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Private Contributions to Collective Concerns: Modeling Donor Behavior

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Abstract

The obvious discrepancy between the predictions of the standard model of private provision of public goods and empirical indications have led many economists to search for alternative explanations of the phenomenon of voluntary contributions. Whilst concentrating on models of donor motivation, the present paper gives a non-technical survey of a sample of these approaches, and discusses their advantages and limitations.

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"... no decentralized pricing system can serve to determine optimally [the] levels of collective consumption." Paul A. Samuelson (1954), p. 388.

1 Introduction

The standard theory of public goods neglects the possibility of meeting collective needs sufficiently through private contributions. The constituent attribute of a public or collective good is that one person can take advantage of it without cutting back the consumption opportunities of others. In addition, it may be prohibitively costly to exclude single members of society from its consumption. Taken into account the assumption of rational, and at least partly egoistic individual motives, free-riding is the individually optimal action. A free-rider will participate in the consumption of the good, yet not in its provision.

Indeed there are means of overcoming the problem by improving the organization and coordination of the collectivity. Notably, Olson (1965) focussed on this context. Whether or not an improvement to a setting without cooperation can be achieved, does, however, crucially depend on the collectivity's size. In Olson's non-technical theoretical framework collectively rational outcomes can be expected only in environments with intensive social control, and therefore principally in small groups.

However, empirical studies point towards remarkable levels of private initiatives dedicated to the support or actually complete funding of public interests, even in large collectivities. For instance, charitable organizations like the Red Cross and child relief organizations, or other institutions of public interest like local sports facilities and universities are to some varying, yet undeniable extent financed by voluntary donations. What is more, they often rely heavily on voluntary work.

The obvious discrepancy between the predictions of the standard public goods model and empirical indications have led many economists to search for alternative explanations of the phenomenon. Whilst concentrating on models of donor motivation, and only alluding to other agents's objectives,

this paper introduces a sample of those approaches, groups them according to their central assumptions, and presents their core results.

The following section will be concerned with models of individual rationality, whereas the third will confront their results with those when assuming morally conscious individuals. The fourth section will scrutinize the impact of intermediary institutions, such as fundraisers, on the individual donor's utility. Section 5 introduces a recent model that embraces donor motives from all three domains. The survey closes with some transeunt remarks.

2 Models of Individual Rationality

Positive models of private contributions to collective needs can basically be distinguished according to whether they are based on the assumption of individual rationality or on that of individual morality. Individual rationality means that the agents in question follow a well-defined objective, that they systematically use their resources and endowments to optimize (usually: maximize) their own welfare or utility. By contrast, individual morality suggests that an agent's behavior is guided not only by self-oriented objectives, but at least to some extent by a superordinate moral notion that also takes others' concerns into account.

We will begin by describing in more detail the outcome and implications of the standard public goods approach, which can be counted among the models of individual rationality. Subsequently, we will show with which modifications more recent models try to overcome the standard model's lack of prediction power.

2.1 The Public Goods Model and its Empirical Shortfalls

Essentially influenced by Becker (1974), Warr (1982, 1983) and Roberts (1984), the modern version of the public goods model was cohesively restated by Bergstrom et al. (1986). According to the basic assumptions of the standard model, the individual's objective is solely influenced by her wish to consume the collective good by herself or to guarantee a certain supply. Hence, individual utility from the public good is affected only by the level of

its provision. Alternative determinants such as the welfare of other members of society do not enter her calculus in any form.

In summary, when an individual decides to contribute time or money[1], she does so because she is in need of the good provided. However, the individual's gift does not only affect her own utility, but that of all other members of the collectivity – and vice versa. In large, i. e. anonymous, societies, this interdependence establishes a strong incentive to take advantage of the good's provision without bearing a suitable cost. The result generally is an inefficiently low supply of collective goods, because all individuals tend to behave in a likewise manner. This is not the only implication of the standard model, though. Further propositions are that, under quite general assumptions, neither the level of provision of the public good nor the individuals' private consumption are affected by moderate redistributions among the contributors or by "small" variations of a tax-financed governmental grant. In both cases the individuals adjust their donations such that the total supply remains unchanged.

Considering the effect of redistributions, this result is often referred to as the neutrality theorem of public goods provision. It can be summarized as follows:

Neutrality Theorem. A redistribution of income among the contributors to a public good has no effect on the total supply of the public good and on the individual consumption of the private good, as long as no individual loses more income than what she had dedicated to the supply of the good before.

Because the original bundle of private consumption and public good supply is still attainable, such a redistribution does not alter the individually optimal allocation of resources. Hence, neutrality is due to the fact that every individual reduces or raises her donation by precisely the extent to which her income has changed in consequence of the redistribution. Since the individually rational consumption plan is naturally invariant and can

[1] With minor extensions to the basic model, Duncan (1999) derives the result that, in equilibrium, voluntary work and voluntary donations are perfect substitutes from the contributor's point of view.

still be put through, the consumer will continuingly seek to fulfill it.

For large economies, even such redistributions that bowl down the initial resource constraints are approximately neutral, as is demonstrated in Andreoni (1988).

A comparable, yet more special result can be derived when accounting for governmental initiative in terms of tax-financed provision of the collective good. The analysis of this interdependence of private and governmental supply of public goods has been motivated by Warr (1982) and Roberts (1984), and was again contiguously rephrased by Bergstrom et al. (1986). The core result of their analysis is that tax-financed contributions completely offset privately financed contributions. This proposition is often referred to as the crowding out theorem of public goods provision and can be reproduced in the following way:

Crowding Out Theorem. As long as the individual's tax burden levied to fund the public good does not exceed her original voluntary contribution, the governmental grant reduces total private provision by precisely the same extent.

The crowding out theorem is based on the same mechanism as the neutrality theorem. This is not surprising: From the donor's point of view, the government is perceived as only yet another individual ready to contribute to the collective good. So, if the government decides to take part in the provision of the public good and finances its contingent by taxing private contributors, then the latter will reduce their donations exactly by the amount of their individual tax load. In consequence, the sum of private and governmental provision is the same as the original supply resulting from solely voluntary contributions.

What is more, complete crowding out does not only pertain to lump-sum taxes, but may also follow a distortionary policy, as Bernheim (1986) shows. The only extra condition for this result is that all members of the collectivity are linked by the sequence of transfers in question. Andreoni (1988) states that even distortionary *subsidies* may be neutral, if they occur in the form of partial reductions of an individual's tax bill.[2]

[2]In Andreoni and Bergstrom (1996), this model is restated and compared to a similar

However, if the redistribution of income or the taxation of individuals is such that it changes the set of contributors, i.e. that it affects former free-riders or overtaxes contributors, then both measures actually will have an effect on the total supply of the public good. In particular, a tax-financed governmental contribution will lead to a higher level of provision, if those who do not voluntarily participate in the financing of the good are drawn on as taxpayers.[3]

Hence, it is of interest, under which circumstances and to which extent free-riding occurs in collectivities of strictly rational individuals in the first place. Whether or not single members of the society are ready to contribute to the provision of the public good, crucially depends on the size of the collectivity in question. As Andreoni (1988) demonstrates, the settings of the standard public goods model inevitably lead to the phenomenon of free-riding in large economies.

Free-rider Theorem. Consider a collectivity of n individuals, with individual wealth drawn from a continuous probability density function. Let n converge to infinity, then none but the wealthiest individual contributes a positive amount to the provision of a public good. While total provision approaches a constant positive value, the average individual donation converges to zero.

This reasoning does not rest on the presupposition of identical preferences. At the limit, though, all "remaining" contributors are of the same type.

To conclude, the standard model leads to the following propositions concerning the privately supplied level of provision of public goods and the role of governmental supply. Tax-financed governmental grants as well as tax

one, where subsidies actually do increase the overall provision of a collective good. If subsidies are not modeled as rebates that reduce a *universally* binding tax load, but are financed by *individually* fitted shares of total subsidy expenditures, the result is a positive relation between subsidy rate and supply level. Kirchsteiger and Puppe (1997) study the possibility to enhance a welfare-maximizing provision of public goods by means of distortionary subsidy schemes. The case where efficient supply is the unique equilibrium, is conditional on perfect information about individual characteristics.

[3]Bernheim (1986), by contrast, claims that under quite general circumstances even such redistributions that involve non-contributors to a good, have no impact on total supply. If more than one collective good is supplied, and there is "sufficient overlap between the sets of donors to different causes", neutrality and crowding out always take effect.

rebates for private donations will not extend the supply of a public good, if exclusively former voluntary contributors are drawn on. Also, an exogenous redistribution of income among these individuals will have no impact on the level of supply. Involving free-riders will lead to a positive quantitative effect of governmental intervention only if the respective collectivity is small. In large economies, neutrality and crowding out approximately hold, even if non-contributors are affected.

In the standard model, there is no role for governmental intervention. From a welfare perspective, however, a case can be made for a subsidization of charitable donations. The positive externalities imposed on the collectivity by an individual's choice to contribute may not be incorporated in her reasoning. Tax privileges can then be interpreted as Pigouvian subsidies.[4]

Mark that the three major results cited in this section hold true only if both the private and the public good are normal in consumption for all members of the collectivity. A rise in income entails the propensity to spend more on the collective good, and a rise in others' contributions to the good lowers the incentive to participate oneself. This requirement ensures the existence of a unique Nash equilibrium. If the collective good were not normal for each and every individual, then the effect of income redistributions could not be generally assessed.

The standard model's testable implications – (approximative) neutrality, crowding out, and free-riding – have indeed frequently been confronted with empirical data. The results can be summarized as follows:

– Exogenous redistributions do not show to be neutral.

  For examples of relevant empirical studies, see e. g. Hochman and Rogers (1973), Khanna et al. (1995), p. 268.

– Crowding out of private contributions through tax-financed governmental supply does not appear to be total.

  See e. g. Abrams and Schmitz (1978, 1984), Clotfelter (1985), Kingma (1989), Posnett and Sandler (1989), Khanna et al. (1995), Payne

[4] Blumkin and Sadka (2007) point out that, while this is true for purely altruistic motives, *taxation* of charitable contributions can be backed with the same argument in case of purely egoistic motives.

(1998), Eckel et al. (2005). For surveys on empirical evidence on crowding out, see Steinberg (1991), Peloza and Steel (2005) offer a meta-analysis. An interesting result is derived in a field experiment by Karlan and List (2007). They find that a matching grant enhances giving, yet that a larger rate does not outdo a lower one in terms of revenues.

– Even in large collectivities there is a notable disposition to voluntarily contribute to public concerns.

  Charitable non-profit-organizations in the US accounted for a business volume of around 600 bn US-$, or 6.2% of US-GDP, in 1999 (see Blackwell and McKee (2003)). The total of charitable contributions in the US, according to an annual survey by Giving USA, amounted to 249 bn US-$ in 2004, which exceeded 2% of GDP. Experimental evidence for a propensity to donate even in anonymous settings can be found in, e. g., Ledyard (1995), or Meier (2006).

In reality, people obviously are not indifferent whether they contribute to the provision of a public good voluntarily or by means of transfers to the government or other individuals.[5] Besides, the absolute level of provision does not appear to be a private donor's only motive to participate in the funding of a public good. Accordingly, the assumptions of the standard model are likely to be conceptually too narrow.

2.2 Warm Glow

In reaction to the lack of predictive power the standard approach displays, Andreoni (1990) extends the model by a component he addresses as warm glow. Warm glow describes a feeling of personal gratification arising from the act of giving itself. This sentiment is not altruistic in character, even though it might seem so from its definition. In fact, the donation is driven

[5] Notwithstanding a prevalence of rejection, the outcomes of empirical tests concerning neutrality and, especially, crowding out are not completely uniform. An interesting approach to explain this disparity is provided by Borgonovi (2006): Assuming a non-linear, i. e. inverted u-shaped, influence of public support on private initiative will produce different outcomes depending on the given level of governmental intervention.

by the (essentially egoistic) wish to consume a purely private good, namely warm glow. The fact that an individual's donation also benefits others, is due to the non-rivalry property of collective goods, and not to her inner propulsion which remains strictly utility-maximizing.

Basically, the setting in Andreoni's approach does not differ too much from the standard model. The fundamental innovation is that the individual's contribution affects her utility not only through its impact on the overall supply, but also in a way that is completely independent of collective interests: the sheer instance of giving becomes an additional motive. By means of this modification, Andreoni derives the following results:

- A redistribution of income among private contributors to a collective good is not neutral. In fact, the level of private provision changes due to a variation of the income distribution.
- An increase in the tax-financed governmental supply of the collective good prompts an increase in the level of total provision. Therewith, crowding out is not complete.
- An increase in the subsidies on private contributions to collective goods prompts an increase in the level of total provision.
- For a given level of governmental revenues, subsidies provoke a larger increase in the level of total provision than a direct governmental grant of the same extent.
- From the point of view of social welfare, subsidies are preferable to an increase of the same extent in the direct governmental grant.

Therewith the modified framework of the warm glow model leads to predictions that more easily comply with the results of empirical observations than those of the standard approach. In the equilibrium of the warm glow setting, redistributions of income will not be neutral, so there is space for an effective coexistence of private and governmental initiative. Besides, the seizable policy proposal can be derived that subsidization of private contributions – e. g. by means of tax deductions – typically outdoes direct grants

to collective goods.[6]

A paper by Ribar and Wilhelm (2002) suggests, by contrast, that a similar limit property to that producing approximative neutrality in the standard model, also strikes through to Andreoni's impure altruism approach. As long as individuals in an infinitely large collectivity do not act *purely egoistic*, their choices will completely countervail exogenous changes in the collective good's supply. A tax-financed governmental grant of one dollar, for instance, will only partly crowd out a given individual's private contribution, and therefore lead to some net increase in provision lower than one dollar. This development is anticipated by another impure altruist and again partly neutralized by her contribution decision, and so on. At the limit, crowding out is total.

2.3 Other Models of Individual Rationality

The widely recognized limits of the standard model's prediction power provoked other economists apart from Andreoni to develop models that add an egoistic element to the calculus of a private donor, notably Margolis (1982)[7] and Steinberg (1987). Steinberg's approach also treats the individual contribution as a private good, but the donation enters the individual calculus only once. Notwithstanding its being part of the collective good for all others, it is perceived as a separate commodity by the individual herself. Hence, for any single member of the collectivity, the public good comprises only the total of all the other members' contributions, whereas the own donation is a pure private good.

Beside the private sector, government also plays a role in Steinberg's approach. There are two levels of government, each contributing to the provision of a public good. The local government charges the individuals with a proportionate income tax, whereas the central one imposes a linear-progressive tax on the income net of local deductions and voluntary contributions. A further assumption is that the individual is indifferent whether

[6] Blumkin and Sadka (2007) point out that, while a case for subsidization can be made for purely altruistic motives, *taxation* of charitable contributions can be backed with the same (Pigouvian) argument in case of purely egoistic motives.

[7] Margolis classifies an individual's total utility from her contribution in s-utility and g-utility, i. e. in utility for "self" and "group".

the public good is provided by means of other persons' donations, grants on behalf of the central or those on behalf of the local government – all these types of contributions are considered perfect substitutes.

The interdependence of the own donation and that of the other members of the collectivity serves as a measure of the degree of egoism the individual is driven by. If these, too, are perfect substitutes, the individual is purely altruistically motivated. In contrast, pure egoism can be presumed when the own utility is completely independent of any other's contribution.

Mixed motives imply that an increase in the exogenous (governmental as well as private) contributions can effect the individual's choice in various ways. It may result in a higher, lower, or in an unaltered contribution. Steinberg follows that a complete crowding out of private initiative through governmental grants is, at least, largely improbable.

A further implication of the model can be stated as follows:

– Given a decrease in the central government's contribution, those of the individuals and of the local administration will indeed rise, yet not enough as to compensate for the shortfall in the central government's funding share.

Steinberg's model assigns an important role to the government: without its initiative the level of provision of a public good will be lower. This implication is not strictly clear-cut, either, but it still displays a high level of robustness.

Similar to Andreoni's (1990) model, this approach of mixed motives results in more realistic propositions concerning the neutrality of transfers between the parties involved. However, it is less general as it is focused on a specific type of government, namely a federal system.

In the context of models of individual rationality, an early contribution by Guttman (1978), labelled matching principle, shall be introduced as representative for the vast normative literature attempting to develop an efficient mechanism of public goods provision.[8] As before, the Nash-conjecture

[8]This normative branch of literature on voluntary contribution games is known under the name of Mechanism Design Literature. Among its most notable contributions are those by Clarke (1971) and Groves (1973) (which, based on Vickrey (1961), founded the

that individuals treat the others' actions altogether as given, is dismissed as counterfactual. Instead, a two-stage contribution scheme is proposed that hence allows the individuals to react to the behavior of others. In the first stage, the players determine the rate at which they promise to match the total of contributions. In the second stage they choose their own contribution in reaction to the matching rates of the others. Hence, all matching rates are known to all agents in the second stage, and the sequential design of the procedure therewith prevents naive choices.

The individual's total contribution then consists of the flat component and the matching rate applied to the sum of the others' donations. In equilibrium, each individual chooses a subsidy rate of 1, and the following result can be derived:

– Given identical agents, the matching principle leads to a unique equilibrium, in which social welfare attains an optimum.

The matching principle thus results in a complete resolution of the free-rider problem. Strictly speaking, matching is no principle of individual rationality, though. It is a mechanism that members of a collectivity can agree on against the background of their mutual welfare. However, it again relies on very strong assumptions, namely those of perfect information and identical preferences.

3 Models of Individual Morality

The free-rider problem has not only been analyzed according to the concept of the strictly rational homo oeconomicus, it has also frequently been scrutinized against the background of other codes of conduct. That part of the related literature coined "Kantian" will be dealt with in the next section. Alongside, this chapter will be concerned with other concepts of modeling individual contributions to public goods on the basis of individual morality.

group of so-called Vickrey-Clarke-Groves-mechanisms), Bliss and Nalebuff (1984), Bagnoli and Lipman (1989).

3.1 The Kantian Approach

Kant's (1907) Categorical Imperative is frequently interpreted as an individual's obligation to solely choose an action she would want everyone else to choose, too.

Categorical Imperative. "Act only on that maxim through which you can at the same time will that it should become a universal law."[9]

Effectively, such a notion of human behavior may influence the outcome of voluntary contribution games in that it expands the range of possible levels of provision towards an efficient supply of public goods, as Bilodeau and Gravel (2004) show. The authors generalize the basic work of Laffont (1975), which was sensitive to the restrictive assumption of identical preferences and resources.

The analysis is based on the standard voluntary contribution model described by Bergstrom et al. (1986), among others. The player's strategy space is determined by her income, i. e. her individual range of possible resource allocations. In addition, private goods (such as nutrition) are assumed to be essential, whereas public goods are not. Hence, the setting is quite familiar to those presuming individual rationality. So far, the players act in basically the same environment.

The significant difference is embodied by the principles underlying the individual's choice of conduct. She does not act according to the logic of strict utility maximization, but rather obeys the application of the Kantian norm. Also, the welfare of others does not enter the individual's calculus as in the altruistic model, where it essentially becomes a public good liable to the typical free-riding problems. Here, the preference – or even: the innate obligation – to participate arises from a cooperation motive. It seems plainly unfair not to behave in the way one expects others to do. So, individuals feel utterly indebted to act their part in satisfying collective requirements.

On the basis of these assumptions, Bilodeau and Gravel prove the existence of an equilibrium that leads to the following outcome:

[9] Kant (1907), p. 88.

– Individuals that unanimously act according to the Kantian maxim voluntarily provide the efficient level of supply of a public good.

Hence, the free-rider problem can be overcome if all individuals comply with the interpretation of the categorical imperative described above.[10]

3.2 Other Notions of Individual Morality

Beside the Kantian approach, other notions presupposing individual morality have been developed in order to surmount the standard model's strictly inefficient outcome.

Notably, Sugden (1984) offers an approach of social exchange, whilst disclaiming as arbitrary and counterfactual the simple Nash-assumption that all agents individually act in best response to the given conduct of all other agents. Instead of treating the actions of others as given, in Sugden's approach the individuals account for the fact that their own behavior influences that of all others – and vice versa.

Just as in the "Kantian" models, Sugden thus supposes that the members of a collectivity are led by a notion of cooperation that lets them include mutual concerns into their consideration. Yet beyond that, he criticizes the application of Kantianism outlined above, because individuals agree to obey their moral obligation, irrespective of whether the others act in the same way, or not. This "principle of unconditional commitment"[11] appears to him just as unfair as unconditional free-riding, and therefore as irrelevant in practice.

Sugden presumes that every player establishes claims on what would be a universally appropriate contribution to the collective good, i. e. what she would best want every single member of the collectivity to dedicate (in the following: individually best-preferred contribution). Then, individual con-

[10] The authors label their application of Kant's concept "universalization". It has to be noted, though, that e. g. Wolfelsperger (1999) criticizes the "Kantian economics" as philosophically banal. Besides, he denies the possibility of deriving a solution for the prisoner's dilemma from "authentic Kantianism" (Wolfelsperger (1999), p. 898). In fact, Kant's objective is not to create a norm of, but to deliver a positive theory for human conduct. It claims that individuals in practice incur a self-obligation to ensure the collectively rational outcome.

[11] Sugden (1984), p. 774.

duct can be appointed practically moral where it predicates on reciprocity. This norm of mutual cooperation is specified as follows:

Reciprocity. Given that all other individuals contribute an amount g not lower than her best-preferred contribution, the individual is bound to dedicate at least g to the funding of the collective good.

As long as everybody else participates in an appropriate manner from the point of view of an individual, she will reciprocate this behavior.[12]

The equilibrium is defined as the set of the smallest individual donations to the collective good that comply with this principle of reciprocity. In particular, equilibria will exist where the following circumstances are given:

- Each and every individual contribution to a collective good is not lower than the payment the individual would make, were she the only contributor, and not higher than her best-preferred contribution.
- Apart from the boundary case that the individually best-preferred contribution is zero, there will always exist multiple equilibria.
- Solely the specific equilibrium that consists of identical individually best-preferred contributions is optimal from the point of view of social welfare. Any other equilibrium results in an inefficiently low level of provision of the collective good.

Thus, the principle of reciprocity will only lead to a congruence of individually and collectively rational behavior, and therewith to an efficient outcome, when accompanied by very restrictive assumptions. However, free-riding can indeed be confined, so that the phenomenon of voluntary (partial) funding of public concerns effectively can be explained by the adherence to such a behavioral norm.[13]

[12] Empirical indications for such a logic of action can be found in, e. g., Fong (2001). A field experiment conducted by Frey and Meier (2004) also supports a notion of "conditional cooperation".

[13] Reciprocity as an important determinant of behavior in voluntary contribution games is subject to more recent analysis, too - with a theoretical focus (cf. Rabin (1993)) as well as, even more prominent, in experimental economics. This large field of research is beyond the scope of this survey, yet some propositions are Fehr and Schmidt (1999), Bolton and Ockenfels (2000), Falk and Fischbacher (2006).

A notable approach in the same line is Young's (1989) fair-share model, that calls for the individuals to contribute an equal relative share of their income. The outcome is similar, too: the incentive to take advantage of the others' efforts can be limited, therewith allowing clearly higher levels of provision than predicted by the standard model.

Chan et al. (1997) present an experiment that delivers empirical indications of a comparable norm of conduct. Their so-called equity model comes to an end that also dismisses the free-rider proposition of the altruistic setting:

– Referring to the predictions of the standard public goods model, poorer individuals contribute more, and richer individuals contribute less to the funding of the collective good.

In fact, the individual contribution converges to a constant value, so that an average donation of Zero becomes an extremely particular case.

The idea of accounting for relative levels of income (or utility) can be traced in later models of inequality aversion, where altruistic behavior as well as non-cooperation, or even punishment, result from an individual's position in the collectivity's income distribution.[14]

To a certain extent, the above-mentioned models all depend on the complete observability of the collectivity's donation distribution. In large economies, this is quite unlikely. A model by Holländer (1990) concentrates on this aspect. It explores the individual motivation to contribute to a collective good despite the negligible impact of the donation on the good's overall level of provision. Holländer demonstrates that, also in large collectivities, a higher level of welfare can be reached if individuals are emotionally sensitive to what he calls "social approval". The model does not presuppose a clear-cut rule of conduct from the outset, but shows that the inclination towards "social approval" will lead to one such.

Members of a collectivity are assumed to care about the other members' sentiments toward them in absolute as well as relative terms. Notwithstanding the negligibly small contribution of a donor's gift to social well-being, it

[14] Notions of inequality aversion can be found in, e. g., Fehr and Schmidt (1999, 2003), Bolton and Ockenfels (2000), Charness and Rabin (2002).

is subject to an approving sentiment. This is, because individuals are held to "consider the hypothetical advantage"[15] they would encounter if everybody displayed a similar comportment. Therefore, the degree of participation in the supply of a collective good, which delivers no noteworthy incentive to cooperate in large groups itself, is positively correlated with an emotional "good" provided by the fellow individuals.

Since all subjects are assumed to have the same preferences for approval, and governmental coercion rules out the possibility to gain any such award, the following result holds:

– If preferences for social approval exist, ceteris paribus, the resulting equilibrium is superior in terms of collective welfare to that enforced by government.

Besides, the model setting brings about the evolution of a social norm oriented at the average donation. Divergence from this guideline is responded to in either an approving or a disapproving way, depending on the direction of the deviation. So, what is presupposed by models such as that by Chan et al. (1997), or shown in experiments on inequality aversion, automatically emerges from the general setting in Holländer (1990). In consequence, individuals may agree to contribute a positive amount toward the provision of a collective good, even though their contribution remains virtually unsubstantial for the overall level of supply.

4 The Role of Intermediation

The models discussed so far widely function within the framework of a one-shot voluntary contribution game, i. e. the individuals simultaneously contribute to the provision of the collective good, which then is supplied in perfect equivalence to the value of the total fund. Accordingly, no transaction costs are assumed to exist that may reduce the amount supplied in any sense whatsoever.

In reality, though, we observe charitable organizations and fundraising institutions that generate costs when soliciting and administering private

[15] Holländer (1990), p. 1161.

donations. So, an actor is obviously interposed in the provision mechanism of some collective goods, whose presence and demeanor cannot be accounted for by the previously quoted approaches. In effect, part of the donation goes to an agent who, seemingly, does not create a surplus value: she simply conveys the funds to their destination, an exercise the donor could be expected to just as well perform herself.

However, if the costs and frictions caused by these intermediate parties actually were dispensable, they should disappear in the course of the competition for donations. This development cannot be observed in reality.[16] Consequentially, the activities of such costly institutions should contain some sort of value in order to justify their presence.

Most manifest is an informational function of intermediation. A potential donor is not automatically aware of the option to take part in the funding of a certain cause. Besides, the quality of the respective good is not always easy to observe. For that reason, charitable organizations generally distribute information on their field of activity and the intended attribution of the gifts.

Beyond the mere informational function, fundraising is assumed to feature a stimulus in the provision mechanism. It may turn an initially subliminal wish to contribute into an explicit donation. A stylized fact of charity is that individuals may only contribute when directly confronted with the well-specified request to participate in a particular funding process.

Another important quality of intermediation is to accord traits of a private good to the mechanism of supply of a fundamentally public good, and so to erode the incentive to free-ride. A direct, straightforward example from fundraising is the raffle strategy.[17] Participants in such a lottery contribute to a collective cause, whilst accounting for the probability to win a certain prize.

More generally, intermediation may add a private dimension to the contribution through a visible sign of approval (that may increase with its size).

[16] In 1995, fundraising institutions in the US were hired by about 115,000 charitable organizations, accounting for a revenue of roughly 2 bn US-$. Cf. Money Magazine Online, cited in Andreoni (2006).

[17] See, e. g., Morgan (2000), Morgan and Sefton (2000), Duncan (2002).

Therewith, an individual's utility is affected in excess of the good's mere supply, and the donation itself is in a way set apart the body of collective contributions.

Some inferences on donor utility may also be drawn from the behavior an intermediary typically displays. Models that analyze fundraising methods often propose a sequential procedure, or emphasize the role of large initial gifts.[18] This implies, that donors are interested in the progress of the funding, i. e. in its probability to succeed, when the good needs to meet a certain threshold. Andreoni (1998) studies the strategic implications of capital versus continuous campaigns before the same background. Further notable approaches modeling the donor-intermediary relation mainly from the intermediary's point of view, can be found in papers by Romano and Yildirim (2001), and Bac and Bag (2003), for instance.

In essence, a distinct classification in models of donor and such of intermediary behavior cannot be made. Naturally, where optimal fundraising strategies are analyzed, they always predicate on assumptions referring to donor preferences[19].

The following sections will provide an introduction to the role of intermediate institutions on the basis of selected models of the philanthropy market. We are well aware of the fact that intermediaries naturally are exposed to specific incentive structures themselves, and therewith may display a behavior that deviates from that taken for granted here. However, this field of research is beyond the scope of this survey. We will concentrate on the implications especially for *donor* utility.

4.1 Charitable Gifts as a Signal of Status

The model proposed by Glazer and Konrad (1996) accounts for the observation that, in many forms of appearance, donations are generally not made anonymously (although, incidentally, tax deductions are usually not conditional on anonymity).

[18] See Vesterlund (2003), and List and Lucking-Reiley (2002), Andreoni (2006), respectively.

[19] The Harbaugh (1998a) prestige approach, for instance, proposes an innovative dimension in donor utility, and then derives optimal publication strategies for intermediary institutions based thereon; cf. section 4.2.

The authors describe a society, where an individual's voluntary contribution to a collective good serves as a signal of wealth. An individual might wish to signal her wealth because it is seen as the fruit of extraordinary intellectual abilities or outstanding character trades. But instead of conveying the signal herself, an individual relies on an independent institution in order to add the necessary credibility to the announcement of her donation.

Compared to other proxies of wealth, such as excessive private consumption, a philanthropic gift is a powerful signal, because its publication may offer a better perceptibility. Another advantage is the generally higher social acknowledgement of charitable initiative.

According to this approach, the reason for the failure of the standard and of the warm glow model is the anonymity of the donor. Yet, the argument here is not that publication enhances social control. In large economies the sanctioning of inadequate contributions would still be prohibitively difficult. Instead, Glazer and Konrad conjecture a positive incentive to participate in the funding of a public good, namely the quest for social status. Besides, none of the previously presented models delivers a direct explanation for the frequent observation that voluntary contributions, as far as published in donor categories, are significantly overproportioned at the lower categorial boundary.[20] Obviously, individuals do not always participate for reasons of altruism, or to sense a warm glow of giving, but in order to achieve recognition in their social environment.

Glazer and Konrad model status as the individual net wealth signaled to the other members of the collectivity. The individual determines her optimal contribution on the basis of her resources. The others observe her choice and deduct rational expectations with respect to the donor's wealth.

The specification of the status model results in the following implications:

– Crowding out is not complete as long as the government finances its grant by means of lump-sum taxes.

[20]The publication of the donors' names in categories such as "Distinctive Member" or plainly "Friendly Supporter" restricts the information from the exact amount to a broad range of monetary contributions. For an empirical analysis of the resulting behavior, see Harbaugh (1998b).

– Redistributions are not neutral. In particular, equational redistributions raise the level of provision of the public good.

– Due to a proportional governmental subsidy of private donations that is financed by a reduction of the government's direct grant, the level of overall provision rises.

The model delivers quite natural implications such as the negation of the neutrality theorem and the preferability of tax deductions for contributors over direct grants. What is more, it offers a possible concretion for the process that might create the so far quite diffuse sense of a warm glow. Namely, what adds private utility to an individual's contribution here is the opportunity to have an intermediary institution publish her gift, and therewith to gain social acknowledgement. So, in addition to a possible informational function, charitable organizations adopt the role of a signal transmitter.

4.2 Prestige as a Source of Extrinsic Motivation

Harbaugh's (1998a) prestige model is based on the same observation that inspired the status model: the strikingly high percentage of contributions exactly at or just above the lower boundaries of the respective donor categories. The specification of this model constitutes an expansion to Glazer and Konrad's setting, though: Harbaugh integrates the incentives warm glow and prestige, whereby interpreting the first as a purely intrinsic, and the latter as an extrinsic source of motivation. This specification provides a number of interesting insights into the interdependence of donors and intermediaries. Particularly, the ambition for prestige establishes a scope for an intermediary to influence the donor's choice of resource allocation.

Just as in the status model, the altruism motive is completely omitted from the individual utility function. The contribution is in fact seen as a pure private good affecting the donor's calculus solely by creating prestige due to its publication and by means of an immanent experience of well-being sensed when giving.

Besides publishing a contributor's name, an intermediary might an-

nounce the exact amount issued, or the donor category. She might also make no announcement at all. Harbaugh examines which publication scheme is most desirable from the donor's point of view. Incidentally, the preferences of donor and intermediary widely coincide: an opportunity for substantial utility gains will entail a correspondingly large individual contribution, and therewith simultaneously benefit a revenue maximizing intermediary.[21]

A comparison of the three publication schemes concerning the effect on total gift revenues yields the following implications:

- Publication of the exact contribution results in a higher total revenue than making no announcement.
- Publication within donor categories may lead to a higher, unchanged, or lower total revenue than an exact announcement.

The latter result prompts Harbaugh's further analysis of an optimal publication scheme. Given that an intermediary knows the distribution of donor types, yet not the type of a particular donor, a revenue maximizing publication scheme should satisfy the following requirements:

- Optimal publication schemes exhibit donor categories at the upper and lower margins of the gift distribution.
- Optimal publication schemes announce the exact height of medium contributions.
- Optimal publication schemes exhibit a limited number of donor categories.

Besides delivering implications for an effective reward of philanthropic initiative, the model is capable to describe the characteristics of typical organizational forms of charitable institutions.[22] Notably, intermediaries with

[21] Notwithstanding the acceptance of revenue-maximization as the predominant motive, the intermediary's primary objective is subject to some discussion. A study by Khanna et al. (1995) suggests that, depending on their field of work, some charities appear to maximize either net or gross revenues. Others cannot be distinctly linked to any of these objectives.

[22] Further research on the scope of charitable organizations, especially on the role of central charities in the provision of local versus global collective goods is scrutinized in,

an over-regional or international scope will presumably drive campaigns for small gifts from very many donors, because their addressees are most unlikely to interact, and therefore cannot be rewarded much prestige. Hence, only warm glow is applicable as a private motivation to give to this type of charitable organization.

By contrast, local organizations or such operating in a network are prone to solicit larger gifts from a relatively small number of donors, which tend to be associated in some manner. Accordingly, these intermediaries display a certain amount of monopolistic power, as they are able to offer a degree of prestige that generally is inaccessible through other organizations. Alumni of an elite university, for instance, can achieve far more prestige by having their donation published in a medium addressing the graduates of precisely this university than of any other one, notwithstanding its possibly being even more elitist. The reason is quite simple: the prestigious donation can only be linked to their person by individuals who "know" them sufficiently well.

In addition, Harbaugh's approach is convenient to explain the pooling of charitable organizations. Such consolidated institutions, e. g. the "United Way", launch few, yet extensive campaigns, and divide the revenue among the charities they represent. Often, the individual organization is small and generates only little prestige. The economies of scale linked to the expenses of solicitation, as well as the possibility to convey more prestige to the donors via local cooperations, may well lead to a higher net revenue.

4.3 Impact Philanthropy

Duncan (2004) addresses an individual that gains personal satisfaction from effectively and distinctly influencing the supply of a collectively beneficial good as an impact philanthropist.

Just as the public goods model, Duncan's approach implies an interdependency of individual contributions. Yet, the reaction to any other's donation runs exactly counter to that induced by the standard model. Instead

e. g., Konrad (1998), Blackwell and McKee (2003). Rose-Ackerman (1982), and Bilodeau and Slivinski (1997), among others, deliver implications on how market structure and competition may form an intermediary's specific behavior.

of providing utility by offering the opportunity to free-ride, the initiative of other members of the collectivity spins off negative externalities. The impact philanthropist's gift produces less effect, and the given financial endowment of the good scales it down to a side note.

Impact philanthropy embeds the standard model as well as warm glow as marginal cases. The central innovation of the approach is, as noted above, that the given supply of the collective good depreciatively enters the individual's utility function, because in consequence the donation's impact on public benefit degrades.

The impact philanthropy model fulfills the empirically founded exigence that governmental grants do not neutralize private donations:

– Under quite weak assumptions, exact crowding out is impossible. By contrast, crowding in may be supported.

Another interesting result is related to the distribution of private funds on multiple collective concerns:

– The impact philanthropist will, ceteris paribus, choose that allocation that spreads her gift more unevenly among different collective goods.

This result leads to a conflict of interests between the charity and the donor. For illustration, Duncan uses the example of a child relief organization that seeks to conduct the gifts freely, and to purposefully allocate the resources among the children.[23] By contrast, the impact philanthropist will always prefer a conditional donation, particularly restricting the number of beneficiaries. That is because he chooses to distinctly support one particular child rather than to sparsely aid a number of (anonymous) children. So, despite their probable disadvantageousness for the addressees, such contracts, e. g. a godparenthood for a needy child, are quite commonly concluded. The reason for the intermediaries' giving in to the claim for comparable arrangements supposedly lies in the charitable organizations' competition for donors.

[23] For example, by adhering to the highest marginal impact of the single dollar, and not to that of the total gift.

5 A Compound Approach

Bénabou and Tirole (2007) present a model of individual behavior in collectivities that, in a manner of speaking, encompasses the approaches presented in the sections on individual rationality and morality, and on intermediation. The authors identify three driving forces of "prosocial behavior": individual conduct is guided by an intrinsic feeling of obligation, by extrinsic incentives, and by a taste for reputation in a collectivity. The interaction between these stimuli may, however, slightly differ from the way it has been shaped in the models presented above.

Agents are intrinsically motivated when they feel liable to follow (moral) norms that either emerge endogenously from social interaction, or are due to the desire for self-contentment.[24]

Extrinsic motives refer to rewards, such as prizes in charitable raffles, rebates, or so-called fringe benefits[25]. They may, on the other hand, include penalties for deviation from some social norm. Following an observation by Titmuss (1970), the model allows for a substitutive relation between intrinsic and extrinsic motivations to contribute to a collective cause. Titmuss states that moral objectives to donate blood may be crowded out by monetary rewards, because unselfish behavior is given a price and therewith is deprived of its impact on (self-)acknowledgement.[26] So, in Bénabou and Tirole's approach, the overall effect of incentives on charitable giving is not necessarily unambiguous.

As a third force that shapes individual intrasocial conduct, the disposition towards reputation drives an agent's willingness to participate in a collective matter. By means of gift publications, for instance, the donor may signal traits such as wealth, generosity, or a sense of acquittal. But again, the signal may also have a counter-effective impact, because boasting is not acknowledged even when it is related to apparently non-selfish causes. An intense signal may, in the eyes of the others, bring to the fore the egoistic

[24] Concerning the desire to live up to a specific self-image, see also Brekke et al. (2003).

[25] Think of, e. g., preferential admittance to proms or dress rehearsals at the opera.

[26] Mellström and Johannesson (2005), among others, find evidence for such a crowding out effect in blood donation.

dimension of the donor's reasoning.

As in Holländer (1990), the model does not presuppose any rules of conduct, but allows for heterogeneity of individual tastes for, e. g., altruism, and describes the emergence of multiple norms of intrasocial behavior. Individuals draw conclusions from observed behavior, and form a pattern of interdependencies between agents' actions. The substitutability or complementarity of individuals' choices is then determined by whether conformity or deviation from "mainstream" attitudes is appreciated.

A subset of the results Bénabou and Tirole derive from their framework is the following:

- Rewards and penalties are counterproductive for a wide range of values.
- Nevertheless, agents will generally not reject rewards.
- The optimal incentive rate does not fully compensate for the donation's public good externalities.
- Competition among intermediaries will, ceteris paribus, increase rewards for donors, and therewith diminish social welfare, compared to the monopoly case.

The model reflects the complex structure of individual contribution decisions, which are driven by a medley of objectives such as altruism, status orientation, self-conception, social norms, incentive structures, and notions towards "mainstream" behavior. These underlying structures again differ across individuals, and the driving force of the model then is the interpretation and valuation of an individual's emitted signals by the other members of the collectivity.

6 Concluding Remarks

The standard public goods model has shown to possess noteworthy weaknesses in prediction power. Restricting the character of a donation to merely

that of a component of a collective good obviously cannot explain the prevalent level of private funding of collective concerns. An expansion of the underlying individual motivation to moral aspects or to purely private incentives such as status, prestige, or warm glow, admits a better understanding of the empirically observable behavior a private donor typically displays. Various theoretical approaches discussed above are in line with that.

There are numerous other studies related to the investigation of the so-called voluntary sector's characteristic properties. Needless to say that this survey can only offer a sample of the quite substantial and still incessantly growing literature. While the authors concentrate on the individual motives of donors alone, the strategic interactions among donors as well as between donors and fundraisers receive acute attention in present research. Some core aspects of such relations, such as the role of intermediaries, were referred to above, yet again mainly within the scope of utility effects for donors. It was outlined that fundraisers should principally announce the source and height of the donation – in categories, as the case may be, yet by all means in a prestige-enhancing manner. In general, the possible trade-off between personal and collective requisitions should be adequately addressed through the arrangement of the provision process.

Various branches of research within the wide brackets of private contributions to public concerns were not explicitly addressed in this survey, yet still are of great interest. There is, as outlined before, a vast literature on mechanisms to overcome free-riding.[27] Another large field of research is concerned with experiments that study donor behavior in a laboratory environment.[28]

Of course, an in-depth understanding of donor behavior also has an undeniable impact on the role of government. The degree of substitutability between a donor's and the government's contribution affects the design of subsidization schemes, or the question of optimal taxation of contributors.[29]

[27] Examples are, besides those already mentioned, Admati and Perry (1991), Varian (1994), and Marx and Matthews (2000).

[28] A survey is provided, for instance, by Meier (2006).

[29] See, e. g., Kaplow (1995), and Diamond (2006), respectively. Important empirical studies of the interdependence of governmental initiative and private donations are presented by Randolph (1995), and Auten et al. (2002).

Another issue is the measurement of social welfare, when purely private, often intangible, utility from charitable contributions is to be assessed. A discussion of whether warm glow, for instance, should be incorporated in a social planner's objective function is provided by Diamond (2006), a related discussion can be found in Bénabou and Tirole (2006).

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