

DISCUSSION PAPER

PREFERENCE VARIATION AND PRIVATE
DONATIONS

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Abstract

This paper tries to bridge part of the gap between the theoretical model of mixed altruism and the empirical research on charitable behaviour. We use questionnaire data on charitable donations from a representative sample of the Flemish population. We link interindividual differences in behaviour to the answers on direct motivational questions. The results are in line with the theoretical predictions. Respondents who are more sensitive to warm glow considerations donate more. A stronger preference for the public good does not lead to a higher level of private giving. This can be seen as weak evidence for the crowding out-effect. Tax prices have no significant effect. This has mainly to do with lack of information and limited tax awareness.

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1 Introduction

While economists have usually been reluctant to discuss the effects of preference differences, a large part of the recent theoretical literature on altruism and private donations has focused on the structure of individual utility functions. There is a simple reason for that unusual research interest. The traditional model, in which private donations are taken to be contributions for the voluntary provision of a pure public good, leads to extreme behavioural predictions. In that model there will be "one for one"-crowding out, as an optimizing individual will perfectly substitute his own donations for donations from another source. Government intervention is "neutral", because increases in government expenditures lead to equal decreases in individual contributions. Things change, however, when one takes into account that persons are not uniquely motivated by the outcome or result of their contribution. Models of "mixed" or "impure" altruism incorporate the idea that the valuation of the act of giving itself may be as important as the outcome of that act (i.e. the valuation of the public good for which the donation is a contribution). In these models, the strong prediction of one-for-one crowding out does no longer hold.

In principle the choice between the two approaches could be decided on empirical grounds. There is indeed some direct evidence to reject the strong crowding-out hypothesis. Private giving is not insignificant in most western societies, even in fields where public provision is huge, and government intervention apparently has not resulted in the complete crowding out of private initiatives. Empirical studies only find (slight) evidence of some partial crowding out. Except for Kingma (1989), however, these studies make use of aggregated data, and do not focus on the issue of preference variation. Most of the applied literature with individual data concentrates on issues which are not immediately relevant to the theoretical debate. Empirical

work is largely based on a model which considers donations as any ordinary consumption good and focuses on price- and income effects. Preference variation is introduced in a rather ad hoc-way¹.

With this paper we want to make a contribution to bridging the gap between the theoretical and the empirical work on charitable donations. Data at the individual level are needed if we want to get a better insight into the structure of preferences. We therefore collected such data from a representative sample of the Flemish population (1990). We asked for detailed information on donations and socio-economic characteristics. Moreover, we included in the questionnaire 32 items measuring the motivation (not) to donate. This information enables us to test whether this preference-related information can make a significant contribution in an econometric model of charitable behaviour.

In section 2 we give an overview of some theoretical topics, which are relevant for the choice of model specification and for the interpretation of the empirical results. The questionnaire and the sample are presented in section 3.1 and the direct information on preferences is described and analysed in section 3.2. Section 4 comments on the empirical explanation of charitable behaviour in our sample. Section 5 concludes.

2 Preference variation and donations: some theoretical notes

The literature contains different approaches to model donation behaviour. We adopt the model of "conditional donations" based on the theory of rationing (see also Schiff, 1985). An individual i allocates his exogenously given net income m_i between his level of donations g_i and private consumption x_i . Since donations may create externalities, his utility will also depend on the

¹ Clotfelter (1985) contains a complete overview of the literature on price- and income elasticities of charitable donations until 1985. Two papers focusing on preferences are Long (1976) and Amos (1982). Long (1976) concludes that "personal forms" of solicitation (friends and workplace relationships) increase contributions. Amos (1982) concludes that "indirect" motives (the desire for public goods) or "Kantian" (act-) motives are more important than direct benefit (political, religious, income or social pressure) motives.

level of contributions by others and by government. We assume that private donations by others and government contributions are perfectly substitutable² and write their sum as g^{-i} . Of course, individual i cannot decide upon the level of g^{-i} . When modelling this as a rationing constraint, we set the exogenously given level of other's donations equal to c^{-i} . The price of private consumption is normalized to one, the price of private donations is p_i . This is the marginal cost in terms of consumption foregone. It is influenced by the system of tax deductibility of donations, so that in general $0 \leq p_i \leq 1$. It is assumed that the marginal cost of other's donations is zero³. Under the Nash assumption of zero conjectures, we can write the Langrangian for the conditional donations model as

$$L = U_i(x_i, g_i; g^{-i}) - \lambda \{x_i + g_i p_i - m_i\} - \gamma (g^{-i} - c^{-i}) \quad (1)$$

Note carefully that this is a model of individual behaviour and that the utility function may be different for different individuals. However, for notational convenience we will drop the subscript i until section 2.2. In general the solution of this optimisation problem will be a donations function $g(p, m; g^-)$. Under the standard conditions of consumer theory we can assume that $\frac{\partial g}{\partial m} > 0$ and $\frac{\partial g}{\partial p} < 0$.

More interesting, however, is the effect of changes in g^- . Following the theory of rationing, we define the private valuation of other's contributions as

$$p^* = \frac{U_{g^-}}{U_x} = \frac{\gamma}{\lambda} \quad (2)$$

2 Assuming imperfect substitutability between donations of other individuals and government contributions, as in Schiff (1985), or imperfect substitutability between all possible sources of other's donations, as in Van Ootegem (1995), does not add any fundamental insights for the points we wish to make.

3 This assumption is not as innocuous as it may seem at first, because the government could charge a positive tax price for additional contributions. However, for our purposes this is not a crucial point.

This virtual price, p^* , is the marginal willingness to pay for other's giving and it measures the money valuation of an additional unit of g^- provided at zero cost. At this virtual price, the level of other's contributions just equals the level the individual would have demanded in the case of unconditional behaviour. The partial effect (for a given level of income) of a change in other's contributions upon individual voluntary donations, being the (Nash) reaction function, can then be written as

$$\frac{\partial g}{\partial g^-} = \frac{\partial g^u}{\partial g^-} + \frac{\partial g}{\partial m} p^* = \psi_g + \epsilon_g p^* \quad (3)$$

Eq. (3) shows that the effect of a change in other's contributions can be subdivided in a compensated effect ($\psi_g = \frac{\partial g^u}{\partial g^-}$) and an income effect, with $\frac{\partial g}{\partial m} = \epsilon_g$ the marginal propensity to donate and p^* the change in real income induced by a change in other's giving. Note that the (marginal) income effect as well as the substitution effect are evaluated at virtual prices and income.

We can simplify the interpretation of ψ_g considerably if we are willing to assume that private consumption is independent in the utility function from the donations of other individuals. Indeed, under this assumption

$$\psi_g = -\frac{U_{g^-}}{U_g} = -MRS_{g^-g} \quad (4)$$

Let us now start from (3) and (4) to model preference variation. We first concentrate on the two extreme cases from the literature (section 2.1) and then look for a formalization of intermediate situations (section 2.2).

2.1 Public goods and warm glow

If we want to model preference differences, it is necessary to structure more explicitly the general utility function $U(x, g; g^-)$. We propose to work with

$$V(x, w, G) = U(x, g; g^-) \quad (5)$$

where $G = g^- + g$ and $w = g$. This approach has been called "mixed" or "impure" altruism in the literature (Cornes and Sandler, 1984, 1994, Andreoni, 1989, 1990). The utility function now reflects two possible motivations to donate. The first motivation is concern for the public good G , which is produced by the sum total of all the contributions. The second motivation is the psychological satisfaction derived from giving by the giver himself. Andreoni (1989, 1990) talks about a "warm glow"- but the effect may also capture less positive feelings like the need to yield to social pressure by one's neighbours.

This approach leads immediately to two extreme cases. The first has been called in a rather unfortunate terminology *pure altruism*. It assumes that the only motivation to give is the concern for the public good, i.e. $V_w = 0$ and therefore $U_g = U_{g^-}$. The individual does not value his own contribution any more than contributions from others. Other's giving and own giving are perfect substitutes. In the optimum it will then be true that $p^* = p$. Moreover, and more importantly, eq. (3) reduces to

$$\frac{\partial g}{\partial g^-} = -1 + \epsilon_g p \quad (6)$$

A sufficient condition for a negatively sloped Nash reaction curve is that $0 < \epsilon_g < 1$. If private consumption is a normal good, the income effect can never be sufficient to compensate the (one for one) substitution effect. A higher contribution of the rest of the community will crowd out an individual's private donation.

Among others, Warr (1983) and Bergstrom et al. (1986) have shown that the (positive) income effect completely vanishes when the increase in g^- follows from additional government contributions which must be financed by lump sum taxes on contributors and when those taxes do not exceed the level of the pre-tax donation. Each individual will adjust his private giving so

as to maintain the same level of private consumption. This result is generally described as "one for one"-crowding out of private giving w.r.t. increased public contributions or the neutrality of total public good provision w.r.t. government contributions or income redistribution. In this model the only way that the government can have any (significant) impact on the provision of public goods is to completely crowd out private provision.

The second extreme case has been baptized "*pure egoism*" by Andreoni (1989, 1990). Here it is assumed that individuals do not care for the public good and only donate because of the warm glow-effect. This implies that $U_{g^-} = p^* = 0$ and therefore $MRS_{g^-} = 0$. Eq. (5) reduces to

$$\frac{\partial g}{\partial g^-} = 0 \quad (7)$$

There is then no crowding out of private donations by giving from others.

2.2 A formal model of preference variation?

Until now we worked with the abstract utility function $V_i(x_i, w_i, G) = U_i(x_i, g_i; g^-)$, where we reintroduced the individual subscript. The extreme cases of pure altruism and pure egoism are interesting as a theoretical benchmark but in actual reality most donors will probably be "mixed altruists" and the weight given in the utility function to the different motivations will vary over individuals. We can model such preference variation by introducing a vector of psychological characteristics π_i to get $V_i(x_i, w_i, G) = W(x_i, w_i, G; \pi_i)$. However, we do not know very well how to model the effect of changes in π_i .

Andreoni (1989, 1990) indexes what he calls "the degree of altruism" of the economic agents by a coefficient α_i , which, adapted to our notation, is defined as

$$\alpha_i = \frac{\partial g_i / \partial m_i}{1 + \partial g_i / \partial g^-} \quad (8)$$

This definition works perfectly well for the extreme cases. For the pure altruists (and under Andreoni's assumption that $p = 1$), $\alpha_i = 1$; for the pure egoists $\alpha_i = \partial g_i / \partial m_i$. This "ex post" definition is based on the equation for optimal giving itself and it proves to be useful in the theoretical analysis of the crowding-out phenomenon. It is less suited for empirical work, however. It is impossible to use Andreoni's ex post concept as an explanatory variable in the equation for optimal giving. We still have to parameterize explicitly differences in $\partial g_i / \partial m_i$ and (more importantly) $\partial g_i / \partial g^{-i}$.

A somewhat more promising approach is followed by Cornes and Sandler (1994). They specify the utility function as

$$W(x_i, g_i, G; \pi_i) = W(x_i, \beta_i g_i, g^{-i} + \gamma_i g_i) \quad (9)$$

Cornes and Sandler (1994) interpret the parameters β_i and γ_i mainly as "technological" factors, reflecting for instance the production technology of the public good and the marketing efforts of charitable organisations. But for our purposes we can also make them individual-specific, interpret $\pi_i = [\beta_i, \gamma_i]$ and parameterize variations in the psychological characteristics as variations in β_i and γ_i . Note that the extreme cases of pure altruism and pure egoism are captured by $\beta_i = 0, \gamma_i = 1$ and $\beta_i = 1, \gamma_i = 0$ respectively. The comparative static results in Cornes and Sandler (1994) then yield interesting insights in terms of complementarity/substitutability relationships. The direction of the effects can only be determined under restrictive assumptions, however. Moreover, eq. (9) is already restrictive as such, in the sense that both β_i and γ_i enter multiplicatively, i.e. as a proportional shift parameter. It is well known that this makes changes in these parameters similar to price changes and that other specifications yield quite different behavioural predictions (see, e.g., Schokkaert, 1982). There is no a priori reason why the multiplicative specification would be preferable over these alternatives for empirical work.

Given the present state of our knowledge, we found it advisable to take an agnostic stance and to follow a reduced-form approach in our empirical specification. We will therefore introduce variations in π_i directly into the equations for optimal donations. However, we will use direct information on motivations to link our empirical results to the altruism-egoism dimension, or better, to the public good and the warm glow preference structures.

3 Altruism or Egoism in Flanders: a questionnaire⁴

In May 1991, an oral and representative survey (n=1013, age 18 and more) was conducted in Flanders, the Dutch speaking community of Belgium. The general aim was to collect data (for the year 1990) about the importance of individual charity, the market shares of different organisations, the motives underlying the act of (not) giving and the use of the funds collected. We will discuss the motivational questions in more detail in section 3.2. In section 3.1 we first give a short overview of the general results on the amount of giving.

3.1 The amount of private gift-giving

Amongst the Flemish population, 16% has not given anything to any charitable organisation during the year 1990, 84% reports to have made a non-deductible donation and 16% also made a tax-deductible donation. The average deductible donation is 5051 BEF, the average non-deductible donation is 801 BEF. Based on these statistics, we can estimate total charitable giving in Flanders in 1990 to be about 4.5 to 5 billion BEF. This represents 0.21% of total

⁴ More information about, and aggregate results of, the survey can be found in Van Ootegem (1995).

private consumption in the same year. All these figures are based on the answers of the respondents. However, as far as we can compare our data with official statistics, e.g. on deductible gifts, they seem quite reliable (Van Ootegem, 1995)⁵.

We have also asked about the distribution of the donations over various causes. The results are summarized in table 1. We see that the largest share of voluntary giving goes to organisations involved in development projects, followed by projects for the sick and disabled.

Table 1 about here

For a donation to be deductible from taxable income, under Belgian tax law, a base amount of 1000 BEF for each organisation is minimally required. 91% of the respondents knows that minimum requirement, but only 30% is able to estimate the amount one recovers due to the system of deductibility. We will return to this lack of knowledge when we discuss the results in section 4.2.

3.2 Some direct evidence on motivations

An important aim of our survey was to derive some direct information on the motivations of the respondents. We therefore included 32 questions related to the motivation to donate or not to donate (see table 2). Each item included four answering possibilities, ranging from complete agreement to total disagreement. We are well aware that our range of items cannot possibly capture all motives to give. On the other hand, it is already too extensive to be practically useful. We therefore reduced the number of variables through a factor analysis. This means that we

⁵Our estimated donations are very low when compared to U.S.A. figures. Yet the two situations are not comparable. Government intervention (and hence taxation) is much larger in Europe. More than half of the giving in the U.S.A. is directed towards religious organisations. Moreover, organisations in the U.S.A. use more professional fund-raising techniques and are united in several important pressure groups.

constructed a small set of underlying, hypothetical variables or factors, so that the observed variables are linear combinations of the underlying factors. These factors indicate the dimensions along which we can structure the utility functions.

Table 2 about here

Table 2 gives the matrix of factor loadings after a varimax rotation⁶. 27.3 % of the total variance in the 32 items is explained by six common factors. Interpretation of such factors is always subjective to a certain extent but the overall pattern seems clear.

Most of the items loading on *factor one* are related to a personal principle or code. There is also a high correlation with feelings of guilt and religious conviction (taken up by the second factor). None of the items contains any reference to other people or to the use of the funds collected by means of charity. They all refer to the private sphere and motivations of the individual. This is also the case for the items of *factor two*, that refer to some kind of social or psychological pressure (not to refuse) to donate. Still, there is no reference to the use of the funds. A person attaching high importance to factor two seems to care strongly about what others think about him.

Most items of *factor three* on the contrary point to some specific use of the gift. The contrast with factor six suggests that factor three does not mainly represent a feeling of distrust w.r.t. charitable actions. We rather feel that it points to some interest in the use made of the collected means, albeit possibly in a rather narrow-minded sense. The interpretation of *factor four* may be twofold. Most items refer to qualities of the fund-raising organisations (information and

⁶ The factor analysis was conducted using the SAS-package. As initial estimates of the communalities, we used the squared multiple correlations (SMC). Additional factors are extracted until the eigenvalues became smaller than one. We opted for the varimax rotation procedure because it maximizes the variance of the squared loadings for each factor, and therefore facilitates the interpretation of the columns.

good use of the funds). The link with the items loading mainly on factor six is obvious. But at the same time, factor four also indicates a lively and real interest in the good cause. One wants to have full knowledge of the circumstances and causes of the problems which must be solved in a structural manner. Agreement with these items points to individuals who are motivated by the result or outcome of their charitable actions.

Factor five reflects mainly financial constraints. All the items of *factor six* are related to aspects of the organisations collecting the donations. The main difference with the items of factor four, however, is the fact that the items of factor six do not refer to the final use of the funds, but remain restricted to the characteristics of the organisations. Factor four relates to the evaluation of organisations as vehicles to transfer money to the good cause, while factor six relates to the evaluation of organisations as such.

The link between these motivational factors and the theoretical framework in the previous section is not altogether obvious. However, it seems possible to link factors one and two to a kind of warm-glow effect. They do not refer to the use of the funds but to the effect of the own donation on the donor's utility. We will call them "egoism-principles" and "egoism-pressure" respectively. Factors three and four do refer to the use of the gift and are therefore more outcome-related. They seem to give some information on the public good-component. To emphasize the difference in focus between the two factors we call them "regionaltruism" and "mundialtruism" respectively. We keep to the altruism-egoism terminology because it has become almost generally accepted in the literature, but it is obviously somewhat confusing from a psychological (or philosophical) point of view.

After having defined the content of our factors, the next step is to determine the position of the individuals on these factors, i.e. the interindividual variation in psychological weights. Rather than working with the standardized factor scores, we preferred a more direct and unstandardised measure, which gives a better indication of the average weight given to the different factors by

the overall Flemish population. The weight attached by an individual to a factor is then determined by making an average of the answers of that individual on all the items loading on that factor, with a value of four for "very important", three for "important", two for "not important" and one for "not at all important". The average importance of the four psychological characteristics is summarized in table 3. On average our respondents agree more with the "public good" (altruism)-items than with the "warm glow" (egoism)-items⁷.

Table 3 about here

In the following section we will investigate the contribution of these psychological structures for the explanation of individual donations. Let us first try to formulate some a priori hypotheses, which can be derived from the theoretical framework in section 2. It is clear that we expect in general that persons who are more sensitive to warm-glow considerations will indeed give more. But what about the altruism-motivation? In a world without government we could expect that respondents who are more interested in the public good would contribute more, even taking into account the free-rider effect. But in a situation with huge government intervention (as is the case in Belgium) a large part (or even the whole of) these contributions will be crowded out by the taxes used to finance that government intervention. Therefore we can formulate as an hypothesis that interindividual differences in the altruism- or (public good) motivations will not lead to differences in individual donations (but most probably will be correlated with the psychological acceptance of high rates of taxation).

⁷ Van Ootegem (1995) gives some results on the explanation of the psychological factors in terms of socioeconomic characteristics.

4 Explaining private donations in Flanders

To explain the level of private donations, we estimate a separate equation for deductible (*DED*) and non-deductible donations (*NDED*). In a certain sense we hypothesise that the two are different goods. A priori one could expect that deductible giving is a more rational decision, taken after some deliberation, while the largest part of non-deductible giving is a spontaneous act. The results for deductible and non-deductible donations are summarised in tables 4 and 5 respectively. Total deductible and non-deductible donations are explained as a function of disposable income (*INC*⁸), the respective prices, socio-economic variables, and the psychological characteristics defined before. The price of non-deductible donations is one. The individual price of deductible giving (*PRICE*) is computed for each respondent on the basis of the fiscally relevant information (partner, children, profession, net monthly income) provided by the questionnaire.

Tables 4 and 5 about here

To handle the problem of zero observations, we have estimated a simple Tobit-model⁹. We also analysed explicitly the problem of price endogeneity (see Reece and Zieschang, 1985), which may arise from the nonlinearity of the income tax scheme. We computed for all households reporting a positive amount of deductible giving both the "first franc" and the "last franc"-price:

⁸ INC is net household income in BEF for the year 1990.

⁹ Jones and Posnett (1991a, 1991b) and Smith et al. (1995) reject this simple Tobit-specification in favour of a more general two-stage model, where the effect of the various explanatory variables may be different in the selection equation (giving or not giving) and in the level equation (what amount to give). However, the results of the two-stage estimation are rather sensitive to the choice of variables included in both stages, about which we do not have good a priori hypotheses. We therefore preferred to stick to the simple Tobit-specification.

in our sample none of the donating households moved through its donation into another tax bracket. We therefore neglect the problem of price endogeneity and we used the "first franc"-price as explanatory variable.

We will now first interpret the price and income effects and then turn to the psychological variables.

4.1 The effect of tax deductibility

Table 4 shows the estimation results for the model of individual deductible donations. In all the variants of the model, the Tobit coefficient for income is .004-.005. Correcting for the fact that only about 15% of the sample has non-zero deductible donations, this leads to a marginal income share of .00060-.00075. Using the information from the survey that the average deductible donations for all the Flemish households are about .07% of disposable income¹⁰, we can then estimate the income elasticity of deductible donations in Flanders to be about .86-1.07. The income effect on non-deductible donations is hardly significant. Perhaps this confirms our idea that non-deductible giving is rather a spontaneous act, an immediate answer to some direct request.

Contrary to the results in most of the existing (U.S.A.-based) empirical literature, the price of deductible donations has no significant impact on the amount of deductible giving¹¹. Multi-collinearity is not a sufficient explanation for this result. Indeed, when we substitute for INC the personal perception of the financial situation (INCPER¹²), which we expect to be less directly correlated with the prices, the price effect does get the expected sign but remains insignificant (column 2). And the same is true when we omit the income variable altogether (column 3).

10 The average deductible donation of the whole sample is 748 BEF. Average disposable income in our survey is 959 078 BEF.

11 The same is true in Jones and Posnett (1991a, 1991b).

12 With INCPER=1: "very bad", INCPER=2: "bad", INCPER=3: "good" and INCPER=4: "very good".

There may be an alternative explanation: the tax awareness of the population apparently is much weaker in Flanders (in Europe?) than in the U.S.A. We mentioned already that only 30% of our respondents is able to give an estimate of their own individual tax price. Since we had sufficient information to calculate for all individuals their actual tax price, we could check the accuracy of these estimates by the respondents. The Pearson correlation between the computed tax prices and the answers by the respondents is -0.04. Table 6 gives an idea about the estimation errors made by our respondents: only 21.5% (of the 30% who have given an estimate) is capable to estimate the price of a deductible donation within a margin of error of plus/minus 0.05. We can safely conclude that our respondents have no idea about the exact price of deductible donations. It is therefore not surprising that it plays only a minor role in their decisions on charitable giving. Because of the insignificance of the price-influence and the correlation with the traditional income variable, we decided to discard the price variable.

Table 6 about here

4.2 Altruism, egoism and crowding out: a tentative interpretation of the effects of preference variation

If we capture preference variation through the traditional socioeconomic variables we get the results in column (4) of table 4 and column (2) of table 5. Schooling¹³ and age have a significantly positive effect on deductible donations, as is commonly found in the literature. The effect of age on non-deductible donations is not significant, however. An interesting variable is IMPREL: this is a level variable capturing the importance of religion for the respondents¹⁴. A stronger

13 SCHOOL1: primary education, SCHOOL2: lower technical level, SCHOOL3: lower general level, SCHOOL4: higher technical level, SCHOOL5: higher general level, SCHOOL6: non-university higher education, SCHOOL7: university level.

14 With IMPREL1: "very important", IMPREL2: "important", IMPREL3: "not important" and IMPREL4: "not at all important".

religious inspiration leads to larger donations. This effect is stronger for non-deductible donations, which could have to do with the fact that many of the smaller (non-deductible) donations are collected during religious ceremonies or in church. The number of children has no significant effects¹⁵.

While these socioeconomic variables undoubtedly capture a part of the preference variation, the question arises whether our motivational constructs as described in section 3.2 add some further explanatory power to the equations. Columns (5) in table 4 and (3) in table 5 show that from a statistical point of view they do. Or, better, two of the motivational constructs play a significant role: the "egoism-social pressure"-factor and (more importantly) the "egoism-principles" factor, both related to the warm glow. What we interpreted as "altruism" (or public good-) motivations have no significant influence on the level of donations. These results are perfectly in line with the hypotheses formulated at the end of section 3. Note that there is some interplay between the coefficients of the "warm glow"-variables and the importance attached to religion. This was to be expected.

By and large, our empirical results confirm the models in the theoretical literature. We cannot reject the traditional hypothesis of free rider behaviour and crowding out in the case of public good-motivations. In our data set, an increase in the (stated) willingness to provide contributions for the public good has no significant impact on concrete charitable donations. But the pure public good model is not complete, because it has difficulties to explain the existence of private donations even in a situation with huge government intervention. Our results suggest that this phenomenon can partly be explained by warm glow-motivations. It seems useful to structure the utility functions of potential donors along the lines suggested by economic theory. Models of mixed altruism are a promising starting point to model charitable behaviour.

¹⁵ We also tried a number of regional dummies: they are not significant.

5 Conclusion

Empirical reality requires an approach that takes into account variation in preferences. The theoretical model of mixed or impure altruism offers an interesting starting point. It has seldom been used to guide empirical work, however. Most empirical work has concentrated on the effect of tax deductibility (the price effect) and on the influence of income and other socio-economic characteristics.

We aimed at bridging part of that gap between theoretical and empirical work by setting up a questionnaire which made it possible to link the amount of charitable giving to differences in motivations. We used factor analysis to classify the answers to such motivational questions in some basic factors, which could be meaningfully related to the "public good" and the "warm glow" motivations that appear in the theoretical literature. We then introduced this information in an explanatory model of charitable behaviour. The price of charitable donations is not important to explain deductible giving. Our survey reveals that this may have to do with lack of information and limited tax awareness. Deductible donations are positively correlated with the net household income, the age and the level of schooling of the respondent. The income effect on non-deductible donations is hardly significant.

In general, respondents who are more sensitive to warm glow considerations donate more. However, a stronger preference for the public good does not lead to a higher level of private giving. These findings are perfectly consistent with the theoretical predictions. Under the hypothesis of crowding out we could expect that differences in the degree of altruism *ceteris paribus* would not lead to larger private gifts in an environment with huge government intervention.

It is clear that our results have to be interpreted with caution. Yet it is promising that direct information on motivations, even if measured in a far from perfect way, apparently improves the explanatory power of an equation explaining charitable behaviour. It is the more promising

that the direction of the effects is in line with what could be expected on the basis of theory. More work is needed to introduce preference variation in a formal model of mixed altruism and to explore in a more rigorous way the consequences of various specifications.

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Table 1: Allocation of private contributions to public goods.

Cause	Deductible	Non-Deductible
People in developing countries (TW)	45.84	34.99
The sick and disabled (SD)	21.54	31.34
The poor in Belgium (P)	8.18	7.88
Political prisoners and refugees (R)	7.42	3.39
The environment (E)	2.20	9.55
Immigrants	0.00	0.31
Other cause (explicitly mentioned)	1.66	7.83
No cause mentioned	13.16	4.71
Total	100	100

Table 2

32 items : Matrix of factor loadings after varimax rotation.

Variance explained: 27.3 (=100)		7.9 (29.0)	5.0 (18.3)	5.0 (18.2)	4.3 (15.7)	2.7 (10.0)	2.4 (8.7)
Item Factor 1	Comm	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
(11) I find it difficult to turn down organisations or rallies committing themselves to the good cause	.501	.646	.288	-.018	.026	.007	-.004
(24) I consider it my duty to help wherever I can	.413	.600	.057	.096	.105	-.037	.169
(15) I would like to support whenever possible all campaigns and organisations committing themselves to the good cause	.325	.538	.165	-.010	-.036	.052	.063
(9) I find it hard to turn down children ringing the door-bell to raise money for the good cause	.332	.526	.150	.101	.069	.127	-.034
(16) I highly respect people having the courage to raise money for the good cause	.274	.455	-.111	.108	.133	.128	.098
(22) If an (urgent) emergency arises, I will support help	.271	.444	-.010	.237	.099	.010	.088
(13) Whoever is financially at ease, has to support the good cause	.201	.376	-.033	.080	.035	.220	.053
(32) The government of Belgium should generally give more aid to charity organisations	.178	.317	-.133	.015	.219	.034	.098
(31) There are certain campaigns or organisations for which I have a special liking	.151	.267	.146	.087	.074	-.135	.164
Item Factor 2	Comm	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
(23) I will support sooner when I see that others support as well	.353	.127	.540	.056	-.111	.161	.061
(28) Sometimes I feel obliged to support the good cause because of my surroundings (neighbours, colleagues, etc.)	.263	.055	.484	.084	-.086	-.030	.102
(27) I feel obliged to support the good cause because of my religious conviction	.371	.311	.452	.110	-.072	-.161	.162
(30) I feel guilty when I do not give	.395	.406	.442	-.069	-.001	-.138	.016
(18) I need a long time to decide whether I should give money to a particular cause or not	.181	-.109	.363	.045	.004	.171	-.076
(26) I tend to give sooner to campaigns or organisations selling things for the good cause than to campaigns or organisations which only raise funds	.205	.055	.361	.153	.047	.171	.129

Item Factor 3	Comm	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
(20) I tend to support a cause more when the money raised is destined to projects in my own neighbourhood	.370	.018	.078	.578	.124	.118	.023
(21) Rather than giving via charity organisations, I'd prefer to give it straight to people who need it	.344	.038	.000	.568	.139	.010	-.025
(17) I prefer smaller, local organisations to larger national organisations	.301	.114	.093	.525	.060	-.004	.019
(12) I am more likely to back charity actions or organisations when I know people who already benefited from their aid	.308	.166	.070	.488	.159	.052	.096
(25) I prefer to give when I know the person who is asking for the gift	.314	.095	.300	.423	.010	.086	.172
Item Factor 4	Comm	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
(5) Organisations need to provide feed-back on what they accomplished with the money they raised	.351	-.057	-.012	.105	.576	.063	.009
(29) I would like to know exactly what happened with the money raised	.327	.048	.015	.162	.543	.059	.021
(8) Organisations have to provide a lot of information on the origin and the extent of the causes they back	.262	.106	-.050	.042	.481	-.054	.110
(7) Organisations have to tackle the problems at their root	.237	.157	-.111	.044	.415	.008	.160
(1) Organisations are not to have any political tendency or colour	.089	.109	-.020	.069	.248	.019	.101
Item Factor 5	Comm	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
(19) I would suffer financially when giving away a large amount of money	.285	-.005	-.006	.036	.035	.531	.020
(10) My generosity depends on the financial burden on me at the moment they call upon my support (e.g., a costly month)	.260	.144	.101	.030	.003	.476	.044
(14) When I am not asked personally for charity, I often forget to give money	.140	.088	.193	.123	.040	.280	.002
Item Factor 6	Comm	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
(3) Organisations need to have acquired a certain name, or be known by the public	.275	.115	.028	.103	.130	.064	.479
(2) Organisations need to promote their cause intensely and make a lot of publicity for it	.248	.174	.074	-.065	.118	.077	.434
(6) Organisations need to give fiscal certificates for tax deductions	.139	.055	.186	.058	.153	-.085	.261
(4) Organisations have to commit themselves to causes which accord with my vision of life	.081	-.022	.094	.092	.175	.003	.180

Table 3: The importance of the psychological factors in in Flanders

Factor	Preference-structure	Sample Average
4	"Mundialtruism"	3.32
1	Egoism-Principles	2.97
3	"Regionaltruism"	2.75
2	Egoism-Pressure	2.14

Table 4: Deductible donations

C	-65308.0 **	-73289.7 **	-55522.4 **	-30118.0 **	-55772.8 **
	(11137.2)	(11960.7)	(10341.1)	(4037.91)	(9200.64)
PRICE	3394.11	-2814.89	-7454.00	-	-
	(6256.09)	(5142.52)	(4992.13)		
INC	.005 **	-	-	.004 **	.004 **
	(.002)			(.001)	(.001)
INCPER	-	6007.98	-	-	-
		(1557.17)			
EGOPRIN	8745.26 **	8676.93 **	8995.58 **	-	9001.89 **
	(2068.44)	(2130.75)	(2104.75)		(1978.56)
EGOPRES	3037.38 *	1962.09	2663.20 *	-	2305.29 *
	(1614.98)	(1632.30)	(1623.16)		(1531.13)
ALTREG	-829.41	-752.11	-1035.57	-	-1023.67
	(1382.50)	(1417.36)	(1402.07)		(1268.80)
ALTMUN	195.66	563.11	259.65	-	-332.25
	(1766.98)	(1824.64)	(100.52)		(1682.88)
NKI	200.39	286.40	436.82	295.10	269.10
	(611.36)	(616.98)	(608.80)	(510.27)	(565.74)
AGE	157.35 **	170.69 **	157.37 **	101.11 *	123.67 **
	(62.87)	(64.93)	(63.98)	(51.96)	(60.10)
SCHOOL 2	1026.66	1873.69	2228.66	3471.19	1736.38
	(2995.68)	(3070.86)	(3040.71)	(2448.15)	(2789.93)
SCHOOL 3	5040.64 *	4667.73	5353.39 *	4338.01 *	4486.98 *
	(3096.18)	(3100.33)	(3155.50)	(2642.48)	(2070.13)
SCHOOL 4	7939.54 **	7662.81 **	8360.37 **	5378.34 *	7345.86 **
	(3305.10)	(3468.22)	(3456.33)	(2846.35)	(3186.03)
SCHOOL 5	5677.78 *	6248.81 **	7206.03 **	5612.32 **	5851.70 **
	(2886.56)	(2909.36)	(2009.81)	(2409.50)	(2685.04)
SCHOOL 6	9448.83 **	9839.77 **	11046.2 *	9081.90 **	10197.7 **
	(3117.81)	(3155.84)	(3144.42)	(2570.37)	(2881.63)
SCHOOL 7	18379.8 **	19345.0 **	21324.3 **	14220.2 **	17484.9 **
	(3785.65)	(3776.42)	(3747.83)	(3161.40)	(3500.00)
IMPREL1	-	-	-	8392.98 **	1824.12
				(2427.46)	(2701.97)
IMPREL2	-	-	-	3957.37	-1015.76
				(2090.75)	(2315.32)
IMPREL3	-	-	-	-1435.07 **	-3988.72
				(2330.04)	(2561.41)
OBS/POS	742/107	729/106	742/107	950/139	704/116
LOG LIK.	-1309	-1292	-1313	-1717	-1411

TOBIT, **: $t > 2.0$ and * : $t > 1.5$, (standard errors)

Table 5: Non-deductible donations

C	-2475.6 ** (891.58)	-793.31 ** (360.62)	-1971.7 ** (915.87)
INC	.0002 (.0001)	.0003 ** (.0001)	.0002 (.0001)
EGOPRIN	829.03 ** (205.85)	-	756.42 ** (206.97)
EGOPRES	148.83 (175.19)	-	100.95 (176.99)
ALTREG	-95.01 (147.94)	-	-118.14 (147.35)
ALTMUN	-190.44 (192.39)	-	-231.36 (192.93)
NKI	46.28 (63.79)	5.43 (53.92)	28.46 (63.81)
AGE	6.55 (6.59)	5.42 (5.55)	4.08 (6.66)
SCHOOL 2	542.20 * (284.95)	500.30 ** (242.63)	526.48 * (283.72)
SCHOOL 3	294.01 (317.38)	205.03 (274.21)	256.84 (315.94)
SCHOOL 4	272.37 (367.78)	273.56 (308.45)	171.84 (367.48)
SCHOOL 5	690.90 ** (296.00)	637.50 ** (250.38)	654.82 ** (294.81)
SCHOOL 6	1264.63 ** (330.94)	1024.73 ** (279.75)	1205.27 ** (329.83)
SCHOOL 7	1576.77 ** (452.40)	1287.54 ** (374.39)	1516.92 ** (451.73)
IMPREL1	-	927.54 ** (263.22)	753.72 ** (319.64)
IMPREL2	-	358.34 * (211.26)	111.58 (258.81)
IMPREL3	-	104.39 (222.17)	28.82 (267.25)
OBS/POS	784/662	950/796	784/662
LOG LIK.	-6141	-7343	-6137

TOBIT, ** : $t > 2.0$ and * : $t > 1.5$, (standard errors)

Table 6: Comparison of computed and estimated cost of donations

Interval around computed price	% of estimated prices in interval
+/- .05	21.5
+/- .10	36.9
+/- .20	51.2
+/- .30	68.8

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