator which is defined as the number of household members divided by the number of rooms.

A difficulty is that the number of gatherings is measured at the household level, while involvements in associational activities are recorded for each spouse. Thus, we consider several variables to estimate the impact of associational membership on gatherings. First, we use a dummy variable that takes the value of one when at least one spouse takes part in such activities. Second, we construct an ordered variable to account for the intensity of spouses' involvement, so that this variable is equal to the number of participants within the couple. In the third place, we define two dummy variables for the involvement of each spouse to control for possible gender differences in associational activities. Finally, we define four dummy variables for the different degrees of involvement in associations (no participation, irregular participation, regular participation, responsibilities).<sup>17</sup> Using these different indicators, we investigate meticulously the potential effects of associational membership in terms of relational goods.

Given the censoring of the dependent variable, we estimate Tobit models where the endogenous variable is defined as the logarithm of annual number of gatherings with friends. Econometric results are reported in Table 2 for both selected samples.

Before turning to the impact of associational participation, we briefly describe the effects of the other covariates. According to the data, the number of gatherings decreases as heads of households get older. That younger people have more visits and dinners with friends is certainly due to more frequent meetings during schooling for younger adults. The number of children exerts a negative impact in the regression, significant at the 5 per cent level for the restricted sample. Spouses who both work full-time prefer to spend time with their children during their moments of leisure instead of meeting friends. The number of annual gatherings increases with the level of education, especially for people having done graduate or postgraduate studies. There is also a positive relationship between income of the household and gatherings, at least for high levels of income.<sup>18</sup> Finally, the possession of home appliances provides all the expected

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17 To construct these variables, we have selected the largest degree of involvement when both spouses take part in associational activities.

18 Income of the household also exerts a positive effect for the full-time workers sample, but the relationship is no longer significant.

**Table 2 – Tobit estimates of gatherings (log) with friends.**

Variables	At least one spouse works				Both spouses work full-time			
	(1)		(2)		(3)		(4)	
	coef.	t-test	coef.	t-test	coef.	t-test	coef.	t-test
Constant	2.448	16.89	2.462	17.02	2.290	6.08	2.289	6.09
Age								
between 20 and 29	Ref		Ref		Ref		Ref	
between 30 and 39	-0.383	-4.05	-0.389	-4.13	-0.310	-2.22	-0.316	-2.26
between 40 and 49	-0.796	-8.12	-0.807	-8.25	-0.703	-4.71	-0.712	-4.78
between 50 and 59	-1.017	-10.11	-1.028	-10.23	-0.913	-5.66	-0.922	-5.72
Number of children	-0.026	-0.90	-0.030	-1.04	-0.136	-2.50	-0.139	-2.56
Level of education								
No diploma or primary school	Ref		Ref		Ref		Ref	
Secondary school	0.215	3.08	0.217	3.12	0.354	3.04	0.355	3.05
Baccalaureate	0.275	2.88	0.263	2.76	0.314	2.00	0.304	1.94
Graduate studies	0.512	5.07	0.502	4.97	0.616	3.81	0.612	3.79
Postgraduate studies	0.619	6.17	0.595	5.92	0.638	3.67	0.619	3.56
Household's income (monthly)								
Less than 10000 F	Ref		Ref		Ref		Ref	
From 10000 to 14000 F	0.072	0.91	0.072	0.91	0.163	0.51	0.169	0.53
From 14000 to 21000 F	0.328	4.13	0.328	4.14	0.390	1.22	0.400	1.26
More than 21000 F	0.450	4.79	0.446	4.76	0.495	1.49	0.498	1.50
Number of persons per room	-0.069	-0.69	-0.060	-0.60	0.141	0.84	0.156	0.93
Dishwasher	0.223	3.79	0.220	3.76	0.131	1.40	0.132	1.41
Microwave	0.313	5.18	0.310	5.14	0.230	2.29	0.222	2.21
Associational participation								
At least 1 participation	0.330	6.32			0.318	3.83		
0 participation			Ref				Ref	
1 participation			0.244	4.19			0.257	2.80
2 participations			0.506	6.81			0.455	3.75
Sigma	1.383	71.68	1.381	71.68	1.257	41.45	1.256	41.45
Number of observations	3073		3073		979		979	
Log likelihood	-5217.69		-5217.17		-1595.46		-1594.27	

Source: INSEE 1998–1999 Time Use survey.

positive signs, while the number of people per room does not play any significant role.

We now focus on the impact of associative involvement of respondents. According to Table 2 (column 1), households who report such activities have more gatherings with friends. This effect is significant at the 1 per cent level, and being a member of an association increases the number of annual gatherings by about five gatherings

**Table 3 – Marginal effect of associational participation on gatherings with friends**

Number of gatherings	At least one spouse works	Both spouses work full-time
Associational participation		
No	Ref	Ref
Yes	+4.86	+5.02
Number of associational participations		
0 spouse	Ref	Ref
1 spouse	+3.59	+3.45
2 spouses	+7.48	+8.55
Associational participation within couple		
Husband's participation	+3.35	+4.33
Wife's participation	+4.11	+3.79
Degree of involvement		
No participation	Ref	Ref
Irregular participation	+6.72	+7.57
Regular participation	+3.84	+4.57
Responsibilities	+5.82	+4.43

Source: INSEE 1998–1999 Time Use survey.

per annum (see Table 3). This finding suggests that there may be a relational benefit for associational activities, although the causality is unclear at this stage. The question also remains whether there are any increasing returns by looking at the membership intensity within the household. Clearly, benefits are higher when both spouses take part in associational activities (see Table 2, column 2). There is an increase of 3.6 gatherings per annum when exactly one spouse is a member, but there is a twofold increase (7.5 gatherings) when both spouses take part.<sup>19</sup> Conversely, there is no significant gender difference in the positive effect of participation (see Table 3).

Since we do not control for labor decisions in the previous regressions, the positive impact could be interpreted as a leisure effect. Let us suppose that people are members of associations because they work less. In this case, they would certainly have more time to meet friends, and the positive relationship would be spurious. By looking at couples in which both partners have full-time employment, we can reject such an interpretation. According to Table 2 (column 3), we still observe a positive relationship between associational membership and gatherings, significant at the 1 per cent level. The marginal impact remains sizeable, with five additional gatherings per annum.

19 A Wald test indicates that both estimates are significantly different at the 1 per cent level, with a Chi square value of 11.1 for the test (with one linear restriction).

Another question concerns the extent of individual involvement in the association. This is a difficult issue given the data at hand, since the survey contains no appropriate gauge of time values devoted to associational activities. Since our analysis is conducted at the household level, we consider that the degree of involvement is given by the largest degree within the household when several persons undertake associational activities (see Table 3). Results are ambiguous, since the rise in annual gatherings is most significant in households where associational activities remain infrequent. However, this result comes as no surprise as a person who devotes a lot of time to an association has less time to meet friends. Also, since irregular participants have fewer opportunities than regular ones to enjoy relational goods inside associations, some of them may wish to compensate the lower intensity of relations by inviting their associational friends at home. Nevertheless, assuming responsibilities also increases the benefit in terms of relational goods, at least for the sample where at least one spouse is working.

Our econometric results illustrate a significantly positive relationship between gatherings and associational membership of the household, at least when associative involvement is treated as exogenous.<sup>20</sup> However, the relevance of this assumption of exogeneity is highly questionable in the light of our problem. For instance, if associative activities are a form of leisure, households face a joint decision to determine whether they take part in an association and whether they meet friends. To test whether associational participation is exogenous, we consider linear specification for the gatherings equations and rely on the specification test proposed by Hausman (1978). Under the hypothesis of exogeneity for participation, both the linear and the instrumental variables estimates are consistent, but the IV estimator is inefficient. If this hypothesis is false, only the IV estimator is consistent. Thus, the test is based on a Wald statistics.

As usual with the IV estimates, the difficulty is to find suitable instruments for the associative involvement of respondents. For that purpose, we include variables as covariates of the associative decision pertaining to age, number of children, education, work in the public sector, household income, home ownership, help received from other households and certain geographic indicators. Specifically, we include dummy variables for the size of the town where respondents live and

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20 To assess the robustness of our results, we have also estimated linear models using OLS and LAD models. Again, we find that there is positive and significant impact of associational participation on gatherings.

for regional areas. Our underlying idea is that these variables may be proxies for the supply of public-provided services. In small towns or in more rural areas, the public or profit-making provision of recreational goods remains scarce and thus households are more likely to engage in associative activities to consume such goods.

To perform the Hausman test, we estimate the gatherings equation twice, respectively with the exogenous and the instrumented participation. Using the appropriate covariance matrix, we obtain a value of 19.9 for the corresponding Wald statistics (with 1 degree of freedom). According to the chi-squared table, this value is significant at the 1 per cent level, so that the assumption of exogeneity for the associational participation is clearly rejected.<sup>21</sup>

A first way to address the problem of endogeneity is to treat the associational membership decision as a continuous variable. Although this is not correct, it should be remembered that the binary choice to be member of an association or not may be expressed in terms of a latent variable, which would be negative when the household does not undertake associational activities. Then, we can estimate a gatherings equation with endogenous membership using Two Stage Least Squares (see Table 4).<sup>22</sup>

When controlling for endogeneity of the associational decision, the data show that undertaking such activities still exerts a positive effect on the amount of annual gatherings with friends. This impact is significant at the 2 per cent level, but the standard error for the estimate is now higher (as might be expected). The magnitude of the associational estimate is also higher, but this coefficient is not directly interpretable. If we turn to the restricted sample of full-time workers, we again observe that participation exerts a positive impact on gatherings. The significant level for that endogenous regressor is now approximately 5 per cent. So, there is still a positive relationship and the impact on the frequency of meetings with friends is again higher when one adequately controls for labor supply decisions.

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21 When conducting the same test on the subsample with two partners working full-time, we find a similar result. The Wald statistics is equal to 22.1, which is again significant at the 1 per cent level.

22 The latent interpretation for discrete-dependent variables is standard in models for binary choice (Greene, 1993). Nevertheless, there are two problems with the 2SLS method. On the one hand, we rely on an unobserved latent specification for associative involvement, while it is a binary choice. On the other hand, we neglect the existence of censoring for annual gatherings (see Table 1).

**Table 4 – 2SLS estimates of annual gatherings (log) with friends**

Variables	At least one spouse works		Both spouses work full-time	
	coef.	t-test	coef.	t-test
Constant	2.461	15.95	2.155	5.49
Age				
between 20 and 29	Ref		Ref	
between 30 and 39	-0.355	-4.09	-0.293	-2.21
between 40 and 49	-0.745	-8.32	-0.669	-4.74
between 50 and 59	-0.952	-10.36	-0.874	-5.74
Number of children	-0.046	-1.55	-0.151	-2.74
Level of education				
No diploma or primary school	Ref		Ref	
Secondary school	0.130	1.75	0.268	2.30
Baccalaureate	0.160	1.55	0.215	1.37
Graduate studies	0.372	3.30	0.499	3.09
Postgraduate studies	0.469	4.05	0.514	2.91
Household's income (monthly)				
less than FF 10000	Ref		Ref	
from FF 10000 to 14000	0.020	0.27	0.223	0.73
from FF 14000 to 21000	0.235	3.05	0.400	1.33
more than FF 21000	0.347	3.87	0.501	1.60
Number of persons per room	-0.001	-0.01	0.222	1.32
Dishwasher	0.161	2.86	0.094	1.05
Microwave	0.274	4.97	0.210	2.22
Associational participation	0.763	2.51	0.741	2.06
Number of observations		3073		979
Log likelihood		5095.72		-1553.06

Source: INSEE 1998–1999 Time Use survey.

Now, we estimate a simultaneous model with one Probit equation for associational decision and one Tobit equation for gatherings. We assume that associative involvement is an endogenous explanatory variable in the gatherings equation, but we also endogenize the number of gatherings in the participation equation. In so doing, we account for the possibility of reverse causality, such that individuals who are more sociable are more inclined to be involved in associations. In this simultaneous model, we control for the correlation between the error terms of each single equation (see Maddala, 1983). The model is estimated by the Maximum Likelihood approach, and results of the ML estimation are described in Table 5.<sup>23</sup>

23 We derive the likelihood of this simultaneous model in the Appendix.

**Table 5 – ML estimates of the simultaneous associational participation-gatherings model**

Variables	At least one spouse works				Both spouses work full-time			
	Participation		Gatherings (log)		Participation		Gatherings (log)	
	coef.	t-test	coef.	t-test	coef.	t-test	coef.	t-test
Constant	-2.302	-6.66	2.983	17.84	-1.731	-1.83	2.628	8.06
Age								
between 20 and 29	Ref		Ref		Ref		Ref	
between 30 and 39	0.098	0.96	-0.379	-3.98	0.035	0.20	-0.308	-2.09
between 40 and 49	0.390	2.86	-0.831	-8.69	0.217	0.73	-0.725	-4.71
between 50 and 59	0.529	3.35	-1.063	-10.75	0.319	0.88	-0.946	-5.58
Number of children	0.079	3.42	-0.043	-1.52	0.101	1.72	-0.153	-2.90
Level of education								
No diploma or primary school	Ref		Ref		Ref		Ref	
Secondary school	0.234	3.00	0.096	1.15	0.146	0.84	0.271	2.16
Baccalaureate	0.350	3.32	0.110	0.92	0.295	1.47	0.203	1.17
Graduate studies	0.318	2.50	0.323	2.41	0.178	0.66	0.507	2.60
Postgraduate studies	0.348	2.46	0.410	2.89	0.300	1.06	0.498	2.52
Working in the public sector	0.205	4.04			0.232	2.69		
Household's income (monthly)								
less than FF 10000	Ref		Ref		Ref		Ref	
from FF 10000 to 14000	0.129	1.59	0.014	0.17	-0.278	-0.82	0.218	0.75
from FF 14000 to 21000	0.092	0.93	0.239	2.86	-0.092	-0.25	0.386	1.36
more than FF 21000	0.085	0.68	0.352	3.40	-0.054	-0.13	0.477	1.59
Home ownership	0.124	2.39			0.127	1.26		
Number of persons per room			-0.105	-1.34			0.102	0.73
Dishwasher			0.184	3.52			0.143	1.67
Microwave			0.254	4.62			0.201	2.18

Continued

Table 5 – Continued

Variables	At least one spouse works			Both spouses work full-time		
	Participation		Gatherings (log)	Participation		Gatherings (log)
	coef.	t-test	coef.	t-test	coef.	t-test
Receipt of outside help	0.172	2.92				
Size of town					0.374	3.11
under 2000 inhabitants	0.094	1.55			0.299	2.41
2000–20000 inhabitants	–0.066	–0.83			–0.089	–0.57
20000–100000 inhabitants	0.094	1.44			0.024	0.20
above 100000 inhabitants	Ref				Ref	
Regional areas						
Paris area and middle	Ref				Ref	
North	0.221	3.52			0.299	2.42
East	0.191	2.75			0.446	2.87
West	0.154	2.37			–0.123	–0.97
South-West	0.010	0.15			–0.137	–0.95
Middle-East	0.065	1.43			0.040	0.45
Mediterranean	0.164	3.49			0.174	1.96
Endogenous variables						
Associational participation	0.428	3.24			0.345	1.02
Gatherings (log)			0.431	3.38		0.342
Sigma			1.390	72.21		1.263
Number of observations			3073			979
Correlation (t-test)	0.141 (5.76)	–7192.1			0.144 (3.12)	–2223.8
Log likelihood						

Source: INSEE 1998–1999 Time Use survey.

Let us focus on the decision to undertake associational activities (see also Prouteau and Wolff, 2002). The age of the head of the household does not influence the choice, but the number of children exerts a positive effect. This is not a surprising finding since several recreational activities may only be experienced in an associative setting. Socio-economic variables greatly affect associational membership. Indeed, the decision is more frequent when the household is characterized by a high income.<sup>24</sup> The probability also increases with the educational level of the household head and when the head works in the public sector. Home ownership and help received from other households also produce a positive effect. As expected, there are large geographical differences. The use of associational activities increases for respondents who live in small towns (less than 2000 inhabitants) and membership is more likely in North, East, West and Mediterranean areas than in the Parisian area.

We now consider the impact of the endogenous variables. Concerning the gatherings equation, the data show that the participation decision causes a positive incidence on the annual number of gatherings (Table 5). Moreover, the effect is significant at the 1 per cent level and the corresponding estimate is now higher than in the censored model with exogenous membership (0.431 instead of 0.330). This suggests that controlling for endogeneity is important, since it has sizeable effects.<sup>25</sup> When looking at the participation equation, we also find that a higher level of informal sociability increases the probability for joining an association. This effect is significant at the 1 per cent level for couples with at least one working spouse, but this relationship does no longer hold when both spouses work full time.

A final comment concerns the relevance of the simultaneous model. Our different joint estimates indicate that it is important to control for endogeneity. For both subsamples, we observe that the coefficient of correlation between the two residuals is significantly positive at the 1 per cent level. Thus, our results imply that a separate analysis of associational participation and informal sociability would lead to biased estimates.

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24 However, the positive relationship is no longer significant for the subsample with two full-time workers.

25 In the restricted sample with full-time workers, we also find that associational activities positively influence the number of gatherings with friends at the 2 per cent level.

## 5 Discussion

As a result, our different econometric investigations prove to be sound. According to the French data, we find that the frequency of gatherings with friends for households is higher when at least one of its members takes part in associational activities. This positive relationship holds when adequately controlling for possible endogeneity bias of the membership decision. We now discuss several interpretations which are compatible with this empirical finding.

A first interpretation deals with the relational impact of gatherings on associational activities. In that case, the network of friends is expected to foster associational participation, which we call the 'network effect'. The fruitful associational experience of friends may stimulate one's own participation. Also, many personal relations improve access to information about existing associations. Consequently, informal sociability comprises social resources that 'smooth the path to voluntarism' as human and material resources (Wilson and Musick, 1998, p. 800). But the role of this network may be understood otherwise. So far, we have assumed that decisions to perform voluntary activities or to take part in associations were the result of a purely intentional decision (meaning that it would be the conscious calculation of a rational utility maximizer agent).

However, when describing volunteer labor, Freeman (1997) warns us against the neglect of demand-sided effects. Specifically, many persons perform volunteering activities only when they are requested to do so.<sup>26</sup> As soon as one accepts the idea that at least part of the associational choice is explained by the request from relatives and friends (some of them also being participants or volunteers), then the intentional interpretation in terms of network is misleading. Indeed, a household characterized by frequent gatherings is also more likely to be requested to take part in associational activities, thereby leading to a positive correlation between both variables of interest. Importantly, our empirical results provide limited support in favor of this 'network effect', since associational participation is not significantly increased by gatherings when adequately controlling for simultaneity and labor supply effects (when both spouses work full-time).

A second interpretation of the correlation between gatherings and associational participation refers to the positive impact of

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26 Berger (1991) also stresses that being asked to volunteer is a very important causal factor.

membership on the extent of personal relations. This interpretation is particularly interesting given our hypothesis about the relational returns of participation. It is borne out by our results which exhibit a significant positive effect of participation on gathering for both samples, even when we account for the 'network effect' into the simultaneous equations framework. Nevertheless, the nature of this return has to be further examined. In this paper, we have emphasized the existence of an intrinsic benefit in terms of relational goods. But, along with this interpretation, one can also consider that the use of relations is rooted in investment considerations. In that case, the underlying motive for associational participation is seemingly not linked to the production and consumption of relational goods, but rather to an accumulation process of relational assets (Gui, 2000). For instance, with a wide circle of acquaintances, members of the household are expected to have greater opportunities to find more attractive jobs or to find new leisure activities.

From an empirical viewpoint, it seems difficult to distinguish between a relational goods motive and a relational asset motive, since both explanations are probably joint (at least to a certain degree). Relational assets, which may have pecuniary or non pecuniary returns, are always necessary to produce relational goods. However, given the definition of gatherings, it appears that our indicator of nutritional sociability cannot be disassociated from an interest in relations for their own sake. Few people invite guest to dinner without appreciating their company. So, the positive incidence of associational participation on gatherings with friends is likely to indicate the existence of a return in terms of relational goods.

Finally, a third interpretation concerns the presence of unobserved heterogeneity. Although we have used multivariate analyses to investigate the effects of associational participation on the relational goods consumption, there are still certain individual characteristics that cannot be observed in the data and that may be significant predictors of the household's behavior.<sup>27</sup> Let us imagine that there is such a latent variable that affects both choices (participation and

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27 In our simultaneous equations framework, unobserved heterogeneity is captured by the residual terms in each individual equation. Nevertheless, this is not adequate if there is an omitted variable that affects the two endogenous variables. In this case, each individual residual should be divided as the sum of a fixed residual and a random component. This would not affect the current likelihood of the model, but would place additional restrictions concerning the correlation coefficient between both residuals.

gatherings) in a similar way. This could be a feeling of concern about others (a kind of altruism) or a capacity to manage interpersonal contacts. For instance, it is well acknowledged that associational participation as well as friendship relations involve a certain mastering of social relations technology (Bell, 1991), and especially that of language (Héran, 1988a). In such a case, a positive relationship between both variables would also be observed, but this could no longer be interpreted in favor of the relational goods motive.

Thus, we believe that the positive effect of associational participation on the relational goods consumptions has to be interpreted with caution. On the one hand, such a relationship is compatible with the theoretical hypothesis suggested in this paper, namely that associational participants are motivated by a production and consumption of relational goods. Undoubtedly, some credit is due to such an interpretation. In particular, Gui (2000) and Ben-Ner (2002) claim that associational activities are especially well suited for this type of benefit. Our empirical evidence is also akin to the recent work of Enjolras (2002), but it is not confined to sports activities. On the other hand, the data at hand do not allow us to discriminate between the relational goods motive and alternative interpretations since these different approaches all involve personal relations when explaining associational behavior.

## 6 Conclusion

In this paper, we have focused on the relational goods motive for associational participation. Relational goods constitute a new field of interest for economists, but empirical evidence on such goods remains scarce. Our theoretical analysis points out that associational activities are propitious to this type of benefit. Assuming that individuals who make friends with others members inside association are also inclined to meet them outside, participants are expected to have more personal relations than non participants. Using an indicator of informal sociability given by the annual number of gatherings with friends, our empirical analysis evidences a positive correlation between associational participation and gatherings in France. After controlling for endogeneity of associational participation and accounting for the possibility of reverse causality, we still find that participation has a significantly positive incidence on the annual number of gatherings.

Thus, our results are in favor of the relational goods motive of associational involvement, although alternative interpretations may

be invoked. For instance, relational returns may be seen as an investment, relations being more instrumentally than intrinsically appreciated. Our indicator of informal sociability does not exclude this explanation which is compatible with an intrinsic joint benefit. Although our results are promising, we argue that further empirical research concerning relational goods with regard to associational participation and volunteering is required. In particular, it would be interesting to examine the interaction with other members inside associations. Also, having panel data would be useful to explain how associational participation affects the production and consumption of relational goods through time. We have left these issues as an object for future research.

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## **Biens relationnels et participation associative**

*Dans cet article, nous examinons le rôle des contacts interpersonnels et la possibilité d'un motif relationnel pour rendre compte de la participation et du bénévolat dans les associations. Partant de la théorie sur les biens relationnels, nous montrons que la production et la consommation de tels biens sont plus probables dans le cadre associatif. Cette hypothèse théorique est ensuite testée à partir d'une enquête transversale réalisée en France en 1999. Notre analyse économétrique, qui corrige les effets d'endogénéité de la participation associative, met en évidence une relation positive et significative entre la participation associative et les préférences pour les biens relationnels.*

## **Relationale Güter und Partizipation in Vereinigungen**

*In diesem Beitrag richten wir den Fokus auf die Rolle des interpersonellen Kontakts und die Möglichkeit eines relationalen Motivs, um Partizipationen und freiwillige Mitarbeit in Vereinigungen zu erklären. Unter Heranziehung der Theorie der relationalen Güter zeigen wir, dass partizipative Aktivitäten in Vereinigungen für Produktion und Konsum solcher Güter vorteilhaft sind: Von den Beteiligten an den Aktivitäten von Vereinigungen ist also zu erwarten, dass sie mehr personelle Interaktionen aufweisen. Diese theoretische Hypothese wird unter Verwendung eines sektorübergreifenden Daten-Sets getestet, das 1999 in Frankreich erhoben wurde. Unsere ökonomische Analyse zur Kontrolle der Endogenität von Beteiligung in Vereinigungen unter Verwendung eines Simultaneous Equations-Modells weist eine signifikant positive Beziehung zwischen dieser Partizipation und Präferenzen für relationale Güter auf.*

## **Bienes relacionales y participación asociativa**

*En este artículo se examina el papel de los contactos interpersonales y la posibilidad de un motivo relacional para comprender la participación y las actitudes benévolas en las asociaciones. Partiendo de la teoría sobre los bienes relacionales, se muestra que la producción y el consumo de tales bienes son más probables en el marco asociativo. Esta hipótesis teórica se verifica, seguidamente, a través de una encuesta transversal realizada en Francia en 1999. El análisis econométrico, que corrige los efectos de endogeneidad de la participación asociativa, pone en evidencia una relación positiva y significativa entre la participación asociativa y las preferencias por los bienes relacionales.*

### Appendix. A simultaneous model of associational participation and gatherings

Let  $M^*$  and  $R^*$  be two latent variables respectively for the associational participation decision and the number of annual gatherings. Then, the econometric model to estimate is:

$$\begin{cases} M^* = \beta_M X_M + \gamma_M R^* + u_M \\ R^* = \beta_R X_R + \gamma_R M^* + u_R \end{cases}$$

where  $X_M$  and  $X_R$  are characteristics that influence associational participation and gatherings,  $u_M$  and  $u_R$  are two normally distributed error terms. We have  $M=1$  if  $M^* > 0$  and  $M=0$  if  $M^* \leq 0$ ,  $R=R^*$  if  $R^* > 0$  and  $R=0$  if  $R^* \leq 0$ . This is a simultaneous model with one Probit equation and one Tobit equation, with a correlation between the two error terms (see Maddala, 1983). The participation and gatherings equations may also be expressed as:

$$\begin{cases} M^* = \theta_M Z + v_M \\ R^* = \theta_R Z + v_R \end{cases}$$

with  $\theta_M Z = (\beta_M X_M + \gamma_M \beta_R X_R) / (1 - \gamma_M \gamma_R)$ ,  $\theta_R Z = (\beta_R X_R + \gamma_R \beta_M X_M) / (1 - \gamma_M \gamma_R)$ . We assume that the residuals  $(v_M, v_R)$  follow a joint normal distribution with means  $(0, 0)$  and the covariance matrix  $\Omega$ :

$$\Omega = \begin{bmatrix} 1 & \rho\sigma \\ \rho\sigma & \sigma^2 \end{bmatrix}$$

There are four groups for the observations of the sample. Let  $\delta$  a variable that describes the different states, with  $\delta=1$  if  $M=0$  and  $R=0$ ,  $\delta=2$  if  $M=0$  and  $R>0$ ,  $\delta=3$  if  $M=1$  and  $R=0$ ,  $\delta=4$  if  $M=1$  and  $R>0$ . Then, the probability of being in each state is:

$$\begin{aligned} L_{\delta=1} &= \Phi_2 \left( -\theta_M Z, -\frac{\theta_R Z}{\sigma}, \rho \right) \\ L_{\delta=2} &= \frac{1}{\sigma} \phi \left( \frac{R - \theta_R Z}{\sigma} \right) \Phi \left( \frac{-\theta_M Z - (R - \theta_R Z)\rho/\sigma}{\sqrt{1 - \rho^2}} \right) \\ L_{\delta=3} &= \Phi_2 \left( \theta_M Z, -\frac{\theta_R Z}{\sigma}, -\rho \right) \\ L_{\delta=4} &= \frac{1}{\sigma} \phi \left( \frac{R - \theta_R Z}{\sigma} \right) \Phi \left( \frac{\theta_M Z + (R - \theta_R Z)\rho/\sigma}{\sqrt{1 - \rho^2}} \right) \end{aligned}$$

with  $\Phi_2$  the bivariate normal distribution function,  $\Phi$  the univariate normal distribution function, and  $\phi$  the univariate normal density. If we define the dummy variables  $D_{\delta=1}$ ,  $D_{\delta=2}$ ,  $D_{\delta=3}$  and  $D_{\delta=4}$  as describing the category of each person, the log likelihood of the model is:

$$L = D_{\delta=1} \ln L_{\delta=1} + D_{\delta=2} \ln L_{\delta=2} + D_{\delta=3} \ln L_{\delta=3} + D_{\delta=4} \ln L_{\delta=4}$$

The model can be estimated by standard maximum likelihood techniques. For the estimation, we have used the BHHH algorithm to reduce computational time since it only requires first-order partial derivatives (Berndt et al., 1974). Finally, the consistent estimate of the variance-covariance matrix is given by the cross-product of the first derivatives of the parameters.

