The Economics of the Gift

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Abstract

In the past, gift-giving has interested mainly anthropologists because it was taken to be a primitive mode of exchange. Recent contributions of economists acknowledge however that gift-giving is still present in modern exchange economies. In this paper gifts are characterized by motivations. Two main features of gift giving are to be explained: (in-)adequacy and (non-)reciprocity. It is argued that social approval is potentially a powerful explanation of gift-giving. We relate the results to the market economy and try to explain the anomaly that gift-giving is sometimes reduced after compensation is offered.

Keywords: gift-giving, reciprocity, adequacy, social approval.

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1 Introduction

Gift exchange has interested mainly anthropologists because of the extravagance and importance of gift-giving in primitive societies (Camerer [11], p. 180). This seems to suggest that gift exchange is not of much importance in today's market oriented economies. But, as is realized by now, the gift exchange oriented tribal economies have not been destroyed but sometimes even flourished in the presence of a market economy (Gregory [23]). Recent contributions by economists also acknowledge the role of gift-giving in modern market-oriented economies, be it somewhat hidden in specific settings. Akerlof [2] for instance, argues that the gift of an employee is the amount of work in excess of the minimum standard. And Rabin [34] considers gift-giving equilibria as situations where fairness considerations lead to cooperative behavior. The 'efflorescence of gift exchange' thesis, by which it is meant that gift exchange has not suffered under the impact of market economies[1], is therefore considered as a valid description of modern exchange economies.

It is in the aim of this paper to give an overview of the main contributions about gift-giving in the economics literature. The way this is done is by categorizing the gifts by motivations. In addition to the motivations found in the existing literature, it is argued that social approval is potentially a powerful explanation of many phenomena related to the topic.

The setup is as follows. First, in section 2 some characteristics of gift-giving are discussed. Different approaches based on motivations are discussed in section 3. Each approach is examined on its potential of explaining the characteristics as mentioned in section 2. Section 4 extends the discussion to the relation with markets. A general discussion and some conclusions are provided in the final section.

2 The Gift

The essential characteristics of a gift are ill understood as is substantiated by the strongly diverging claims made in the literature. This section briefly discusses the views being hold and examines its validity and coherence. Two aspects in particular form the backbone of the discussion throughout the paper: reciprocity and adequacy.

Reciprocity. At first sight it seems quite obvious that a gift is voluntary by nature. But anthropologists stress that although voluntary on guise, factually gifts have strong reciprocal properties (Mauss [32], Codere [13]). One has not even only a duty to give, but also to receive and to return. The extravagance of gift-giving in primitive societies is underlined by the fact that a failure of accomplishing one's obligations to reciprocate often eventuates in warfare and the loss of dignity.[2] It is therefore often thought that reciprocal behavior is necessarily connected with gift

[1] The term is borrowed from Gregory [23]. He relates it to the impact of colonization which is broadly interpreted here as the introduction of a market economy.

[2] This occured for example among the Kwakiutl. It should be noted however that their use of warfare mostly refers to warfare directed to an individual and not so much between nations. For a detailed description of the Kwakiutl, see Codere [13].

exchange. According to Camerer [11] however, it is "especially misleading to assume that modern gift-giving must be reciprocal". It is indeed reasonable not to assume that it is a necessary aspect. Consider for example the case of blood giving. The giving of blood is not directed to specific individuals but to an anonymous agent, as carefully remarked by Arrow [5]. Gifts or donations of this kind can by assumption not elicit reciprocal gifts, albeit this not immediately signifies that non-reciprocity is also unlikely to occur in *personal* relationships. But consider the higher effort of workers above minimum firm standards. This is not always reciprocated by the firm in the form of higher wages or bonuses (see Akerlof [2]). If we take this behavior as a gift of the worker to the firm, then reciprocity is not connected within (fairly) personal relationships either. The correct conclusion would be that gifts are not necessarily reciprocal in nature. If we are to explain the existence of gift-giving, we also have to explain why certain kinds of gifts are given with a reciprocal intention and why others are not.

Adequacy. Consider the following two quotes. According to Camerer ([11], p. 198) "A deliberate cash gift is a polite way of saying, we care about you less". And Douglas puts it even more to our imagination by writing: "...in our society the line between cash and gift is ... carefully drawn. It is all right to send flowers to your aunt in the hospital, but never right to send the cash they are worth" (Douglas [14], p. 58). One wonders why it is so bad to make a gift in cash. Standard microeconomic arguments tell us that it can never be worse to get money rather than a specific good. You are still able to buy that specific good but you may decide to buy some other more preferred good instead. If gifts do not maximize the receiver's utility given his preferences and the costs incurred by the giver, we call them *inadequate gifts*. There is ample empirical evidence of such inadequate gifts. The well documented destruction of by the Kwakiutl fits the description best, witness the following quote:"... she ordered one of her kinsmen to tow it [the copper] to sea behind a canoe and to cut it adrift in deep water and let it sink. 'This is my gift to you, O chief'." (Drucker and Heizer [15], p. 105). This is an example of the most extreme case of inadequacy where the gift is worthless to the receiver. Less extreme examples include birthday and business presents.

The challenge, then, is to find theories of gift-giving that are capable of unifying the diverging perceptions of gift-giving. This is the purpose of the next section.

3 Modeling gifts

Being familiar with the characteristics of gifts, we next review some approaches in the literature and determine the potential explanation power of each of them. The aim of this section is to assess competing models of gift-giving with regard to the characteristics mentioned. In order to structure the discussion we first propose to give a classification of the different models based on the assumptions about behavioral motivations. Of course, other classifications are possible but from an economic modelling point of view it seems above all convenient to take motivations as the fundamental.

Motivation of giving	*Aim of gift*
3.1 Altruism	making other happy
3.2 Egoism I	exchange
3.3 Egoism II	warm glow,social approval
3.4 Strategical	signalling, building trust
3.5 Fairness	norms, reducing inequity
3.6 Survival	selection

In the first approach, gifts are motivated by altruistic feelings. By altruism we mean that my state of happiness is dependent of that of the other. The second approach assumes that egoism is the primary motivation of giving. This is very close to altruism since ultimately it is in your own benefit in both cases. To avoid such confusion, we take it as altruism if the utility of the other directly enters my utility function and egoism otherwise. In the third approach, gifts are considered as strategic acts. The fourth approach starts from ethical considerations. Finally, the fifth approach tries to explain giving by evolutionary arguments. Throughout the paper the aim is to stay as close to standard economic arguments as possible. Each time, the approach of modelling gifts is evaluated on its explanation power considering the characteristics of the gifts as discussed in the previous section: reciprocity and adequacy.

3.1 Altruism

The most obvious approach lending support for gift-giving is probably that where persons have altruistic feelings. They can have either preferences for the consumption level or even the utility level of the other. The structure of such a utility function is given by $U_i = U_i(x_i, U_j(x_j))$, where x_i is the consumption level of person i If person j has altruistic feelings for person i as well, there is an infinite regress: $U_i = U_i(x_i, U_j(x_j, U_i(x_i, U_j(...))$. The regress easily becomes an unbounded process but Becker [7] shows an example where it is not. For example, consider the utility function:

$$U_i = x_i^{\alpha} U_j^{\beta}.$$

Then the reduced form of the utility function follows straightforwardly by substitution and is given by:

$$U_i = x_i^{\frac{\alpha}{1-\beta^2}} x_j^{\frac{\alpha\beta}{1-\beta^2}}.$$

Clearly, this is finite for $\alpha \geq 0$ and $0 \leq \beta < 1$.

3.1.1 Discussion

Altruistic feelings will take care of a redistribution such that an optimal balance results between personal consumption and consumption of the other. If personal consumption is too high for one person, he can gain by giving some of it to the other. Existence of gift giving can therefore be rationalized, including one-sided giving and anonymous giving (if one has altruistic feelings for others in general). But this is as far

as we can get within this approach. Inadequacy of gifts can under no circumstances be a prediction by this model since this would not only lower the receivers payoff, but also that of the giver.

3.2 Egoism I: Gifts as exchange mechanism

Gifts are found most profoundly in primitive societies. It is not unreasonable to assume that at least initially gifts served as a way to separate production and consumption. In this way consumption could be diversified and production could be increased through specialization. The market economy can in this way be interpreted as a more efficient way of exchange, one where gifts are replaced by the use of money.[3] Indeed, Kranton [29] argues that this is the case. In her model, agents choose between reciprocal (gift) exchange and market exchange. Since the market is characterized by a thickness externality –more agents on the market reduces search costs– eventually all gift exchange relationships vanish whenever the market size exceeds a threshold level.

While intuitively appealing, the model of Kranton [29] cannot account for the coexistence of gift exchange and market exchange.[4] If contemporary markets are so efficient as we think they are, why do people still partly stick to gift exchange? Is it not just cheaper to buy all goods and services at the market? Of course, one reason could be that some products cannot be efficiently produced on the market. Another line of reasoning is provided in Van de Klundert and Van de Ven [38]. They argue that gift exchange contains a social interaction element that is valued in itself by the trading agents. Quite often there is a need for mutual sympathy and recognition. These are suppressed entirely in the formal anonymous markets usually studied (Bowles [10], Van de Klundert and Van de Ven [38]). But mutual sympathy is rooted in human nature, as is so breathlessly described in Kropotkin [31]. Thus workers develop sentiment for their co-workers and institution (Akerlof [2]) and gifts 'symbolize and convey meaning' (Camerer [11], p. 181).

In the terminology of Khalil [28], gift exchange provides symbolic utility on top of substantive utility. A good consumed therefore gives its ordinary substantive utility –in a market exchange as well as in a gift exchange relationship – and on top of that the agent experiences symbolic utility but only if the trade has been accomplished in a gift exchange relationship. This symbolic utility has to be explained in somewhat more detail. Let the valuation ratio refer to the ratio of utilities that one experiences in a gift exchange relationship and on the market. It is suggested by Van de Klundert and Van de Ven [38] that the valuation ratio is dependent on the market size in two directions. First the valuation ratio tends to increase as the market gets larger. This is so because mutual sympathy and recognition are lacking in market exchange

[3] Barter can in this respect be interpreted as a market economy without money as an intermediate good.

[4] This is not entirely right. The model is able to predict market size for which gift exchange is sustainable. But the model cannot explain how evolution got us in this equilibrium except for some shocks that can be responsible for this. If we start in a gift exchange relationship and some agents finds it attractive to enter the market, then the model predicts that *all* agents enter the market.

relationships, making sympathy more valuable. However, there is also a tendency for the valuation ratio to decline. This idea builds on the literature on cognitive dissonance in psychology. People have a resistance to change that is lower if more people are supporting a certain view. If agents have to decide whether to stay in their personal gift exchange relationship or to enter the market, then the decision to enter the market gets easier with a larger market size; in essence if more people are supporting the same view. It is argued that these two opposing tendencies are likely to result in a valuation ratio that is first declining and then increasing in the market size. Under appropriate conditions, this model predicts that the market can become efficient enough to attract part of the population. But as the market gets larger, the valuation ratio becomes larger (lack of sympathy becomes more and more oppressing) and the people who stayed in the gift exchange will decide not to enter the market after all. They stay even though the market has become more efficient due to the larger size. This can be a stable equilibrium, no agent having the incentive to switch regimes. As a result part of the population is involved in market exchange and part of the population in gift exchange.

3.2.1 Discussion

The model described is interesting in itself since it argues that the focus of economics should not be a one-sided inquiry into the market as a possible exchange mechanism. In addition, the model can explain a number of things mentioned in the previous section.

First it is able to explain the *seemingly* inadequacy of gifts by taking sympathy into account. For example, it can be that the market provides the same good at lower costs. If people still consume the good within their gift exchange relationship then this points to an inadequate gift. The reason is that part of the utility is neglected; symbolic utility. Substantive utility is higher in the market (more goods at the same costs) but the market provides no symbolic utility. Hence, on net gift exchange is preferable. If in reality we only look at substantive utility, then the gift seems inadequate. If we take into account symbolic utility, there is no matter of inadequacy. Once we take this properly into account we are able to explain the sustainability of gift exchange.[5]

Secondly, gifts have an obligatory element to reciprocate. It is even part of the motivation to reciprocate gifts. If some agent does not return the relationship ends and both enter the market.[6] As a consequence, anonymous gift-giving cannot be explained by exchange as a motivation to give.

Despite these attractive futures, some features mentioned above cannot be explained by the model. The model is not able to explain why some gifts have no reciprocal character or why we can trust people in the first place, something that is

[5] There can still be inefficiency in that everybody could be made better of if all people would enter the market or all staying in their gift exchange. This is due to the existence of externalities that are present in the model.

[6] This is partly due to the assumed tit-for-tat strategy of the players. But it seems that this or any such strategy where the cheater is ultimately punished is reasonable.

resolved in section 3.4.

3.3 Egoism II: Social approval

Searching for motivations for charity-giving, Andreoni assumes that people have a taste for giving. His "egoists" and "impure altruists" do not only care about the supply of the public good that they donate for, but also experience a "warm glow" from having "done their bit." (Andreoni [3], p. 1448). Thus in his model contributions to a public good are made not only for the benefits of public good supply but also for experiencing the warm glow feeling. Here we go one step further in trying to explain *why* people get this warm feeling from giving. The basic hypothesis is that people are searching for social approval. The warm glow is therefore due to the social approval received and not so much by the giving itself. That is, the gift is a mean to get a warm glow and has no intrinsic value in its own in this respect.

As an application of the preceding consider the supply of voluntary labor. Social approval is derived by making efforts in the form of voluntary labor that is beneficial to the others. The supply of voluntary labor can appropriately be interpreted as a gift since you transfer valuable endowments to other persons. By means of voluntary labor you make the gift and through the acquired social approval you experience a warm glow.[7]

The model considered below differs from Andreoni [3], Holländer [26], and Barham et al. [6] in the following way. In Andreoni [3] and Holländer [26] the focus is on contributions to public goods and therefore he assumes that the voluntary labor is beneficial to all persons, *including* the giving person. Likewise, Barham et al. [6] consider volunteer work devoted to a club good. This does not completely fit our concept of a gift. Here the voluntary labor supply is devoted to production that is beneficial to the other persons only.

Consider then a highly stylized economy in which there are only two persons ($i = 1, 2$) and one consumption good x. The consumption good can alternatively be thought of as a commodity bundle. Both persons have an *ordinary* utility function given by:

$$v_i = x_i^{\alpha}, \qquad 0 \leq \alpha \leq 1. \tag{1}$$

The consumption good can be purchased by supplying labor. Each person takes the market wage w as given and has endowment π; the "gift of nature". Their total time constraint is normalized to unity and has to be divided between paid labor $(1-l_i)$ and volunteer work (l_i). The production process of voluntary labor is governed by $x_j = F(l_i)$. The fact that voluntary labor also produces the same good x means that it is either the same good or a good substitute in the same commodity bundle.

In short, the total consumption of good x by person i is given by the sum of his endowment, his own purchases on the market, and the gift by the other player j:

$$x_i = \pi_i + w(1 - l_i) + F(l_j). \tag{2}$$

[7] The focus here is on the the supply on voluntary labor but it can be easily substituted for charity giving. In an empirical study Duncan [16] finds that money and time are perfect substitutes as a gift.

To simplify matters throughout the section it is assumed that the good produced by voluntary labor is governed by a linear technology:

$$F(l_i) = \delta l_i.$$

Unless mentioned otherwise, throughout the text it is assumed that $\delta < w$ so that volunteer work is less productive than paid labor.

As already mentioned, special about the supply of voluntary labor is that the efforts made result in social approval.[8] Additional utility of social approval can be derived by making more efforts than the other. Similarly, the individual experiences disutility if it turns out that the other spends more of his time doing volunteer work. As a measure of approval we conjecture that this is determined by the value of the gift in terms of forgone wages. The rationale for this assumption is that you can get social approval even by someone who does not benefit from the gift in terms of ordinary utility – it is the effort that counts – but also that with a low market wage the gift is valued low since making the gift does in this case not take much of a sacrifice. Both elements are reflected in the following proposed social approval function:

$$s_i = w(l_i - l_j). \tag{3}$$

The total of *extended* utility of player i is assumed to be additive in his ordinary utility of consumption in the sense of (1) and the social approval as given by (3):

$$u_i = v_i + \beta s_i, \tag{4}$$

where β is some positive constant. This concept of utility captures precisely the view of Harsanyi who writes[9]: "People's behavior can largely be explained in terms of two dominant interests: economic gain and social acceptance".

Substituting (2) and (3) into the extended utility function (4) gives for player i:

$$u_i = [\pi_i + w(1 - l_i) + \delta l_j]^\alpha + \beta w(l_i - l_j). \tag{5}$$

Note that social approval is measured by the forgone wage income of the voluntary labor supply, but that ordinary utility increases only by the actual consumption derived from it. One can think of this as a matter of adequacy. The more adequate the gift in terms of my preferences (higher production per unit of l_j, i.e. a higher δ), the more utility I derive from it. But in comparing my status to that of another person, I do not take into account the ordinary utility I derive from it, but the efforts incurred by the other player. For the time being, it is assumed that the player cannot adjust the adequacy of the gift (δ), an assumption that will be dropped later on.

The equilibrium strategies for both players are derived as follows. The problem for both players is to maximize extended utility with respect to the size of the gift (l_i) taking the market wage w as given, as well as the gift of the other player. This Cournot

[8] In the current setup, voluntary labor supply is not a conspicuous good in this sense, since whatever part of the endowment is given away does not add to ordinary utility. Conspicuous goods on the other hand increases status as well as ordinary utility from consumption.

[9] Quoted from Gächter and Fehr [20], p. 341.

behavior results in two upward sloping reaction curves determining the optimal l_i as a function of l_j: $l_i^*(l_j)$. These are drawn in figure 1 below.[10] There are two reasons for the positive slopes. First, as the other player's gifts gets larger, social approval is lowered. Since this creates disutility for the receiving player by loosing status, he has an incentive to increase countergifts as well. The second reason is that if the gift that is received increases, the marginal utility of the consumption good declines: $v_{xx} < 0$. This makes gift-giving relatively cheap and provides additional incentives to increase the efforts made. The first proposition assures the possible existence of gift-giving:

Proposition 1 *(i) In a symmetric agent equilibrium gifts are positive if* $\pi > \bar{\pi} \equiv \left[\frac{\alpha}{\beta}\right]^{\frac{1}{1-\alpha}} - w$. *(ii)* $\bar{\pi}_\beta < 0$, $\bar{\pi}_w < 0$.

Proof. All proofs are in the appendix. ■

The intuition behind the result is that for large π (endowment) or high β (weighting parameter of social approval) the marginal utility of giving is higher than the marginal utility of consumption. This is even the case where both players are the same in all respects and will therefore not derive utility from status in the equilibrium. The reason that they still make positive gifts is caused by the fact that they take the other's consumption level as given thereby ignoring that in equilibrium the other will make countergifts. The result has some features of a 'rat race' where everyone is better of when the race is canceled, but given that everybody is racing, each individual is better off trying to win (Goodstein [22], p. 157). However, it partly escapes from the pessimistic analysis of, for example, Hirsch [25] because besides the negative 'rat race' effect, there is also the positive effect of the gift; the rat race has some productive elements in the form of voluntary labor.

The argument made is that even if both agents are identical in all respects, gift giving can be an equilibrium outcome. This makes a strong case for the existence of gift-giving. The model is also capable of predicting non-reciprocal giving. This is illustrated in figure 2. By lowering the endowment of player 2, π_2, his best response curve $l_2^*(l_1)$ shifts downward. He becomes poorer and consequently experiences a higher marginal utility of consumption. This makes gift-giving relatively less attractive for him. In figure 2 π_2 is decreased up to the point where the best response to the positive gift of player 1 is a gift of size zero. (Some matter of minor importance: suppose that for one reason or another a gift always have to reciprocated. Then curiously enough, Aristotle's wisdom that "it is easier not to take than to give"[11] is indeed correct.)

It is possible to make a conjecture why anthropologists stress the obligatory aspects of gift-giving whereas Camerer [11] finds this misleading for modern societies. As should be clear from the discussion, non-reciprocal gift-giving can be explained by differences in endowments. If it is reasonable to expect that differences in endowments have increased over time, then making non-reciprocal gift-giving has become more likely.

[10] The figure is drawn for $\delta/w < 1$.

[11] Aristotle [4], p. 191.

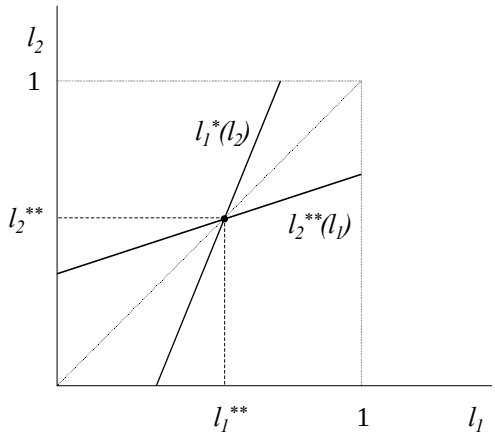

Figure 1: Positive giving

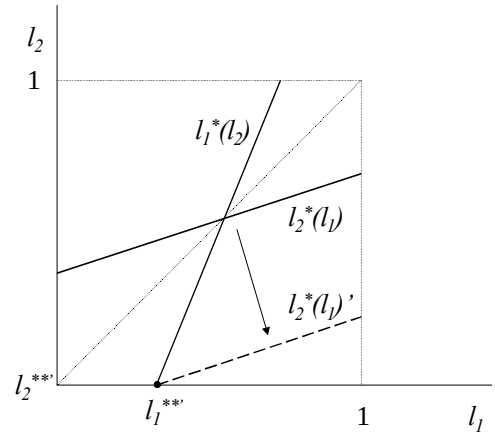

Figure 2: Non-reciprocal giving

So far, nothing has been said about the adequacy of the gift. This is reasonable enough if the preferences of the other player are not known to the other player. In that case, misperceptions of other persons preferences can easily result in inadequate gifts. With some slight modifications, inadequacy of the gift itself can also be an equilibrium outcome.[12] Suppose both players are allowed to determine the adequacy of their gift, say by determining which kind of good to give. Formally then a second good should be introduced into the model. But without loss of generalization it is also possible to let the players determine the productivity of their voluntary labor effort (δ) as a proxy of the adequacy. A less efficient production technology points to a less substitutable good: the rate at which the consumption good can be substituted for the gift decreases. The higher is δ, the higher is the adequacy of the gift. The possibility of adjusting the adequacy has no effect as long as we stick to Cournot behavior. If the actions of the other are taken as given adequacy is of no importance since it does not change my marginal decision either. Suppose then that the giver makes a conjecture about how the receiver responds to a change in adequacy. Here adequacy comes into play. We have[13]:

Proposition 2 *Suppose that $\pi_i = \pi_j = \pi$. Then (i) if $\pi > \bar{\pi}$ it is beneficial from an individual point of view to lower the adequacy of the gift, and (ii) $\delta_i^* = \delta_j^* = 0$.*

The first assumption serves only to simplify matters ($\pi_i = \pi_j$, symmetric endowments) and the second condition is equivalent to that of proposition 1 ($\pi > \bar{\pi}$). Hence, in every equilibrium with symmetric endowments and positive gift-giving, both players have an incentive to lower the adequacy of the gift up to the point where adequacy is zero.[14]

To see why someone would want to lower the adequacy of his gift, note that by doing so the marginal utility of consumption of the other player is increased and that makes it relatively expensive for him to give. The receivers optimal response function is therefore lower at every gift size. The giver also adjusts his voluntary labor supply in a downward direction, and on net, ordinary utility remains unaffected (see appendix). However, the receiver's adjustment in voluntary labor supply is larger in size and hence $l_i - l_j$ increases. This implies a positive effect on social approval for the giver and therefore on extended utility.[15]

[12] Again, the focus is on inadequacy of goods from an individual point of view. Examples where gift-giving is socially inefficient can be easily constructed. For example, in a symmetric agent equilibrium, both agents make equal efforts and therefore are equal in status: $l_1 = l_2 \Leftrightarrow s_1 = s_2 = 0$. Since the status effect drops out of the utility function, their problem reduces to maximizing the subutility function v_i which is obviously attained by setting $l_i = 0$ whenever $\delta < w$, independent of l_j. ($\delta < w$ indicates that the received gift is less valuable than what is given away.)

[13] The condition in the proposition is sufficient but not necessary.

[14] This latter prediction is taken to be a consequence of the oversimplification of the model. One can imagine that the valuation of voluntary labor is positively dependent on the adequacy: $w'(\delta) > 0$. For instance, if player i gives repeatedly inadequate gifts, then the social approval he gets for a unit labor is lowered. There may in this case be incentives for player i not to lower the adequacy too much.

[15] This is most clearly seen in the case where one of the adequacy levels is already set to zero, say $\delta_j = 0$. In this case, the response function of player i is independent of the voluntary labor supply

3.3.1 Elaboration

The social approval approach can be embedded in a richer structure that explains on a deeper level the origins of social approval. A common approach is to seek the explanation in terms of social distance. In Akerlof [1] social approval is achieved through status. Having more of the good increases not only utility of consumption but also admiration by others if exceeding their consumption level. This fits in our framework of gifts if one's (otherwise non-observable) consumption level can be displayed through giving. Originally this was thought to be happening during the potlatches of the Kwakiutl where properties were redistributed by means of gift-giving. The purpose of such a potlatch was thought to be the "ostentatious and dramatic distribution of property by the holder of a fixed, ranked and named social position, to other position holders".[16]

A dual approach to the status-good is that people actually prefer to conform to others rather than distinguish themselves in one way or another. This is also the approach of Fehr and Schmidt [18] and Bolton and Ockenfels [8] (see section 3.5). Again, giving is a possible way to conform to someone's consumption level and gain social approval. It is probably for this reason that, on closer inspection, of the Kwakiutl "So-and-so gave many (...) potlatches *because* he was a great ("highly ranked") chief" and *not* the reverse".[17,18]

It is not immediately obvious how the social approval approach is capable of explaining anonymous gift-giving. Recall however that social approval was obtained from the fact that a gift was made, not necessarily to the person who shows approval. Surely it is often socially approved to donate to developing countries by the people of the developed countries. Similarly, you can give blood which is anonymous for the receiver. But by telling your friends of your act it is not a *truly* anonymous gift for everybody. We conjecture therefore that social approval is obtained mostly by people that are socially close to you. Hence by getting social approval from others than the receiver you may donate gifts that are anonymous from the viewpoint of the receiver.

3.4 Strategical: Gifts as signalling device

The approach of gift exchange can to a certain degree explain the properties of gift-giving mentioned in section 2. In the models of Kranton [29] and Van de Klundert and Van de Ven [38] consumption and production of goods are separated over time. In a gift exchange relationship, one of the agents involved has to produce first and consume one period later. This agent has to trust upon a return gift from the other agent next period. Because this other agent consumes first before bearing the costs of production,

of j because marginal utility of i is unaffected. Hence, by decreasing δ_i, the response function of j is shifted downard but does not affect l_i or v_i. But $l_i - l_j$ is obviously lower and s_i as a consequence higher.

[16] Codere [13] p. 63.

[17] Drucker and Heizer [15] p. 134, emphasis added.

[18] Contrary to the case of status-seeking behavior, where inadequate gifts were optimal from and individual point of view, gifts may be either adequate or inadequate. Adequate gifts can possibly be optimal for instance at $(l_1^{**}, 0)$

he has an incentive to cheat. Even so, the agent has to take into account that cheating means the end of the relationship. Thus the trade-off is between cheating and entering the market or to stay in the relationship. The agent that produces first is, of course, aware of this fact, and anticipates the choice of his partner. Only if he trusts his partner of being honest will he produce first.

In both these models, trust is measured by the discount rate. No explicit account is given of this discount rate, it is assumed to be an exogenously variable.[19] The focus here is on the determination of the level of trust between agents. Ideally one would determine this level endogenously. This can be handled by assuming that agents can give credible signals of their trustworthiness. Such signal games are examined in Camerer [11], Iannaccone [27], Rabin [34], Kranton [30], Carmichael and MacLeod [12]. Since all these models essentially boil down to the same argument, only a basic version of the model is presented here. At the end of the section the differences are explained and another variant of the signalling approach is discussed.

The essential mechanism to determine the other player's trustworthiness is most simply modeled within the framework of Camerer [11]. It is assumed that there are two (groups of) players. Exchange can be realized between those groups. Each group consists of two types of players: trustworthy players and cheaters.[20] The fractions of these types in the groups are given but the type cannot be observed directly. The main difference between the types is their payoff. Trustworthy players are resistant to cheating. They would feel ashamed if they did, lowering their payoff. Cheaters on the other hand find it profitable to cheat, they have no feelings of shame or guilt whatsoever. The problem now is that I cannot know beforehand if my trade partner can be trusted. If he is of the trustworthy type the deal will work out fine, but if he cheats, my payoff will be considerably lower than if I would not have traded at all.

What does the model predict? One result is that if the fractions of honest players in both groups is large enough, then the honest players will trade at the risk of being cheated. A more interesting result however is that even if the fractions of honest players is low, trade can still occur. The chances of meeting a honest trade partner are low, but if there is a possibility of giving a signal of trustworthiness then this does not need to be so much of a problem. The signal is to make a gift. This strategy can be explained as follows. If the fractions of cheaters players is high, then without gifts nobody would be trading. The payoffs are in this case not very large, but trading would on average be even worse for the honest players. Now, if a honest player makes a gift of a size that a cheater is not willing to make because it is not profitable enough for the latter, then this is a signal to the other player that this person is honest. And if both players are honest, then this can be an equilibrium. In principle the cheater can make a gift as well, but if the gifts made by the honest person is large enough, the cost of the gift does not compensate for the payoff by cheating.[21] If such a separating

[19] Besides that, it is unclear if reputation as such can be identified with trust. This is an important point that is elaborated upon in a future paper.

[20] Nothing depends on the assumption of two different groups. One may also interprete them as two single players who are with some probability a cheater or a trustworthy person.

[21] Thus a one-shot Prisonner's Dilemma (PD) game does not satisfy the assumptions needed for a seperating equilibrium. A necessary assumption is that honest players gain by cooperating with

equilibrium exists, honest players can signal the trustworthiness of trade partners by inspection of the size of the gift received.

Example. As an illustration of the above, consider the following example. There is a honest player ($H1$) who wants to trade with another person on the market. There are two players that he can trade with but he doesn't know which one of them is the honest ($H2$) and which one is a cheater (C) (he meets each player with probability 0.5). He has to decide whether to invest (I) or not (N). After investing or not, the trade partner makes a decision. Players that do not meet a trading agent have a payoff 0. The rest of the payoffs are as in the matrices below.

		$H2$			C	
		I	N		I	N
$H1$	I	$6/6$	$-10/5$	I	$6/1$	$-10/2$
	N	$5/-10$	$0/0$	N	$5/-10$	$0/0$

As one can see, both the honest and the dishonest players are worst off when they invested but their trade partner did not. Moreover, both types prefer not to invest if the other doesn't. The difference is that the honest player prefers to invest if the other invests whereas the cheater prefers not to invest if the other invests. (An economic example may be two persons trading where cheating is beneficial for both in pecuniary terms, but where honest players have a sense of guilt outweighing the pecuniary payoffs and the cheaters have no sense of guilt.)

It is readily seen that the dominant strategy for the cheater is not to invest.[22] What should $H1$ do? If he invests, he meets with probability $1/2$ $H2$ who then also invests and with probability $1/2$ C who does not invest. His expected payoff is therefore -2. His expected payoff by not investing equals 0. As a result, the honest player will not invest and consequently $H2$ experiences expected utility of 0 by also not investing.

What $H2$ can do is to make a gift to player $H1$ before $H1$ decides. Suppose that he decides to give an amount of 3 to $H1$. The net payoffs are then given in the left part of the matrix below:

		$H2$			C	
		I	N		I	N
$H1$	I	$9/3$	$-7/2$	I	$9/-2$	$-7/-1$
	N	$8/-13$	$3/-3$	N	$8/-13$	$3/-3$

If C does not do the same then it is obvious for $H1$ what to do. Now he knows that if he gets a gift after meeting his trading partner, then the other is honest and so he should invest. Note that the expected utility of $H2$ is now equal to 1.5 which is still an improvement for him even considering the costs of the gift. What remains to be shown is that the cheater does indeed not make a gift. Consider the right part of the matrix above. If the cheater makes the gift of 3, then whatever the strategy of $H1$ is, he is worse off than the payoff of 0 when he didn't make the gift. The best thing he can do is therefore indeed not to make a gift.

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another honest player and loose by cooperating with a cheater. By the structure of a PD-game, cooperating is never a best-response no matter what the type of the other player.

[22] Mixed strategies are not considered here as they are not equilibrium strategies (see the appendix in Camerer [11]).

3.4.1 Discussion

Obviously this model is able to explain the existence of gift giving. It can also account for some other aspects of gifts mentioned in section 2. It can explain one-sided gift giving. If the fraction of honest players in group 1 is large and if group 2 consists mainly of cheaters, then an equilibrium can be that honest players of group 2 must make a gift to signal their honesty, but for group 1 it is not necessary to give. The extreme case is where all players in group 1 and only one player in group 2 are honest. Obviously the players in group 1 do not have to give to signal whereas the player in group 2 does have to give. This can explain why gift-giving is not always reciprocal in nature and also when it is: if in both groups the number of cheaters is relatively large. Additionally, the model is able to explain inadequate gift-giving. Recall that the gift must be large enough to make it unprofitable for the cheaters to give. But if gifts are adequate, under some circumstances it can still be profitable for cheaters to give since they benefit a lot from the gift they receive! This would make it impossible to signal the honest players from the cheaters. Whenever the cheaters find it relatively more profitable also to signal, gifts should be more inadequate or else they fail in their aim.

Example (ctd.) Suppose for simplicity that the honest player $H1$ in the above game also makes a gift. This does not change the strategy of the cheater since both his payoffs from playing N or I are now increased. The adequacy also does not matter in this case since it does not change the strategy. But suppose that another pre-stage is constructed.. In this pre-stage, some entering costs must be paid. If the entering costs, T, are paid then the rest of the game is as in the above example. If the entering costs are not paid by a player, then he is not allowed to play the second stage and both will not invest. The purpose of the entering costs in the pre-stage is that the adequacy of the gift can now influence the strategy that will be played by the cheater. To see this, consider a gift size of x. Only a fraction δ of the gift adds to the payoff of the other player. The parameter δ is a measure of the adequacy of the gift. The cheater now has to choose to pay the entry costs or not, and if he pays the entry costs then he has to decide whether to give or not. We know that in equilibrium, once entry costs are paid, he will not give (otherwise the signal is useless). But he may still pay the entry costs and then collect the possible gift of the other. This would give him an expected payoff of $.5(-T + \delta x)$. To prevent him from doing this, the entry costs must be such that it is not profitable for the cheater to enter the second stage in the first place: $T > \delta x$ or $\delta < T/x$. As a result, the adequacy may not be too high.

Drawbacks are first that no account is given how gift exchange contributes to the feeling of sympathy or mutual aid. It purely serves instrumentally as a strategic act to observe the honesty of the trading partner rather than being part of our biological 'hardware' inclinations. The second minus is that, since an anonymous gift does not reveal anything about the intentions or type of the giver, by definition it cannot be a signal. This rules out anonymous gift-giving.

The other models are in the same spirit where gifts are taken to be strategic in nature. Carmichael and MacLeod [12] derive Nash-equilibria where inadequate gift-giving signals the right intentions for long-term cooperation.[23] Kranton [30] derives

[23] In their setup gifts are necessarily inadequate.

a strategy for the formation of relationships by incurring a cost at the beginning of a new relationship and gradually increasing the level of exchange. Rabin [34] calls it a gift if the intention of the player is to raise the other's players payoff above his or her's average Pareto-efficient payoff. It is shown that such considerations can lead to cooperative behavior with the existence of such gifts. Intentions also play a crucial role in the model of Iannaccone [27]. Here, it is tried to explain sacrificial behavior. Again, sacrifices are inadequate gifts that signal the good intentions of the players. This model also features the aspect of sympathetic feelings because the object is to become a member of a social club good that is anti-congestible.[24]

Whereas in the above references signals serve to reveal one's *type*, there is also a variant of signalling that reveals one's *strategy*. Here, it suffices to consider only one type. Consider the battle-of-the-sexes. The essence of the game is that both players benefit only by choosing the same strategy. Each player has a preference for one strategy over the other and these preferences are different for both players. However, choosing different strategies makes both players worse off. Now suppose that both players can actually make a worthless gift to the other. This is in fact a reinterpretation of the example taken from Van Damme [36] where there is an opportunity to burn a certain amount of money. By forward induction, Van Damme shows that a gift is made with positive probability. The gift serves as a credible threat of playing a particular strategy. Clearly the gifts are inadequate. It can however also be shown that adequate gifts are possible.[25] Furthermore, as in the case of signalling types, non-reciprocal gift-giving can occur.[26] Note that the objections to the other signalling games also apply here.

3.5 Ethics

As a final motivation for gift-giving the focus is on fairness considerations. The exposition is short because it is argued that the current motivation can be put in the framework already discussed.

Fairness is above all a philosophical question. The current state of the debate about fairness is not yet one that can provide us with definite answers about what are fair principles. A rough but useful classification that divides the economic literature in two is one where fairness concerns either outcomes of an act or the act itself.[27] Both views are discussed next.

In the first view fairness is judged on outcomes. This is the approach of Fehr

[24] Anti-congestible indicates that each member's participation increases benefits on the other members, contrary to congestible club goods where the benefits decrease with larger utilization of others.

[25] This is simple to prove. The argument in Van Damme [36] (see in particular his fig. 5) is independent of what the other player gets. The strategy of each player takes the other player's strategy as given and as a result the adequacy of the gift does not matter.

[26] *Ex ante* non-reciprocal gift-giving is not an optimal strategy. If only one player is allowed to give, then he will never use this option. However, since both players only give with a certain probability (mixed strategy), *ex post* it can well be that only one player made a gift.

[27] It is worthwile to note that both views have their counterpart in philosophy. The former (fairness evaluated on outcomes) is primarily the view of John Rawls whereas the latter (fairness evaluated on the act itself – i.e. rights) is of primal concern to Robert Nozick.

and Schmidt [18] and Bolton and Ockenfels [8]. It is assumed that people have a preference for a fair outcome, or more specifically they are inequity averse. People dislike to be either richer or poorer. In the former case they have the opportunity to redistribute by giving. In this way the distribution becomes more equal. Such a redistribution comes at the cost of decreased own income. The trade-off is therefore between a high absolute income and equal relative income.

The utility function with inequity aversion has the same form as that of social approval. To compare: first there is the term of ordinary utility as a function of monetary income, and second there is the part that now gives *dis*utility as a consequence of inequality. Inequality is then measured as the difference in income net of the shares of income given away. Let us denote consumption again by x and the share of income that is given away by γ_i. The social approval function is now simply the absolute value of the income inequality, net of gifts:

$$s_i = |\theta_i - \theta_j|, \tag{6}$$

where $\theta_i \equiv x_i(1-\gamma_i) + \gamma_j x_j$. Utility is given by:

$$u_i = [x_i(1-\gamma_i) + \gamma_j x_j]^\alpha - \beta|x_i(1-2\gamma_i) - x_j(1-2\gamma_j)|, \tag{7}$$

which is very similar to (5).[28] Note in particular that for a rich person (net of gifts) the derivative with respect to γ_i has the same properties as that of someone aiming at social approval: increasing the gift has a negative effect on ordinary utility and a positive effect in terms of reducing inequality. For a poor person the problem is somewhat different but the propositions in the section of social approval remain valid.

According to the second view hold, fairness is judged on the acts itself. This is for example the approach taken by Rabin [34]. The general idea is already described in section 3.4. What matters here are intentions. If the intention of the other player is good, then I am willing to make a gift in return. For example, if the firm I work for pays me the lowest wage possible then his intention is bad even though the wage itself may be quite reasonable. My effort will as well be poor. If he, on the other hand, offers me a wage that is advantageous to me rather than to him, then his intentions are good and I will make a lot of effort. Gifts are in this case signals about fairness and the analysis of signalling applies. A high wage signals goods intentions. It is also possible that I judge my *own* acts on fairness: "I give something because I think it is the fair thing to do". In that case, the analysis corresponds to that in section 3.3 yet with another interpretation of the warm glow feeling.

3.5.1 Experimental evidence

A vast amount of experimental evidence that has been collected is presented in the papers of Fehr and Schmidt [18] and Bolton and Ockenfels [8]. They test the explanation power of inequity aversion as a behavioral motivation and find that the

[28] The '2' appears because the gift changes inequality in both directions: the giver becomes poorer and the receiver becomes richer.

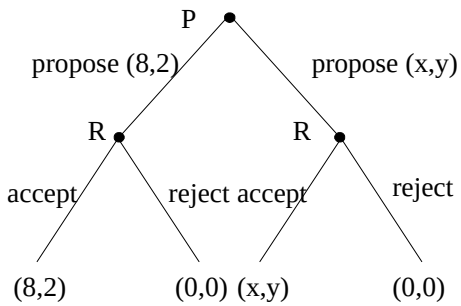

Figure 3: An ultimatum game

assumption performs rather well. Consider for instance the game in figure 3 taken from Falk et al. [17].

The game is a variation on the ultimatum game and goes as follows. In the first stage the proposer can propose the offers $(8, 2)$ or (x, y), e.g. $(8, 2)$ means 8 for the proposer, 2 for the responder. The values of (x, y) differ among experiments. In the second stage (after observing the offers of the proposer) the responder can accept, in which case each player get the proposed offer, or reject, in which case none of the players gets anything.

In the first variant of the experiment (x, y) was set to $(8, 2)$. Note that the proposer can in this case only make the offer $(8, 2)$. Clearly, if the responder only cares about monetary payoffs he will accept the offer giving him a payoff of 2 rather than rejecting and getting nothing. But in fact, in 20 percent of the cases the offer *is* rejected. A possible explanation can in fact indeed be inequity aversion. Accepting would yield a higher payoff but also an increased inequality between the two players.

This is, however, not the complete story. What happened next is the following. Another variant was played in which (x, y) was set to $(5, 5)$. The proposer can in this case offer $(8, 2)$ or $(5, 5)$. Suppose that he still sticked to the proposal of $(8, 2)$. This does not change the situation for the responder. He still ends up with either 2 when accepting or 0 when rejecting, and the inequality is the same for him as in the first variant. The prediction is therefore that if he accepted (rejected) in the first variant then he should accordingly also accept (reject) the offer in the second variant. But apparently something did change for him because the rejection rate increased from 20 to 45 percent! The explanation of Falk et al. is that intentions matter as well. In the first variant proposers had no choice but to offer $(8, 2)$. But in the second variant they *could* have chosen to propose $(5, 5)$ but they did not. As a consequence, the bad intentions of the proposer were punished by the responders. Therefore, they

conclude, both unfair outcomes and unfair intentions matter.

3.6 Evolution

An increasingly popular view that originates in biology interprets individuals as genes. Contrary to what is assumed so far, in this case individuals do not choose but are programmed to play *predetermined* strategies. Put differently, individuals *are* strategies. The basic prediction is that the most successful strategies are likely to survive. A less strict biological interpretation is that of social norms rather than genes, where norms are determined by the group and form the basis of how cultures evolve over time (see for instance Nyberg [33], Akerlof [2]).

The evolutionary approach is used by Carmichael and MacLeod [12] to explain the existence of gift giving. Essential to the perspective taken by them is that the gift is a signal of trustworthiness. This is discussed in detail in section 3.4. The discussion there, however, is focused on static one-shot games. What makes the evolutionary perspective interesting is to examine optimal strategies in repeated games. Essentially, what happens then is the following. Without gifts each individual is randomly matched to another individual every period. Remember now that each individual is already a strategy. In this particular case they are either cooperators or defectors. A gift is in this respect not very helpful to signal your type since your opponent cannot (by definition) change his strategy. But whilst there are not any advantages of giving in the one-shot game, there certainly are in the repeated game. By giving you can reveal your type to the other player. If you as a cooperator are matched to another cooperator then you can decide to stay in that relationship rather than return to the matching market at the end of the period. It will be clear that in this way cooperators can gain by making a gift in the first period and then stay in that relationship forever. Again, gifts should not be too adequate otherwise defectors will also gain by giving.

In real life it is unlikely to stay in the same relationship forever. The approach of Van de Klundert and Van der Lecq [37] is in this respect more realistic. They argue that you while you don't stay in the same relationship you can at least increase the probability of finding cooperators by making some search costs, e.g. by forming clubs. Segmentation of society can in this respect be favorable to cooperators.

Here we take the more extreme case where reputation effects are excluded. Every period each individual is randomly matched to another. What we want to show is that gift-giving can actually improve the survival chances of cooperators. In this way we put the social approval approach in a more dynamic framework.

As pointed out, agents play their strategies according to their hard-wires. Their survival chances are dependent on their expected utility. The higher their expected utility, the larger the probability that they will survive. With a large population it is possible to approximate the stochastic process by a deterministic one. Following Van Damme [35], the dynamics of the fraction cooperators, p, is given by the following replicator equation (a dot above a variable denotes the time derivative):

$$\dot{p} = p(1-p)\left[E(u^c) - E(u^d)\right]. \tag{8}$$

Here $E(u^{c,d})$ denote the expected utility of a cooperator and defector respectively. This expression, common in evolutionary game theory, expresses the idea that strategies grow in the population if they do better than average (Van Damme [35], p. 849). We need at least the assumption that cooperators benefit in one way or another in terms of utility. This may be for example if they manage to provide a public good that is beneficial to both only if each player contributes. Furthermore, they should benefit from giving. As a shortcut we take it as a warm glow feeling but as argued before this can possibly be embedded in the more rich structure of social approval.

To illustrate, consider the game of the figure below. A cooperator that meets a cooperator has a payoff of 2. If he meets a defector then he has no payoff. A defector has a payoff of v if matched to a cooperator and 1 if matched to a defector. Clearly, the cooperating outcome $(2, 2)$ is preferable to the defecting outcome $(1, 1)$ but the former may not be enforceable, and is definitely not sustainable for values of $v > 2$.

	C	D
C	$2/2$	$0/v$
D	$v/0$	$1/1$

Hence, the expected utility values are given by:

$$\begin{aligned} E(u^c) &= pu(2) + (1-p)u(0), \\ E(u^d) &= pu(v) + (1-p)u(1). \end{aligned}$$

After substitution of these expected utilities in the replicator equation (8) and setting $u(0) = 0$ we get:

$$\dot{p} = p(1-p)\left[p[u(2) - u(v)] - (1-p)u(1)\right]. \tag{RE}$$

It is clear from this equation that if the initial fraction of cooperators is $p < (u(1) + u(2) - u(v))^{-1}u(1)$ then ultimately there will be defectors only. If the initial fraction of cooperators is some $p > (u(1) + u(2) - u(v))^{-1}u(1)$ then the population will converge to cooperators only. The solid line in the left panel in figure 4 illustrates the case for $v = 4$ (i.e. prisoners' dilemma) where there is always convergence to 'defectors-only' ($p = 0$) because $\dot{p} < 0$ no matter what the initial fraction of cooperators is (the arrows indicate the dynamics). Panel B illustrates the case for $v = 1$ (stag hunt game) where both $p = 0$ and $p = 1$ are stable outcomes.

Now consider the possibility to make a gift. For defectors this can never be optimal since they gain nothing by giving. However, cooperators get a warm glow $y(x)$ of giving x. By definition we have $y(0) = 0$. The expected utilities are modified accordingly as follows:

$$\begin{aligned} E'(u^c) &= pu(2 + y(x)) + (1-p)u(y(x) - x), \\ E'(u^d) &= pu(v + x) + (1-p)u(1). \end{aligned}$$

For the cooperators there is a gain of size $y(x)$ from the warm glow but they suffer a loss of x due to the probability of meeting a defector and no loss with probability p in the case they meet a cooperator. Defectors gain x by potentially meeting a

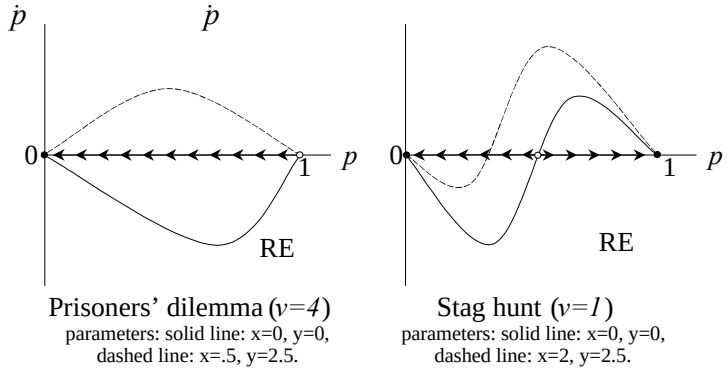

Figure 4: Evolution

cooperator (they gain nothing if they meet a defector). With these modifications in the utilities, the replicator dynamics can be rewritten into:

$$\dot{p} = p(1-p)[p(u(2+y)-u(y)) - p(u(v+x)-u(x)) + (1-p)u(y-x) + E(u^c) - E(u^d)]. \quad \text{(RE')}$$

The first term in the brackets gives the utility gain for cooperators in case they meet a cooperator, the second term gives the utility gain for defectors in case they meet a cooperator, the third term is the utility gain for cooperators when they meet a defector and the last term is the difference in expected utility without gifts. By comparing (RE') to (RE) one can see that as long as the sum of the fist three terms in brackets is positive, giving shifts the replicator equation in an upward direction. The dashed lines in the figure show the results for both cases $v = 4$ and $v = 1$ for linear utility. In either case, if $y(x) - x$ is sufficiently large, $p = 1$ is a stable outcome. In the stag hunt game (right panel) $p = 1$ becomes more likely for a given initial fraction of cooperators for a higher $y(x) - x$.

If there exists a population of cooperators that experiences a warm glow of giving then they may have some survival chances. By the concept of agents playing hard-wired strategies it is clear that the reciprocity of a gift is dependent on the type that an agents meets. If he meets a defector the gift is not reciprocated whereas if he meets a fellow-cooperator then the gift is reciprocated. In the above illustration society evolves over time to one of cooperators or defectors only. Giving increases the possibility of a cooperators-only society. If the gifts are too expensive, however, another possibility arises: a stable society with both cooperators and defectors. The reason is that for a given fraction of cooperators, defectors benefit from the higher gifts. When the fraction of cooperators is high and they make expensive gifts, then a defector is likely to meet a cooperator and hence his expected utility is high. For a low

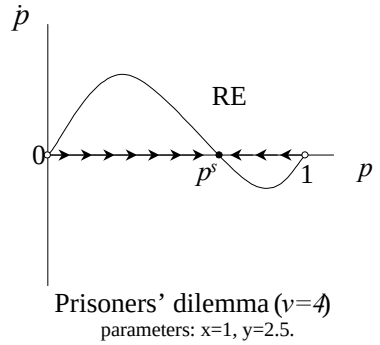

Figure 5: A mixed equilibrium

fraction of cooperators the defector is not very likely to meet a cooperator and so he will only benefit marginally from higher gifts. One and another is illustrated for the prisoners' dilemma in the figure below. With the higher gift we see that there is now a stable interior equilibrium p^s. For any fraction of cooperators $p > p^s$ defectors gain too much from the expensive gift and will increase in population. For any fraction of cooperators $p < p^s$ defectors gain too little and will decrease in population.

It is interesting to see what the effect of the gift's adequacy on survival chances is. As in section 3.3 we assume that only a fraction δ of the gift is added to the receivers payoff. The payoff of each person is therefore decreased by the gift made (x) and possibly increased by the gift received (δx). The higher δ is, the more adequate the gift. Expected utilities are now given by:

$$\begin{aligned} E^{''}(u^c) &= 2p + y(x) - x + p\delta x, \\ E^{''}(u^d) &= pv + 1 - p + p\delta x. \end{aligned}$$

What happens if a player changes the adequacy of the gift? There are two forces at work here. The first is that by lowering the adequacy of the gift, possible defectors benefit less. The second is the exact counterpart of the first in that lowering the adequacy lowers the gain for a possible cooperator. It depends on the shape of the utility function which effect dominates. The following proposition states this more precisely for risk-averse agents:

Proposition 3 *If* (i) $y(x) - x > v - 2$ *and* (ii) $u^{''} < 0$ *then* $\frac{dE^{''}(u^c) - E^{''}(u^d)}{d\delta} < 0$.

The proposition shows that if people are risk-averse ($u^{''} < 0$) then lowering the adequacy of the gift is beneficial for high values of $y(x) - x$ because it increases the

survival chances. This depends on the initial differences in payoffs $(v-2)$ because under risk-aversion, marginal utility is dependent on the utility level. For risk-neutral agents ($u'' = 0$) the replication of each type is independent on the adequacy of the gift.[29] The reason is simple: the replicator dynamics are stated in terms of differences in expected utility. Both types benefit equally from an adequate gift because both have the same probability of meeting a cooperator and the gift is the same for both. The difference in expected utility is therefore independent of the adequacy of the gift and under the assumption of risk-neutrality also independent on the initial utility level. In graphical terms, altering δ does not shift the curve.

4 Gifts and the market

An empirical anomaly exists: suppose you are a giver and someone proposes to reward your behavior by giving a monetary compensation. Based on standard economic arguments, you decide that this increase in monetary payoffs can never make you worse off. Would you change your behavior? If anything you should increase your gifts since the incentives to do so have become more favorable. However, at times it is found that when compensation is offered gifts are sometimes actually *de*creased. The classical example is the decrease in blood-giving after some compensation was offered. In another example taken from Gneezy and Rustichini [21] the other way around is also found, namely that the parents that arrived too late to collect their children at day-care centers increased in number after a fine was imposed (the gift is here the additional time that was spent by the employees). But if the motivation was altruism or a moral conviction, how could this ever disappear if rewarded or become worse if penalized? The rest of this section is devoted to explaining that the result is in fact a logical prediction of many approaches.

Consider first the social approval approach. Suppose that a compensation is offered. In this case, the marginal benefits of social approval decline. This is so because, as will be recalled, social approval is valued by the sacrifice made by the giver and sacrifice is lower once compensation is offered. To state this more precisely: let w^n denote the wage that can be earned on the market and w^v the compensation for 'volunteer' work. The compensation is offered by a third party, e.g. the government. Suppose furthermore that the measure of social approval of voluntary labor is then appropriately given by

$$s_i = (w^n - w^v)(l_i - l_j). \tag{3'}$$

There are two countereffects. First, as compensation increases every unit of voluntary labor is valued less. Besides this negative effect there is also a positive (income) effect: the compensation increases the ordinary utility. The following proposition gives the condition under which the equilibrium value of voluntary labor declines if a higher compensation is offered. Assume that $w^v \leq w^n$. Then:

[29] See the appendix for a proof.

Proposition 4 *In a symmetric agent equilibrium* $l_i^{**} > 0$ *and* $\frac{\partial l_i^{**}}{\partial w^v} < 0$ *if (i)* $w^n < \left(\frac{\alpha}{\beta}\right)^{\frac{1}{1-\alpha}} - \pi_i$ *and (ii)* $w^v > w^n - \delta$.

The intuition behind condition (i) is as follows. Imagine that the compensation for voluntary labor increases. This has two effects on the marginal decision: first, the marginal ordinary utility decreases, and second marginal utility of social approval decreases. Suppose for the moment that the first effect dominates the second. Then marginal ordinary utility is lower than the marginal utility of social approval. In equilibrium, they must be equal. By reducing the voluntary labor supply marginal ordinary utility increases and that of social approval remains constant. Hence, by reducing voluntary labor the equilibrium is restored. By the assumption of decreasing marginal utility of ordinary utility, the first effect is likely to dominate for a low level of ordinary utility, e.g. a low endowment π_i.

Condition (ii) serves merely to guarantee positive gift-giving. Interestingly, voluntary labor supply decreases at the point $w^v = 0$ only if $w^n < \delta$. i.e. if there are gains from trade in terms of ordinary utility (If both persons would exchange endowments, both would be better off).

We want to relate this result to the interaction between gifts and markets. Market exchange is taken to be inextricably connected with the use of money and anonymous agents. Every act has its instantaneous compensation. In the first approach, altruism, a partial compensation would make the gift less effective and so you should never decrease your gift. In the second approach, gift-giving as an exchange mechanism, it is argued that exchanging the good on the market would suppress symbolic utility. This can be harmful even if the market is capable of providing the good at lower costs but on the other hand can the compensation be helpful in avoiding problems of distrust. In the third approach gifts served as a signalling device to reveal the type of the players. Here, the use of money would imply benefits for the receiver of the gift. Unwilling players can anticipate the benefits of the gifts and it may actually be profitable for them to engage in gift giving. The result is a pooling equilibrium and the gift as a signal becomes useless (see the example in the text). Finally, in the approach of social approval, it is shown that compensating can reduce gift-giving. In the interpretation of opening markets, the creation of a market is in this case the cause of crowding out of the gift, something that is indeed often observed (see for instance Frey [19] but also the discussion in Arrow [5]). This conclusion is similar in spirit to that of Holländer who concludes that it may well be the case that "the opening of a market (...) reduces voluntary contributions" (Holländer [26], p. 1165).

One and another suggests that gift-giving can not unconditionally be replaced by the market mechanism. This conjecture is strenghtened by the fact that in the social approval approach, extended utility is unchanged by compensating voluntary labor, but welfare is in fact decreased since there are costs w^v incurred by a third party.[30]

[30] See the appendix for a proof.

5 Evaluation

The main focus of this paper is not to provide a *unique* unified theory of gift-giving. Rather, it aims at exposing competing theories and to evaluate them on their explanation power of accounting for the three characteristics reciprocity, adequacy, and sympathy. The possibility of coexisting motivations for gift-giving should not be disregarded. Perhaps the motivations differ between different kinds of gifts, different people, or different time periods. One can imagine for example that charity is driven by an intrinsic warm glow feeling whereas voluntary labor is mostly driven by social approval considerations. And for some people social approval may be a reason for charity donations whereas for others it is an intrinsic warm glow feeling. Finally, social exchange may have been a reason for gift-giving in ancient times whereas now it is mostly a signalling device.

Ultimately it is an empirical matter to determine the main motivation of gift-giving. A problem to be tackled is that, as the foregoing shows, some motivations overlap in their predicted outcomes. It is in particular hard to discriminate between social approval and inequity aversion since they share the basic form. It is out of the scope of the current paper to subject them to a detailed empirical investigation but at least one piece of experimental evidence is noteworthy. In an experiment by Güth and Van Damme [24] fairness as motivation is refuted by the data. What they did is to add a third player to the ultimatum game of figure 3. The proposer was now able to make an offer to both other players. But the difference is that the third player acted like a dummy: he had no possibility to reject the offer. One of the main results is that only marginal offers were proposed to the dummy player. They conclude that the proposer was not intrinsically motivated by fairness considerations but that they do not want to *be* fair, but rather want to *appear* fair.[31]

Güth and Van Damme conjecture that the "observed behavior may not be due to a taste for "fairness" but rather to a social concern for what others might think about oneself and for being held in high regard by others".[32] This comes, of course, very close to what we have called social approval. This conjecture, favorable to the social approval approach, is further strengthened by the works of Mauss [32], Codere [13], and Drucker and Heizer [15]. This seems at least to be the case for the more primitive societies but arguably also for modern economies.[33] As a final piece of evidence, Gächter and Fehr find that "if ... the opportunity for social exchange is combined with some minimal social familiarity, there is a substantial increase in contribution levels" ([20], p. 352).

[31] This conclusion does not inevitably follow from the experimental results. Bolton and Ockenfels [9] show that the results obtained by Güth and Van Damme can also be explained by their theory of inequity aversion.

[32] Güth and Van Damme [24], p. 242.

[33] This latter statement is more than a guess. The description of Codere ([13], p. 63) that "the first of these features is that potlatching [the redistribution of property] existed in the context of a fantastic surplus economy" is illustrative of this.

6 Appendix

Proof of proposition 1. Taking the derivable of $u_i(l_i)$ results in symmetric reaction curves for the players given by:

$$l_i^* = \frac{\delta}{w} l_j + 1 - \frac{1}{w}\left[\left(\frac{\alpha}{\beta}\right)^{\frac{1}{1-\alpha}} - \pi_i\right].$$

Define $\varphi_i \equiv \frac{1}{w}\left[\left(\frac{\alpha}{\beta}\right)^{\frac{1}{1-\alpha}} - \pi_i\right]$. Then $l_1^* = \frac{\delta}{w} l_2 + 1 - \varphi_1$ and $l_2^* = \frac{\delta}{w} l_1 + 1 - \varphi_2$. These curves are drawn in figure 1 for $0 < \varphi < 1$. The slope of l_2^* in the (l_1, l_2) space equals $\frac{\delta}{w}$ which is taken to be smaller than unity. Similarly the slope of l_1^* equals $\frac{w}{\delta}$.

Substitution to derive the equilibrium value (denoted by **) gives:

$$\begin{aligned} l_1^{**} &= \frac{1 - \varphi_1 + (1 - \varphi_2)\frac{\delta}{w}}{1 - \left(\frac{\delta}{w}\right)^2}, \\ l_2^{**} &= \frac{1 - \varphi_2 + (1 - \varphi_1)\frac{\delta}{w}}{1 - \left(\frac{\delta}{w}\right)^2}. \end{aligned}$$

Since the denominator is always positive for $0 < \delta/w < 1$, gifts are positive whenever:

$$1 > \varphi_i + (\varphi_j - 1)\frac{\delta}{w}.$$

For the symmetric case considered in the proposition this reduces to: $1 > \varphi_i(1 + \delta/w) - \delta/w$ or $\varphi_i < 1$. This is equivalent to $\pi_i > (\alpha/\beta)^{1/(1-\alpha)} - w$. ■

Proof of proposition 2. Denote the technology of player i by $\delta_i l_i$. Then notation of ordinary utility needs to be modified slightly as $v_i(x_i) = [\pi_i + w(1 - l_i) + \delta_j l_j]^\alpha$. As long as we stick to Cournot-Nash behavior adequacy does not change the strategy since it only affects the other's payoff and this is taken as given. However, suppose that player i makes a conjecture about the equilibrium. By changing the adequacy he changes the equilibrium supply of voluntary labor. Suppose then that he compares different equilibria with different levels of adequacy.

We investigate the sign of the derivative $\partial u_i/\partial \delta_i$ at the equilibrium choices of voluntary labor supply $l_{i,j}^{**}$. These should be accordingly rewritten into :

$$l_i^{**} = \frac{1 - \varphi_i + (1 - \varphi_j)\frac{\delta_j}{w}}{1 - \frac{\delta_i \delta_j}{w^2}}.$$

The derivatives of $l_{i,j}^{**}$ are given by (for notational convenience we drop the superscripts):

$$\begin{aligned} \frac{dl_i}{d\delta_i} &= \frac{\delta_j l_i}{w^2 - \delta_i \delta_j}, \\ \frac{dl_j}{d\delta_i} &= \frac{w(1 - \varphi_i) + \delta_j l_j}{w^2 - \delta_i \delta_j}. \end{aligned}$$

Assume for simplicity that $\varphi_i = \varphi_j = \varphi$ and define $\chi \equiv (1-\varphi)/(1-\delta_i\delta_j/w^2)$. Fist we show that ordinary utility is independent of the level of adequacy.

Ordinary utility is given by $v_i = [\pi_i + w - wl_i + \delta_j l_j]^\alpha$. Then:

$$\frac{d(-wl_i + \delta_j l_j)}{d\delta_i} = -w\frac{dl_i}{d\delta_i} + \delta_j \frac{dl_j}{d\delta_i} = \chi \cdot 0 = 0,$$

and hence $dv_i/d\delta_i = 0$. Ordinary utility is unaffected by a change in adequacy. (There is a simple reason for this: since δ does not affect the marginal utility of social approval, in equilibrium the marginal utility of ordinary utility must remain unaltered as well.) Social approval increases by decreasing δ_i if $d(l_i - l_j)/d\delta_i < 0$ $\Leftrightarrow$ $\chi(-\frac{1}{w} + \frac{\delta_j^2}{w^3}) < 0$. The assumptions in the text ($\pi > \bar{\pi} \Leftrightarrow \varphi < 1$) and the usual assumption that $\delta_j < w$ guarantee that this last inequality holds. Since the conditions are independent of the equilibrium values of voluntary labor supply, the optimal adequacy levels are $\delta_i^* = \delta_j^* = 0$. ■

Proof of proposition 3. The net gift received is $-x_i + \delta x_j$. For simplicity, assume that $x_i = x_j$. Then:

$$\begin{aligned} E(u^c) &= pu(2 + y(x) - x + \delta x) + (1-p)u(y(x) - x), \\ E(u^d) &= pu(v + \delta x) + (1-p)u(1). \end{aligned}$$

Hence the difference is given by:

$$E(u^c) - E(u^d) = p[u(2+y(x)-x+\delta x) - u(y(x)-x) - u(v+\delta x) + u(1)] + u(y-x) - u(1).$$

The derivative with respect to δ is then:

$$\frac{dE(u^c) - E(u^d)}{d\delta} = px[u^{'}(2 + y + \delta x - x) - u^{'}(v + \delta x)].$$

Hence, $dE(u^c) - E(u^d)/d\delta < 0$ if $u^{'}(2 + y + \delta x - x) - u^{'}(v + \delta x) < 0$. For $u^{''}$ this is the case if $v < 2 + y - x$. Under risk-neutrality, $u^{''} = 0$, $E(u^c) - E(u^d) = p(3 - v) + y(x) - x - 1$ and $dE(u^c) - E(u^d)/d\delta = 0$. ■

Proof of proposition 4. Let $w^n > 0$ denote the market wage and $w^v \geq 0$ the compensation for "voluntary labor". Define next $\tilde{w} = w^n - w^v$ as the difference in the wages. Throughout it is assumed that $\tilde{w} > 0$. The equilibrium value l_i becomes:

$$l_i^{**} = \frac{w^n/\tilde{w} - \tilde{\varphi}_i + (w^n/\tilde{w} - \tilde{\varphi}_j)\frac{\delta}{\tilde{w}}}{1 - \left(\frac{\delta}{\tilde{w}}\right)^2},$$

where $\tilde{\varphi}_i \equiv w^n\varphi_i/\tilde{w}$.

Under the assumption of symmetrical agents this reduces to:

$$l_i^{**} = \frac{(w^n/\tilde{w} - \tilde{\varphi}_i)(1 + \frac{\delta}{\tilde{w}})}{1 - \left(\frac{\delta}{\tilde{w}}\right)^2} = \frac{w^n/\tilde{w} - \tilde{\varphi}_i}{1 - \left(\frac{\delta}{\tilde{w}}\right)}.$$

After multiplying through by $\tilde{w} > 0$ it is easily found that the derivative with respect to w^v is equal to:

$$\frac{dl_i^{**}}{dw^v} = -\frac{dl_i^{**}}{d\tilde{w}} = \frac{w^n(1-\varphi_i)}{(\tilde{w}-\delta)^2}.$$

Hence, $\frac{dl_i^{**}}{dw^v} < 0$ if $1 < \varphi_i$. This condition is equivalent to:

$$\left(\frac{\alpha}{\beta}\right)^{\frac{1}{1-\alpha}} - \pi_i > w^n.$$

This occurs at $l_i^{**} > 0$ only if the denominator is negative (since the condition implies that the numerator of l_i^{**} is also negative). Hence, $1-\left(\frac{\delta}{\tilde{w}}\right)^2 = (1-\frac{\delta}{\tilde{w}})(1+\frac{\delta}{\tilde{w}}) < 0$ if $1 < \frac{\delta}{\tilde{w}} \Leftrightarrow w^v > w^n - \delta$.

Note furthermore that extended utility is unchanged. With symmetrical agents, $s_i = 0$ in equilibrium and straightforward calculations show that $du_i/dw^v = 0$. Hence, both ordinary utility and social approval (and therefore extended utility as well) are independent on w^v. ■

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