The non-monetary nature of gifts

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Abstract

This paper addresses the prevalence of non-monetary gifts over more highly valued and efficient monetary transfers in social relationships. We demonstrate that under a wide variety of circumstances, inefficient non-monetary gifts will be offered by a donor in lieu of cash in order to signal the donor's quality of information about the recipient's preferences. This result emerges *because* gift giving is inefficient relative to cash, and not because of any arbitrary assumptions regarding communication. In particular, the donor has available the strategy of offering cash and saying what he would have purchased. Nonetheless, there is still an important equilibrium role for buying gifts. © 2001 Elsevier Science B.V. All rights reserved.

1. Introduction

An enormous amount of money is spent on gifts, with individuals typically spending 3–4% of their income on such purchases. One of the most interesting features of these offerings is that they are typically non-monetary; only 10–15% of all gifts offered at times of celebration are in the form of money, so that non-monetary Christmas gifts alone total approximately 40 billion dollars (Waldfogel, 1993; Caplow, 1982). This social institution is in obvious contrast to

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tenets of exchange espoused by economists, who typically extol the virtues of money. Since money is a common claim on goods, it is typically the most desired asset with which to compensate others, as alternative means of exchange may simply not transfer as much value. It is clear that this simple microeconomic logic is not paramount when giving gifts, despite estimates of the deadweight loss of non-monetary gifts of approximately 10% of their value (Waldfogel, 1993, 1995). This paper considers one reason why the usual notions of economic exchange are a poor predictor of gift-giving.[1]

A common reason put forward for giving non-monetary gifts is that it is 'the thought that counts'; what is important is that a donor is willing to spend time searching for an appropriate gift for a recipient. Offering cash by contrast seems impersonal and typically carries some stigma, as described in Caplow (1982) and Waldfogel (1995). But note that non-monetary gift-giving involves two components: (i) the donor searches for an appropriate gift for the recipient, and (ii) he purchases and offers that gift. While we are persuaded that 'the thought' in (i) counts, a troubling issue remains: Why must the donor purchase the gift if only the thought counts? In other words, could not the donor simply communicate information to the recipient by telling her what he would have purchased and then making an appropriate transfer of money, thereby demonstrating that he has thought well while simultaneously eliminating any potential deadweight loss? Since the deadweight loss of Christmas gifts alone is about \$4 bn, this ostensibly seems to be a better social institution than purchasing gifts. Therefore, understanding non-monetary gift-giving must address why the two transactions (identifying the right good and purchasing it) are bundled, not simply why there is demand for identifying something suitable for the recipient.[2]

This paper puts forward one reason among many for the use of non-monetary gifts, where cash gifts are seen as impersonal in a sense described below. We

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[1] Two issues need to be addressed in order to understand non-monetary gift-giving. First, why do individuals give gifts? There is a large literature in anthropology concerning this question (see Mauss, 1950), which has also recently been addressed by economists. See Camerer (1988) and Carmichael and MacLeod (1993) for economic approaches to gift giving. Second, what form should those gifts take? Our interest is in this second question: Why are gifts usually non-monetary, despite the possibility of deadweight loss? We take as given that an individual wants to offer a gift, and rather address the form in which that gift is offered.

[2] An additional issue must also be considered: Why is identifying an appropriate gift part of gift-giving? One possibility is that by searching to determine the right gift, the donor illustrates that he is willing to impose costs on himself to find something suitable for the recipient. This does not seem a sensible reason in itself why donors purchase gifts, as there are more efficient mechanisms to incur costs. For example, suppose that searching for a gift creates no surplus but costs a dollar in utility to the donor. Then a Pareto-dominating gift is to offer a money gift that is one dollar higher than the monetary cost without search. As a result, it seems likely that finding the 'right' gift is an efficient allocation of the donor's time (Burgoyne and Routh, 1991). We assume that this is so in the analysis below.

argue here that people give non-monetary gifts to illustrate the certainty to which they understand the preferences of those upon whom they bestow gifts. If getting the gift wrong is costly to the donor (which here we model as arising from some form of altruism), then donors with more certain information will be more likely to offer gifts and hence more credibly demonstrate their knowledge of the recipient's preferences. We believe that this explanation is most relevant to new relationships, where there may be quite significant uncertainty about how much one party understands the other. The premise of this work is that understanding the preferences of friends is in many cases important. For instance, individuals in a relationship may be uncertain about the value of the relationship, and there could be concern about whether the individuals are compatible in their prefer-ences. An individual who can show that he understands the preferences of his partner is likely to be a more desirable partner than one who has no idea what his partner wants or believes in. According to Camerer (1988, pp. 193–194), 'close friends can distinguish themselves from casual friends by giving me things I like', which is valuable as 'this knowledge guides my investment in our relationship'. From this perspective, finding the perfect gift is not valuable only because the donor will like it, but also because it illustrates that the donor knew enough about the recipient's preferences to buy something desirable. What matters is not only that the recipient likes the good, but that the donor chose it.

Consider a scenario where a donor would like to show a recipient that he knows the recipient's preferences and must choose in what form to give a gift: Offer money or buy a gift. The donor can communicate with the recipient, by telling her what he believes she would like, even if he offers a cash gift. Therefore, the donor does not have to purchase the good to reveal to the recipient which one he thinks she would prefer. Our central point is that non-monetary gifts can be used to reveal *certainty* in a way not possible with cash gifts. If donors suffer from getting the recipient a bad gift, then those donors who are sure of the preferences of others can more cheaply offer non-monetary gifts, safe in the knowledge that there is little hazard from doing so. Those who are less certain of the preferences of the recipient perceive greater potential for deadweight loss and may be reluctant to offer uncertain gifts. In this way, the type of gift can potentially reveal information on how well a donor understands the recipient.

We develop a simple model in the next section to illustrate the role of such influences on gift-giving. We consider a situation where a donor wishes to give a gift to a recipient, and chooses between buying a non-monetary gift and transferring a monetary gift of cash in tandem with a message of what the donor thinks the recipient would like. We assume that the agents care about three separate things. First, as is standard, they value their own consumption. Second, they are altruistic. Finally, the innovation of the paper is that they derive utility from how well they are believed to know the preferences of the other, where they have private information about how much they truly know.

Our objective here is to illustrate the likelihood of non-monetary gifts. We begin by characterizing the set of perfect Bayesian equilibria (simply 'equilibria' hereafter) of our game, and show that non-monetary gift-giving can arise as an equilibrium for sufficiently low levels of altruism. While this illustrates a role for non-monetary gifts, we are aware that such equilibria can sometimes be supported by unreasonable out-of-equilibrium beliefs. As a result, in order to rule out unreasonable equilibria, and hence identify the robustness of non-monetary outcomes compared to cash equilibria without any non-monetary gift-giving, we impose a simple restriction on out-of-equilibrium beliefs by adding arbitrarily small amounts of noise to the donor's preferences. With this refinement we find that for low rates of altruism, all donors buy non-monetary gifts. With somewhat higher altruism, those donors most certain about the recipient's desires will purchase gifts while those less certain will offer cash, a finding consistent with empirical evidence in Waldfogel (1995) and Caplow (1982). Finally, for sufficiently high rates of altruism, all agents offer cash, as it is not worth the cost to reveal how well the donor knows the recipient. As a result, we are confident of the robustness of non-monetary gift-giving in this setting.

2. Signaling knowledge of preferences with gifts

There are two agents, a donor, D and a recipient, R, where the donor must give something of cost equal to one dollar to the recipient. The donor must choose between giving the dollar as a cash gift or purchasing a gift for the recipient. The recipient can consume one of two goods, A or B. The recipient likes either A or B but not both.[3] At the beginning of the game, nature chooses which good the recipient values with equal probabilities. Consuming the desirable good yields the recipient a utility of 1; consuming the undesirable good generates no additional utility.

Following this realization, the donor receives a signal ρ, which carries information about the preferences of the recipient. In particular, ρ measures the probability that the agent values good A. If $\rho = 1$, the agent values good A for sure, while $\rho = 0$ means that he values good B for sure. The least informative signal is $\rho = \frac{1}{2}$, which reveals no information about the preferences of the

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[3] The model assumes only two gifts, which is a restriction. In a model where there are a large number of gifts, we believe that more precise inferences can be drawn by the recipient, both from non-monetary gifts and from messages. For example, instead of preferring A or B, the donor could send a more informative ordering of many goods (such as he believes that C is preferred to A which is preferred to B and so on), thus increasing the precision of the signal. As a result, when there are a large enough number of goods, the precision of both messages and gift-giving is likely to increase. As there is a deadweight loss from purchasing gifts, we believe that the increased ability to reveal information through messages with more goods is likely to mitigate the need to purchase gifts.

recipient. Because the informativeness of ρ depends on how much it deviates from $\frac{1}{2}$, we denote $q = 2|\rho - \frac{1}{2}|$ as the signal quality, where we allow q to vary between 0 and $\bar{q} \leq 1$. Thus, a donor's information ρ is equivalent to quality q, and a best prediction A or B. We will focus on this latter representation of donor's information for simplicity. We additionally assume that q is private information to the donor, but q is commonly known to be uniformly distributed over $[0, \bar{q}]$, *ex ante*.

The two agents are assumed to derive utility from three sources. First, they value consumption, x_i, $i =$ r, d, which is simply the consumption value of the gift or income, where we normalize the marginal utility of income to unity. Second, the agents are altruistic, and value the welfare of the other agent at a fraction ϕ_i, $i =$ r, d of the amount they value their own welfare, where $0 < \phi_i < 1$. Finally, each agent derives utility from the knowledge that the recipient understands the donor's preferences. Understanding preferences is measured as the estimate of the recipient that the donor knows the recipient's marginal utility of consumption. The true ability of D to correctly predict R's preference is measured by q, and we let $\hat{q}$ be the recipient's perception of that measure.

The recipient's utility is assumed to be $V_r = x_r + \mu_r \hat{q} + \phi_r V_d$, where $\mu_r \geq 0$ is the value of a unit increase in the perceived understanding of preferences. Similarly, the donor's preferences are given by $V_d = x_d + \mu_d \hat{q} + \phi_d V_r$, with $\mu_d \geq 0$. We are most interested in the donor's utility, which after substitution, is proportional to $\alpha x_r + \hat{q}$, where we use α to denote the marginal rate of substitution of recipient utility to recipient beliefs:

$$\alpha \equiv \frac{\phi_d}{\mu_d + \mu_r \phi_d}.$$

The larger is α, the more important is altruism relative to being perceived as understanding the recipient. This parameter plays a central role in the paper and is sufficient for characterizing equilibrium behavior.[4]

The game is as follows. First, nature chooses whether the recipient likes A or B. After this, the donor observes q and his best prediction of the recipient's preferences. The donor then decides in what form to make the offering to the

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[4] It is important to bear in mind that α refers to the marginal rate of substitution between altruism and the understanding of the recipient's preferences rather than simply the level of altruism. We offer a characterization of the equilibrium for any α, which depends on both the μ_i and ϕ_d. It seems likely that μ_i and ϕ_i are positively correlated, in that those factors which lead to greater altruism are also likely to generate a greater desire to be known to understand the preferences of the other. For instance, good friends are both more likely to feel altruistic to each other and to want to be known to understand the other than are distant friends. It is not obvious, therefore, whether α is higher for close or more distant relationships: It depends on which factor increases more rapidly. As a result, care needs to be taken in inferring how the nature of gift-giving varies across different relationships, as is unclear how this marginal rate of substitution will change across these relationships.

recipient. We allow the donor to purchase a gift (g) or send cash (c), and if cash is sent, he appends a message, A or B, stating which good he believes that the recipient values. This message is assumed to be interpreted literally.[5] We assume that refunds of gifts are sufficiently costly so that the purchased gift is always consumed, though see Section 3 for a discussion of this. Following the donor's choice of 'cash' or 'gift' and the resulting correctness of his preference prediction, the recipient forms an expectation, $\hat{q}$, about the donor's ability to understand the recipient and the game ends with the stated payoffs from above. As a benchmark, note that offering cash gifts is always the efficient outcome (i.e., it maximizes the sum of the individual utilities) because the expected social return from information transmission is invariant across all equilibria.[6]

Our objective is initially to characterize the set of perfect Bayesian equilibrium outcomes, defined in the appendix. Given the strategies described above, the recipient updates on two pieces of information only: Whether the donor was 'right' or 'wrong' in his prediction or purchase, and whether he purchased a gift or gave cash. Thus the set of beliefs are represented by a four-tuple: $\hat{q}_{gr}$, $\hat{q}_{gw}$, $\hat{q}_{cr}$, and $\hat{q}_{cr}$, where the first subscript denotes whether a gift, g, or cash, c, was offered and the second subscript denotes whether the donor's choice or prediction was ultimately right, r, or wrong, w.

To explore the equilibrium outcomes, it is useful to define the *net* utility of a donor to offering a gift versus cash for given quality, q, and marginal rate of substitution, α, by $\Delta(q, \alpha)$.

$$\Delta(q, \alpha) \equiv \frac{(1 + q)}{2}(\hat{q}_{gr} - \hat{q}_{cr}) + \frac{(1 - q)}{2}(\hat{q}_{gw} - \hat{q}_{cw}) - \frac{(1 - q)}{2}\alpha.$$

The first bracketed term measures the net effect of buying the gift on the recipient's expected posterior beliefs, where $(1 + q)/2$ is the probability of guessing 'right', while the final term measures the loss caused by the possibility of buying the wrong gift, where $(1 - q)/2$ is the complementary probability of getting it 'wrong'. Not surprisingly, this implies that non-monetary gifts can only arise if recipients form (weakly) better estimates of the donor from doing so, as

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there is a deadweight loss from purchasing the wrong gift, which occurs with probability $(1 - q)/2$. Note that providing equilibrium beliefs are such that $\hat{q}_{gr} - \hat{q}_{cr} \geq \hat{q}_{gw} - \hat{q}_{cw}$ – which will be shown to be the case – $\Delta(q, \alpha)$ is increasing in q and decreasing in α.

It is a straightforward exercise in revealed preference to demonstrate that only three possible classes of equilibria exist: (1) only cash is chosen in equilibrium, (2) only gifts are sent in equilibrium, and (3) a hybrid equilibrium with a critical threshold quality, q_o, such that low types $(q < q_o)$ choose 'cash' while high types $(q > q_o)$ choose 'gifts'. This observation is summarized in the following lemma. All proofs are provided in the appendix.

Lemma 1. In any equilibrium, there exists a threshold type $q_o \in [0, \bar{q}]$ such that all donor types with $q < q_o$ choose 'cash' and all types $q > q_o$ choose 'gifts'.

We proceed to characterize these three sets of equilibria in the following subsections. In Section 2.3 we consider the robustness of the 'gift' equilibria to restrictions on beliefs.

2.1. Pure-cash equilibrium outcomes

We begin by considering circumstances under which the social optimum can be attained as an equilibrium. First consider inferences drawn from offering a cash gift. The probability that the donor's prediction is right as a function of q is $(1 + q)/2$. It follows that the unconditional expected likelihood of correctly predicting preferences, based on the uniform prior, is $E[(1 + q)/2] = (2 + \bar{q})/4$. Therefore, the posterior density of the donor's information quality, q, conditional on correctly predicting the preference of the recipient (i.e., being 'right') is given by

$$\frac{(1 + q)}{2} \bigg/ \frac{(2 + \bar{q})}{4\bar{q}} = \frac{2(1 + q)}{\bar{q}(2 + \bar{q})}. \tag{1}$$

Taking expectations over q it follows that $\hat{q}_{cr} = \bar{q}(3 + 2\bar{q})/3(2 + \bar{q})$. Similar calculations reveal that conditional on being wrong about the recipient's preferences, $\hat{q}_{cw} = \bar{q}(3 - 2\bar{q})/3(2 - \bar{q}) < \hat{q}_{cr}$. Then a donor of type q has a probability $(1 + q)/2$ of having average quality $\hat{q}_{cr}$ and the complementary probability of being perceived with average quality $\hat{q}_{cw}$.

This can only be an equilibrium if the most knowledgeable donor $(q = \bar{q})$ does not want to deviate and purchase a gift, given he knows that the gift will be right with probability $(1 + \bar{q})/2$. Out-of-equilibrium beliefs are obviously central here. By choosing sufficiently negative beliefs for the recipient following a choice of

gift, there is always an equilibrium in which all agents offer cash.[7] Hence, for any value of α, the pure-cash equilibrium outcome always exists.

2.2. Non-monetary gift-giving equilibria

Now consider outcomes where at least some donor types buy gifts rather than offer cash. To characterize this class of equilibria, we compute the vector of recipient beliefs in equilibrium: $\{\hat{q}_{gr}, \hat{q}_{gw}, \hat{q}_{cr}, \hat{q}_{cw}\}$, in exactly the same way as in Section 2.1, except that now the q for a gift giver is the uniform distribution on $[q_o, \bar{q}]$. In order for an agent of type q to purchase a gift it must be the case that $\Delta(q, \alpha) \geq 0$. In the pure-gifts equilibrium outcome, it must be the case that $\Delta(0, \alpha) \geq 0$. In the hybrid equilibrium outcome with both gifts and cash, there must exist an interior $q_o \in (0, \bar{q})$ such that $\Delta(q_o, \alpha) = 0$.

First, consider pure-gift equilibria. The equilibrium-path beliefs of $\hat{q}_{gr}$ and $\hat{q}_{gw}$ are calculated exactly as in (1). The equilibrium is sustainable if the inference for choosing 'cash' is sufficiently negative. Hence, the largest set of values for α for which the pure-gift equilibrium outcome can be sustained is determined by choosing the worst possible inferences: $\hat{q}_{cr} = \hat{q}_{cw} = 0$. In this case, we have the worst-type's net gain from gift-giving given by

$$\Delta(0, \alpha) = \frac{\hat{q}_{gr} + \hat{q}_{gw} - \alpha}{2}.$$

The requirement that $\Delta(0, \alpha) = 0$ defines a critical value of $\alpha_1 = \hat{q}_{gr} + \hat{q}_{gw}$ for which the pure-gift equilibrium outcome is sustainable. Substituting the algebra for $\hat{q}_{gr}$ and $\hat{q}_{gw}$ and simplifying yields the critical value

$$\alpha_1 \equiv \frac{4\bar{q}(3 - \bar{q}^2)}{3(4 - \bar{q}^2)}.$$

For all values of α (weakly) less than α_1, pure-gifts represents an equilibrium outcome. Therefore (holding ϕ_i fixed), if altruism is not particularly important (but positive), complete non-monetary gift-giving arises as an equilibrium.

Second, consider the hybrid gift-cash equilibrium outcome. Because all outcomes are observed in equilibrium with some probability, beliefs are completely tied down by the Bayes rule. The algebra for these beliefs are provided in the appendix. Let $\hat{q}(q_o)$ define the vector of these equilibrium beliefs given the cutoff,
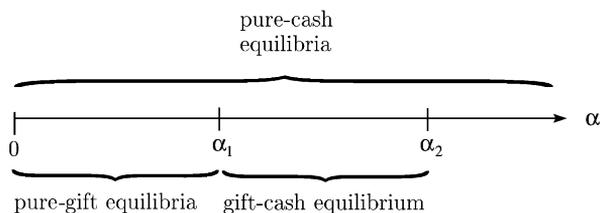

Fig. 1. Perfect Bayesian equilibria regions for various values of α.

q_o. A hybrid equilibrium exists if and only if there is an interior quality, q_o, such that $\Delta(q_o, \alpha) = 0$. Therefore, it is sufficient to show that $\Delta(\bar{q}, \alpha | \hat{q}(\bar{q})) > 0 > \Delta(0, \alpha | \hat{q}(0))$, where we have to introduce the equilibrium beliefs as a third argument in Δ to make clear the dependence on beliefs. This pair of inequalities will generally hold for only a limited interval of α. As shown below, a hybrid equilibrium exists if and only if $\alpha \in (\alpha_1, \alpha_2)$, where $\Delta(0, \alpha_1 | \hat{q}(0)) = 0$ defines α_1 (the same value as above), and $\Delta(\bar{q}, \alpha_2 | \hat{q}(\bar{q})) = 0$ which defines α_2; i.e., $(1 + \bar{q})(\hat{q}_{gr} - \hat{q}_{cr}) + (1 - \bar{q})(\hat{q}_{gw} - \hat{q}_{cw}) - (1 - \bar{q})\alpha_2 = 0$, or after substitution for equilibrium beliefs at $q_o = \bar{q}$:

$$\alpha_2 \equiv \frac{4\bar{q}(3 - \bar{q}^2)}{3(4 - 4\bar{q} - \bar{q}^2 + \bar{q}^3)} > \alpha_1.$$

Hence, for any $\alpha \in (\alpha_1, \alpha_2)$, the hybrid gift-cash outcome arises as an equilibrium outcome. Note that if $\bar{q} = 1$, then $\alpha_2 = \infty$, so an equilibrium with at least some non-monetary gift giving exists for all (positive) rates of altruism.

Combining results from the three possible outcomes yields Proposition 1, which summarizes the complete set of equilibria.

Proposition 1. All equilibria fall into one of three classes depending upon α:

(1) *Pure cash. For any value of α, there exist equilibria in which the donor always sends 'cash' in tandem with a gift suggestion.*
(2) *Pure gifts. Iff $\alpha \leq \alpha_1$, there exist equilibria in which the donor always buys a 'gift'.*
(3) *Cash and gifts. Iff $\alpha \in (\alpha_1, \alpha_2)$, there exists an equilibrium characterized by a threshold $q_o \in (0, \bar{q})$ such that all donors with $q < q_o$ send 'cash' and all donors with $q > q_o$ buy a 'gift'.*

The set of equilibrium outcomes is illustrated in Fig. 1.

2.3. Robustness of gift-giving equilibrium outcomes

An obvious concern that arises from Proposition 2 is the possibility that non-monetary gift-giving, our primary interest, could be an equilibrium

outcome by choice of unreasonable out-of-equilibrium beliefs. This raises the question of whether a more restrictive equilibrium concept would allow non-monetary gift-giving to remain. While we are generally agnostic about what constitute reasonable out-of-equilibrium beliefs, we think it is natural to ask whether reasonable refinements may make gift giving less plausible. We have considered a number of equilibrium refinements and here present the strongest of those considered.[8] In particular, we consider the equilibrium outcomes that arise when (i) we add full-support type-independent noise to each donor's $\Delta(q, \alpha)$ function and (ii) allow the variance of this noise to go to zero. This is a powerful refinement and is slightly stronger in the present context than Cho and Sobel's (1990) D1 refinement.[9] As the following proposition demonstrates, this refinement has no effect on the existence of pure-gift equilibrium outcomes for $\alpha \leq \alpha_1$, but it restricts the existence of pure-cash equilibria to cases in which $\alpha \geq \alpha_2$.

Proposition 2. The introduction of arbitrarily small type-independent noise with full support to $\Delta(q, \alpha)$ eliminates pure-cash equilibria outcomes when $\alpha < \alpha_2$; equilibria outcomes involving non-monetary gifts are unaffected by this restriction.

The implication of this more restrictive equilibrium concept is to reduce the set of equilibria of the model, but by eliminating outcomes where only cash is given. Thus, non-monetary purchases of gifts remain an equilibrium outcome if altruism is not too great, in exactly the same way as in Proposition 1. Note that if $\bar{q} = 1$, $\alpha_2 = \infty$, so that non-monetary gift-giving by some donors always arises in equilibrium. Thus we believe that non-monetary gift-giving is robust to strong equilibrium refinement. However, let us be clear about the role of this section. We are not claiming that we will necessarily observe the outcome described in Proposition 2 because it imposes strong out-of-equilibrium beliefs and weaker restrictions allow cash giving to arise over a wider range of parameters.[10] Our purpose was simply to show the difficulty of breaking equilibrium outcomes with non-monetary gift-giving with more restrictive equilibrium concepts; instead, it is the cash-giving equilibria which are more brittle.

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[8] In a previous version of this paper, we introduced a continuous variation of Cho and Sobel's (1990) D1 criterion to demonstrate that the gift equilibria survive the D1 refinement even though for moderate values of α the pure-cash equilibrium outcome does not.

[9] Loosely, it imposes the following constraint on out-of-equilibrium beliefs: If, in any pure-cash equilibrium, a recipient deviates from the equilibrium strategy and $\Delta(q, \alpha) > \Delta(q', \alpha)$, then as the variance of the noise goes to zero it is infinitely more likely that type q chose 'gift' rather than type q' and the recipient must believe that the deviation is infinitely more likely to have come from type q than q'. Therefore, this refinement requires that the recipient has degenerate out-of-equilibrium beliefs. In the case of both pure-cash and pure-gift equilibria, $\Delta'(q, \alpha) > 0$, so the recipient must entertain beliefs of $\hat{q}_{gr} = \hat{q}_{gw} = 1$ in pure-cash equilibria and $\hat{q}_{cr} = \hat{q}_{cw} = 0$ in pure-gift equilibria.

[10] For example, in a previous version of this paper, we demonstrated that under the D1 refinement pure-cash equilibrium outcomes exist for $\alpha < \frac{2}{9}$ if $\bar{q} = 1$, but not for $\alpha > \frac{2}{9}$. In this sense, refinements such as D1 are less restrictive about the size of the noise.

To summarize, the paper asserts that what matters for the frequency of non-monetary gifts is the importance that donors place on being known to understand the preferences of the recipients *relative* to their altruism for that person. This is captured in α, which measures the marginal rate of substitution between these issues. When knowing the preferences of others is high, gift-giving becomes more common. By contrast, if altruism is high relative to the desire to be known to know the preferences of the other, the usual deadweight loss argument arises and cash gifts become more common.

3. Remarks

Our purpose in this paper has been to better understand why people give non-monetary gifts even though there is the danger of buying the wrong good. If the donor does not value that he is known to understand the preferences of the recipient, there is no role for non-monetary gift giving in our model (i.e., where $\mu_i = 0$). Instead, basic economic logic on the deadweight loss of non-monetary trade continues to hold. However, this is no longer true when there is a return to being perceived as knowing the recipient's preferences. Then any donor who is not willing to put his 'gift on the line' may be perceived as less certain, so that the bundling of non-monetary gift-giving and information transmission arises naturally in equilibrium. In addition, for reasons described above, we believe that our results on the use of non-monetary gifts are robust to more restrictive equilibrium concepts.[11]

We should be clear that there are many aspects of gift-giving which this model does not address. First, the model is premised on the assumption that there is uncertainty about how much one party understands the preferences of the other. As such, we see the paper as most appropriate for understanding the initial stages of relationships, rather than those who are involved in longer-term relationships, where such uncertainty may already be resolved. Our paper does not address non-monetary gift-giving where there is little uncertainty.[12] Second,

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[11] As noted by a referee, another interesting variant of this model considers gift-giving as a social norm which induces incentives on the part of the donor to investigate the recipient's preferences. In this sense, this alternative view offers a moral hazard interpretation on non-monetary gift-giving, where it is a signal of the donor's efforts, rather than from his exogenous type. We have not fully explored the ramifications of this variant to our model, but it does appear to provide a theory of gifts which is similar in spirit – the choice of a gift over money reveals valuable information to the recipient which could not be conveyed as simply with money. The moral hazard story, however, does still have the difficulty that communication of the donor's research should suffice without the requirement that the donor actually give the gift. For this reason, we feel that the role of gift-giving as a signal of certainty remains.

[12] For example, non-monetary gift-giving is common within families. A reason why non-monetary gift-giving may arise within families is that doing so may be the only credible way to ensure that the recipient gets to consume at the level intended by the donor. For example, suppose a husband presents a gift of money to his wife, but she spends it on the family. To overcome this incentive, which may not be desired by her husband, he simply buys the good for her.

one issue which looms large in the anthropology and sociology literature on gift-giving is the importance of distinguishing a gift from a market transaction.[13] This literature has emphasized the importance that people place on making their gifts appear personal, in order to avoid the interpretation that the transaction is merely payment for services. Not surprisingly, this has resulted in a desire to avoid the use of cash gifts, which is the usual medium of exchange in market settings, and has also generated a desire to disguise gifts in ways that make them appear less like cash.

For example, there are many cases where people do not give cash, yet at the same time reveal little from their gifts of their understanding of the other person. From the perspective of our model, there would be little reason for such a gift. An example of this is the use of gift certificates to a department store. The desire to offer such gifts is probably better explained by a desire to make a gift which is close to cash in its use value, appear less so. Other examples of such norms which probably fit this model better than ours would be flowers or chocolates for dates and Valentine's day, Christmas cards, and so on. For more details on how gifts appear to be affected by the desire to avoid the appearance of impersonal market considerations, see Zelizer (1994).

Finally, another example which does not fit our model well is wedding gifts, where money is often offered, and typically non-monetary gifts are chosen from a registry compiled by the couple. As a result, the desire to reveal information by the donor hardly seems relevant. There are a number of reasons why this norm may arise. First, it could be that the typical wedding guest gains little from revealing how much they know the recipients, and so deadweight loss is minimized by either choosing cash or a gift suggested by the couple. Second, the cost of buying the wrong gift may be especially high for newly married couples, as for example, the marginal cost of an unpopular couch could be high. Each of these would be reasons to mitigate the signaling effects described in the model. Yet these considerations do not explain why non-monetary gifts are offered at all: why not have all guests simply offer cash? We suspect that one reason is that donors desire a sentimental attachment to a particular good, which would not be possible when giving cash.

Despite these omissions, we feel that our results are consistent with findings on gift-giving. Specifically, the empirical literature on gift-giving illustrates two robust phenomena (Caplow, 1982; Burgoyne and Routh, 1991; Waldfogel, 1993, 1995). First, non-monetary gift-giving is inefficient in the sense that the direct utility from cash is higher. This arises in our model; non-monetary gift giving has an associated deadweight loss. In our setting, this deadweight loss is simply the probability of purchasing the wrong gift, which is $1/2 - (1 - q_o/\bar{q})((q_o + \bar{q})/4) > 0$ in the non-monetary equilibrium. Despite this,

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[13] For example, see Mauss (1950), Blau (1964), and Zelizer (1994).

non-monetary gifts are offered. Second, cash gifts are offered by those who are less familiar with the recipient's preferences, as arises here when $\alpha_1 < \alpha \leq \alpha_2$, holding the prior distribution of q fixed. Therefore, our results are consistent with these two observations.

Ours is not the only model to suggest a role for non-monetary gift-giving. First, both Camerer (1988) and Carmichael and MacLeod (1997) argue that money may be a bad medium of exchange when gifts are exchanged simply because cash is *too* valuable to the recipient. For example, consider a relationship where it is of value to understand how much each likes the others, as for example, it affects the investments which each is willing to make in the relationship. Gifts can sometimes be used to reveal this information. Yet I may be wary that a friend is interested in me only because of the gifts I give him. To mitigate this effect (yet to persuade the friend that *I* am serious), some tax on the gift may be necessary. As non-monetary gifts have some distortions, they satisfy this need for taxation. In our model, the motivation is very different: Deadweight loss is not being sought, but instead arises due to the need to guess the other's preferences, which is the donor's true objective.

Second, Waldfogel (1995) proposes that a reason why cash is not offered is that there is a stigma associated with offering such gifts rather than purchasing a gift, in the sense that cash gifts have some non-pecuniary cost to the donor. He estimates an indifference relation between cash gifts and non-monetary gifts, which suggests that the stigma of offering cash is about $50 from a gift with an average cost of $130. We do not see this stigma interpretation as an alternative to these results, but rather we view our work as providing an interpretation of such stigma. In other words, why do cash gifts have stigma? Our view on this is that they reveal that the donor truly has little idea of the recipient's preferences. As such, we believe that these results provide a foundation to why there could be a stigma to cash gifts.

Third, it has recently been argued by Fremling and Posner (2000) that non-monetary gifts may have value over currency by allowing recipients to avoid the negative connotations which would otherwise arise if they chose to purchase the luxury items themselves. For example, in some social circles, there may be greater return to possessing an expensive Swiss watch that was given as a gift, than to have purchased it for oneself, even if the money used to purchase it derived from a gift. In this manner, materialistic recipients can pool with others who have no great desire for such luxuries, achieving both a favorable reputation and desirable consumption. A complete theory, of course, must explain why people who are not materialistic do not benefit from requesting a monetary gift, thereby destroying the pooling equilibrium.

Another implication of the paper is that some gifts are too easy; for instance, if a non-monetary good is known to be valued with probability one, it is equivalent to offering cash in our model. The gift only has signaling value if there is a reasonable possibility that an unknowledgeable donor could get it wrong. As

a result, donors have incentives to choose gifts that illustrate that they truly understand the recipient, rather than buying the 'obvious' present: A knowledgeable donor will attempt to find something more unusual which is a more discriminating signal of his abilities.[14] For instance, gift certificates might be less commonly offered by immediate family members than distant relations.[15] Alternatively, one could characterize relationships by the importance of signaling information on understanding the preferences of the other. For instance, uncertainty is likely to be greatest at the beginning of a relationship (the courtship stage) which would generate an important role for non-monetary gifts at that stage. By contrast, at a later point in the relationship (the marriage stage), a recipient may simply be allocated some cash from the family budget and can buy what he likes.

In our model, the recipient wants his preferences known by the donor. But if this is so, why cannot the recipient simply tell the donor which good he prefers, thus resolving the whole reason for signaling through gifts? For example, why do we not simply tell our friends and relations what we would like for the holidays, rather like a wedding list? Since gifts on average offer deadweight loss, why not eliminate this by simply telling donors our preferred items? We suspect that a reason why the recipient does not simply tell the donor is that the value of the information transmitted extends beyond simply the two goods in question, and that the value of the donor finding out the information on the gift preferred by the donor has value simply beyond that gift. For example, suppose that a donor believes that the recipient would like a particular book, which he offers

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[14] This can be easily introduced into the model by allowing some small uncertainty over the value of the cash gift, with the interpretation being that the 'cash' gift now represents some good (such as a gift certificate for a store) for which there is little uncertainty over its valuation. Hence, this 'easy' gift is a poor mechanism for revealing information on q in the same way as with cash in the model above. We do not model this issue here for space reasons.

[15] One could conceivably test this in the following way. First consider the value to the recipient of various gifts, conditioning on all observable variables such as relationship to recipient, frequency of contact, etc. Then categorize the gifts on the basis of the *variance* of their value to recipients, suitably adjusting for any truncation problems generated by the equilibrium behavior (i.e., those below q_o do not offer the gift). Those which have little variance we would call 'easy' while those with more variance are more subject to error. Then our model would predict that those who are ill informed would be more likely to choose the easy gifts, while those who believe themselves more able to predict tastes would choose a 'harder' (higher variance) gift.

While this seems conceptually a logical test, we are reluctant to push it too far, for the reason that observing behavior across different types of donors is unlikely to be a test of, say, knowledge of a recipient, holding everything else fixed. For example, consider a comparison of siblings and cousins offering gifts. It is true that siblings are more informed about tastes than cousins on average. But we could not conclude that any differences in behavior could be attributed to differences in knowledge, since cousins and siblings may also differ on (i) their altruism, and (ii) the extent to which they care about understanding the preferences of the donor. As a result, cross-donor information is unlikely to offer as precise a test of our model as one would like.

as a gift. This probably represents to the recipient more than simply knowing the preferences of the person over books: It could more generally show that the donor understands what the recipient likes. This cannot be replicated by the recipient simply telling the donor which book he wants, as the donor cannot extend this to other goods. In effect, the donor has to find out the information himself. As such, we think that the information transmitted by the donor is not specific to just the good in question, which is its true value. For that reason, we believe that the outcome we describe cannot be improved upon by the recipient telling the donor his preferences.

To conclude, this paper has provided a simple interpretation of why people buy gifts: They do so not to prove that they have searched for the perfect good (which they could do without buying it) but to prove that they are *sure* that it is the right thing. According to Camerer (1988, p. 194), 'a close friend *must* guess at my tastes (and sometimes err) to distinguish himself from a casual friend'. The objective of the donor here is to show the certainty of his information. The paper also offers a number of empirical implications. First, cash gifts will be offered by those who are less certain of the recipient's preferences. Second, our model has the implication that some gifts are 'too easy'. In particular, if a good exists which is commonly known to be valuable to the recipient, it is not a good means of revealing how much the donor knows about the recipient.

Acknowledgements

Appendix

Definition. A perfect Bayesian–Nash equilibrium in our game consists of (i) a strategy for each donor which maps from estimate $\{A, B\}$ and quality of estimate, q, into a 'gift or cash' decision (g or c) and a choice/prediction of the ideal good (A or B):

$$\sigma : \{A, B\} \times [0, \bar{q}] \mapsto \{(g, A), (g, B), (c, A), (c, B)\};$$

(ii) recipient beliefs, $\hat{q} = \{\hat{q}_{gr}, \hat{q}_{gw}, \hat{q}_{cr}, \hat{q}_{cw}\}$, following different donor selections and gift/prediction outcomes; where (iii) the donor's strategy is optimal given the recipient's beliefs and the recipient's beliefs are consistent with Bayes' rule for all equilibrium behavior.

Proof of Lemma 1. If the PBE consists of all donors choosing 'cash' or all donors choosing 'gifts', then the lemma is trivially true. Suppose instead that the equilibrium has both 'cash' and 'gifts' sent in equilibrium. It suffices to show that if $\Delta(q, \alpha) > 0$, then $\Delta(q', \alpha) > 0$ for all $q' > q$. Since we ultimately care only about the sign of $\Delta(q, \alpha)$ over $(0, \bar{q})$, we may divide it by $(1 - q)$. Differentiating, we have

$$\text{sign}\left(\frac{\partial}{\partial q} \frac{\Delta(q, \alpha)}{1 - q} \right) = \text{sign}(\Delta(1, \alpha)).$$

If $\Delta(1, \alpha) \geq 0$, we are done. Suppose that instead $\Delta(1, \alpha) < 0$, then we have a partition equilibrium in which types below some threshold choose 'gifts' and types above the threshold choose 'cash' – the reverse of the lemma. But consider $q = 0$ who must choose 'gift' and hence $\Delta(0, \alpha) > 0$. For this type, $(\hat{q}_{gr} + \hat{q}_{gw}) > (\hat{q}_{cr} + \hat{q}_{cw}) + \alpha$, which is inconsistent with Bayes' rule given that the prior for 'gift' must be lower than that for 'cash'. Hence, only the former type of partition equilibrium can arise. $\square$

Proof of Proposition 1. According to Lemma 1, there are only three types of perfect Bayesian equilibria (PBE).

(1) *Cash equilibria*: For all PBE in this class, only 'cash' is chosen in equilibrium. Hence, posteriors are determined according to Bayes' rule and are given by $\hat{q}_{cr}$ and $\hat{q}_{cw}$, as in Section 2.1. Out of equilibrium, we can choose beliefs sufficiently negative so as to deter donors from choosing 'gift'. The worst possible beliefs are $\hat{q}_{gr} = \hat{q}_{gw} = 0$. With the given donor strategy, these beliefs are consistent. Given these beliefs, the donor's strategy is optimal if (by virtue of Lemma 1) $\Delta(\bar{q}, \alpha) \leq 0$, which in the present case is satisfied.

(2) *Gift equilibria*: For all PBE in this class, only 'gift' is chosen in equilibrium. Hence, posteriors are determined according to Bayes' rule and are given by $\hat{q}_{gr}$ and $\hat{q}_{gw}$ exactly as in part 1. Out of equilibrium, we choose the worst possible beliefs: Where $\hat{q}_{cr} = \hat{q}_{cw} = 0$. With the given donor strategy, these beliefs are consistent. Given these beliefs, the donor's strategy is optimal if (by virtue of Lemma 1) $\Delta(0, \alpha) \geq 0$. This requires

$$2\Delta(0, \alpha) = \hat{q}_{gr} - \hat{q}_{cr} + \hat{q}_{gw} - \hat{q}_{cw} - \alpha = \hat{q}_{gr} + \hat{q}_{gw} - \alpha \geq 0$$

or after simplification, $\alpha \leq \alpha_1$. Furthermore, for any greater values of α, there do not exist any beliefs which can sustain the pure gifts equilibrium outcome.

(3) *Hybrid gift–cash equilibria*: For all PBE in this class, all equilibrium beliefs are determined by the Bayes rule. Given that the threshold of q_o determines the donor's choice of gift or cash, posterior beliefs are (as a function of q_o)

$$\hat{q}_{cr}(q_o) = \frac{q_o(3 + 2q_o)}{3(2 + q_o)}, \qquad \hat{q}_{cw}(q_o) = \frac{q_o(3 - 2q_o)}{3(2 - q_o)},$$

$$\hat{q}_{gr}(q_o) = \frac{1}{3}\left(2\bar{q} - 1 + \frac{2(1 + q_o)^2}{(2 + q_o + \bar{q})}\right),$$

$$\hat{q}_{gw}(q_o) = \frac{1}{3}\left(2\bar{q} + 1 - \frac{2(1 - q_o)^2}{(2 - q_o - \bar{q})}\right).$$

To this end, define the threshold value of q_o for fixed recipient beliefs $\hat{q}$ by the continuous function, BR, which is increasing in α:

$$q_o = BR(\hat{q}, \alpha) \equiv \frac{(\hat{q}_{gr} - \hat{q}_{cr}) + (\hat{q}_{gw} - \hat{q}_{cw}) - \alpha}{(\hat{q}_{gw} - \hat{q}_{cw}) - (\hat{q}_{gr} - \hat{q}_{cr}) - \alpha}.$$

This function gives the marginal quality type which is just indifferent between a gift and cash.

Sufficiency for $\alpha \in (\alpha_1, \alpha_2)$. Suppose that $\alpha > \alpha_1$. Then straightforward algebra reveals $BR(\hat{q}(0), \alpha) > 0$. Similarly, suppose that $\alpha < \alpha_2$; then algebra yields $BR(\hat{q}(\bar{q}), \alpha) < \bar{q}$. Hence, the existence of a fixed point $q_o = BR(\hat{q}(q_o))$ is assured by continuity and Brouwer's theorem.

Necessity: For any $\alpha \notin (\alpha_1, a_2)$, there does not exist a hybrid gift–cash PBE. First, consider $\alpha \le \alpha_1$. The equation $q_o - BR(\hat{q}(q_o), \alpha)$ has at most 5 roots. Because BR is increasing in α, it suffices to show that there are no positive real roots at $\alpha = \alpha_1$. Tedious calculations reveal this to be true; it is necessary that $\alpha > \alpha_1$. Second, consider $\alpha \ge \alpha_2$. In this case, again calculations demonstrate that there are no real roots less than $\bar{q}$ at $\alpha = \alpha_2$. Hence the necessary condition that $\alpha < \alpha_2$. □

Proof of Proposition 2. Following the argument of footnote 7, the addition of arbitrarily small noise requires the recipient to hold degenerate out-of-equilibrium beliefs on the donor type with $\hat{q}_{cr} = \hat{q}_{cw} = 0$ in the pure-gift equilibrium and $\hat{q}_{gr} = \hat{q}_{gw} = \bar{q}$ in the pure-cash equilibrium. The pure-gift equilibrium outcome is sustainable for any $\alpha \le \alpha_1$ using out-of-equilibrium beliefs $\hat{q}_{cr} = \hat{q}_{cw} = 0$ as demonstrated in the proof of Proposition 1. The existence of hybrid gift–cash equilibrium outcomes is unchanged by any refinement on out-of-equilibrium beliefs. Finally, in the case of pure-cash equilibria, we have the gain to deviation to 'gift' for the highest type equal to

$$2\Delta(\bar{q}, \alpha) = \bar{q} - (1 + \bar{q})\hat{q}_{cr} - (1 - \bar{q})\hat{q}_{cw} - (1 - \bar{q})\alpha,$$

which is positive if and only if $\alpha < \alpha_2$. □

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