

# The Thought That Counts: Towards a Rational Theory of Gift-Giving\*

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## **Abstract**

From an economic perspective, the practice of gift-giving in social relationships makes little sense due to the inefficiencies that arise from commonly mismatched gifts and preferences. This paper addresses the frequency of non-monetary gifts compared to more efficient cash transfers. While there is a vast literature concentrated on this cultural phenomenon, we examine a model based on the idea that the sentimental value of a gift can be measured in terms of the time and energy the donor spent to select a desirable gift for the recipient. We demonstrate that under a variety of circumstances, individuals choose to give non-monetary gifts over cash in order to signal to the recipient that they exerted this effort.

# **1 Acknowledgments**

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## 2 Introduction

Christmas in western countries is inarguably the most anticipated holiday of the year for families, retailers, and anyone concerned with GDP growth. On a macro scale, the holiday shopping season for many countries is the largest economic stimulus. After all, everyone is spending more; retailers in the U.S. make an estimated 50% of their profits and sales during the months of November and December <sup>1</sup>. Yet every year, after the holidays have come and gone, sweaters go unworn and books unread. Giving a gift suggests the need to guess at what the recipient of your generosity might like or need. Realistically, however, most of our gifts fall short of that target. Even if the gift is enjoyed, it probably isn't exactly what the recipient would have chosen if he purchased it himself.

The social institution of gift-giving has been widely explored by economists puzzled by the inefficiencies created in the mismatch of gifts and wants. In the past, gift-giving was viewed by anthropologists as a crude means of trade in early society. However, in today's market economy, this phenomenon still exists to suggest that gift-giving is deeply misunderstood. The seminal paper on gift-giving, Joel Waldfogel's aptly titled "The Deadweight Loss of Christmas" (1993 [15]), is dragged out every holiday season in economic circles by those who exalt cash as the most efficient form

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<sup>1</sup>National Retail Federation

of gift-exchange. Waldfogel’s results suggest that individuals in non-immediate social relationships should give cash over gifts to avoid the deadweight loss of the recipient not valuing a gift at its true cost. With the average American spending nearly \$900 every holiday season on Christmas gifts alone (Gallup Poll 2007 [13]), Waldfogel estimates that a tenth to a third of this spending is destroyed due to poorly chosen gifts. But if non-monetary gifts were so inefficient, then why are they still so frequent? In fact, cash accounts for less than 15% of all gifts to college-aged recipients (Waldfogel 1993 [15]).

The simplest theory of consumer choice says that the welfare-maximizing strategy is to give cash rather than attempt to guess the recipient’s preferences, but this seems to carry a social stigma, not to mention violate the spirit of gift-giving. It is not always acknowledged that sentimental value is excluded from Waldfogel’s analysis, but how exactly does one quantify “sentimental value,” and does it really trump the benefits of giving cash?

The common rationale put forth for gift giving is that “it’s the thought that counts,” reminding us that people do in fact value gifts above their price tag. List and Shogren (1998 [5]) conducted a separate study in which they pointed to a welfare *gain* to gift-giving after taking into account the sentimental value of gifts. Arguably, motivation for giving non-monetary gifts comes from the goal of signaling to the recipient that the donor is willing to spend time and effort searching for an appropriate

gift. Cash transfers are not only too impersonal but also too easy, involving little effort beyond taking out your checkbook. Thus, individuals who choose to give gifts do so hoping to convince the recipient that they spent time and effort for them, even if they never actually did.

The purpose of this paper is to use effort as a measure of sentimental value to explain why traditional tenets of efficient exchange poorly predict patterns of gift-giving. We assume that the individual already intends on giving a gift and address the form in which it is offered: gift or cash. We propose a theory in which individuals give gifts in order to demonstrate to their recipient that they exerted some kind of effort in choosing a gift. Thus, cash transfers may not be the most efficient form of giving. Although as we'll see in the literature review, many papers examine aspects of gift-giving, mine is the only one to my knowledge that uses effort as a proxy for sentimental value.

The motivation here is that gifts are rarely ever given as a purely economic transfer of wealth. Instead, they are a signal of one's commitment to maintaining a relationship – for example, the employer who gives a gift to the employee in order to show gratitude for their contribution to the company. Anyone who has given a gift understands that it is not an easy task, involving time, effort, and often times imagination. While cash is economically more efficient, it is unlikely to endear you to your recipient. If I believe that my friend worked hard to choose a gift for me, I will value our

relationship more and be eager to volunteer my own time and effort the next time he or she is in need of help.

My hypothesis is that if individuals care about being perceived as a thoughtful friend, then they will choose to give non-monetary gifts, either by actually exerting effort or by guessing. Other factors that could determine the form in which the gift will be include how well the donor knows the recipient's tastes and the cost of their time and energy. Effort, however, does not come freely and can be in the form of anything that incurs an opportunity cost: spending time to get to know the recipient better, being perceptive about what he or she might enjoy, contacting friends or relatives, or even just taking the time to think about what would please him or her<sup>2</sup>. For instance, individuals who are less aware of their recipient's preferences may want to play it safe by giving cash, and those who face a high cost may find it not worth the while to exert effort. My model suggests that gift-donors can do one of three things: 1) Give a cash gift, 2) Exert effort to find the "perfect" gift for their recipient, and 3) Try to guess at the donor's preferences without exerting effort, hoping their recipient will believe they did if they happened to choose an appropriate gift. After observing the donor's gift of choice (cash, correct gift, or incorrect gift),

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<sup>2</sup>This cost can also be interpreted as how willing the donor is to exert effort and thus how close the donor is to the recipient. However, for simplicity, we assume that cost is exogenous and not related to any other variables.

the recipient will conjecture whether or not he exerted effort. My objective is to map out a range of donor characteristics that could make each of these actions an equilibrium to better explain why some individuals might actually find it irrational to give cash. By identifying the set of perfect Bayesian equilibria (simply “equilibria” hereafter), we show that non-monetary gift-giving could be supported by increasing social-approval considerations.

This paper proceeds in several sections. Section 2 examines the relevant literature on gift-giving as a signaling mechanism. Section 3 outlines a theoretical model of gift-giving to explain why some individuals might choose gifts over cash. Section 4 concludes with the results and offers suggestions for further research in this area.

## 3 Literature Review

To put these ideas in perspective, let us first survey some of the related literature. Previous work done on gift-giving is divided into two primary subgroups: those that strive to explain why gift-giving exists in contemporary society, and those that address the prevalence of non-monetary gifts over pure-cash transfers. Gift-giving was largely explored in the past by anthropologists, who viewed it as a means of compensation and exchange in primitive societies. For example, Posner (1980 [9]) discusses gifts as insurance against poor harvest, given out during a surplus with the expectation of



repayment in the future. The foundational academic work on the meaning of gifts was written in 1967 by the anthropologist Mauss [1925 [7]], who refers to the ideas of loan and credit as played out in the reciprocal nature of gifts.

It was not until recent decades that this topic attracted the attention of economists, who attempt to map out a wide range of motivations to gift giving. The most common explanation behind gift-giving is that it serves as a signal to encourage cooperation between individuals (Camerer 1988 [3], Carmichael and MacLeod 1997 [4], van de Ven 2000 [14]). A vast literature in anthropology and sociology also explore this issue, setting the theoretical framework for the role of gifts in defining social networks (Mauss 1967 [1925] [7], Malinowski 1922 [6], Caplow 1982 [1], 1984 [2]).

The majority of the economic literature are concerned with the welfare-reducing qualities of gifts and criticizes gift-giving as wasteful – extolling cash as the best instrument of exchange. Perhaps one of the most prominent economic articles on this topic was by Joel Waldfogel ([15]). This empirical study found that a \$50 gift is on average valued at anywhere between \$35 and \$43 by the recipient. He argues that recipients of gifts would have attained higher welfare levels from the cash equivalents, comparing the deadweight loss from the holiday season to the deadweight loss of taxation. The study also found that gifts from siblings and significant others bear smaller losses, whereas gifts from aunts, uncles, and grandparents bear the greatest losses. In fact, the fraction of gifts lost increases with the social distance and age

gap between the donor and recipient. The study also found that extended family and individuals of older age groups are more likely to give cash. Like some other economists, Waldfogel explains the existence of non-monetary gifts by referring to a social stigma attached to cash gifts (Waldfogel 1993 [15], 1995 [16], Webley et al. 1983 [17]). This empirical study argues that giving a gift will leave the recipient worse off than allowing him to buy something on his own with the same amount of cash. My paper questions this result by suggesting that individuals acting rationally might actually find it efficient to give a non-monetary gift.

Ruffle (1999 [12]) explores the payoffs of gifts by using a two-player psychological game in which the utility from gifts is also derived from the emotional reaction to the gift. This factor is measured by the difference between the expected gift and the actual gift received. These emotions are categorized as either surprise, disappointment, embarrassment, or pride. His results demonstrate that gift-giving is welfare improving if the recipient's surprise plus the donor's pride exceed the cost of the gift. This emotional factor of the players' utility functions is similar in concept to my perceived effort factor. In both models, the recipient cares about the donor's reaction to the gift, and derives utility from a positive reaction. However, his model does not address the issue of cash versus gifts but rather focuses on whether or not a gift is exchanged in the first place. We do, however, borrow this concept of a two-player psychological simultaneous game in which the recipient's reaction enters into the donor's utility

function.

Two signaling models of gift-giving are proposed by Camerer (1988 [3]) and more recently by Prendergast and Stole (2001 [10]). Camerer suggests that gifts are signals of a person's investment in a relationship. He proposes gift exchange as a non-cooperative game of imperfect information, in which two individuals choose whether or not to invest in a relationship. In a two-stage signaling game, individuals can choose to give a gift to signal their willingness to invest, and then updates his or her own information based on the other person's signal. Results indicate that mutual gift-giving is an equilibrium when prior probabilities to invest are low, and the absence of gifts is an equilibrium when both individuals are already willing to invest. Camerer also suggests that close friends can distinguish themselves from casual ones by guessing at what gifts the recipient will enjoy. Although Camerer's paper sets many theoretical foundations for modeling gift-giving behavior, it focuses more on the function of gifts and why they exist, rather than why people give gifts over cash. The author briefly implies that individuals choose inefficient gifts because different gifts signal different messages about the donor's prior knowledge of the recipient, whereas cash carries with it no message.

Prendergast and Stole (2001 [10]) argue that non-monetary gifts are used to signal the donors quality of information about the recipients preferences. They propose that even if the donor could transfer cash but append a message indicating what he or

she would have purchased (thus eliminating the lack of thought in a gift), the donor will still find it beneficial to give non-monetary gifts to show the certainty of his information. In elaborating on Camerer's theory that close friends give non-monetary gifts to distinguish themselves from casual friends, Prendergast and Stole suggest that the ultimate goal of the donor is to show how sure he or she is that the recipient will like the gift. Results indicate that as the donor places more importance on being perceived as a close friend relative to being altruistic, non-monetary gifts become more common. Although my paper addresses the same issue of sentimentality in gifts and borrows a similar model, their story is still quite different. While the donor in their model seeks to convey his quality of information to the recipient, the donor in mine wishes to convey the effort that he did or did not exert.

## 4 Model

We begin with the basic assumption that all agents are utility-maximizing individuals. Consider the simple gift-giving scenario: the donor (D) wants to give a gift to a friend, the recipient (R). We borrow the model proposed by Prendergast and Stole (2001 [10]), in which the donor can choose between two equally-priced gifts,  $A$  and  $B$ , where nature determines whether the recipient likes either  $A$  or  $B$ , but not both. The donor also has the option of giving a cash amount equivalent to the cost of the

gift. The recipient derives a utility of 1 from receiving the correct gift or the cash amount, and no utility from the wrong gift. After receiving the gift, the recipient formulates a belief about whether or not the donor spent time and effort in choosing the gift.

The donor formulates a prior belief about the recipient's preferences: whether he likes gift A or B. We often times will refer to this belief as the donor's "best guess". The donor's quality of information is given by  $\lambda$ , which is the probability that the donor's belief is correct. For example, if the recipient prefers gift A and the donor's  $\lambda = \frac{3}{4}$ , then the donor will correctly guess A with probability  $\frac{3}{4}$ . It should be clear then that  $\lambda$  varies between  $\frac{1}{2}$  and 1, since if  $\lambda < \frac{1}{2}$ , then the donor will simply go with his second best guess. A donor with  $\lambda = \frac{1}{2}$  has no prior belief about the recipient's preferences, and thus would make a guess based on a coin toss. On the other end,  $\lambda = 1$  implies that the donor has full knowledge of the recipient's likes and will guess correctly every time<sup>3</sup>.

The donor can exert effort to determine the exact preferences of the recipient. This is represented by the binary variable  $e \in \{0, 1\}$ , where  $e = 1$  indicates that he exerted effort, and  $e = 0$  otherwise. As we mentioned before, effort may include spending time with the recipient, doing some detective work about the recipient's preferences,

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<sup>3</sup> $\lambda$  can be interpreted as a proxy for how well he knows the recipient.

contacting friends or relatives to learn more about what the recipient may like, etc. We also assume that if the donor exerts effort, then he will surely discover which gift the recipient prefers and select the correct gift. The recipient does not see what the donor's  $e$  is, but he can make conjectures based on the present he observes. Let  $\hat{e} \in [0, 1]$  be the recipient's belief about the donor's effort level, conditional upon the observed outcome.

It follows then that if the recipient observes either the wrong gift or a cash gift, then he will believe that the donor did not exert any effort. However, if he observes the correct gift, then he will believe that the donor either exerted effort or guessed his preferences correctly. Because effort involves time and energy, it must come at some cost  $c \in [0, 1]$ , with  $c = 0$  being effortless and  $c = 1$  being extraordinarily difficult.

There are three actions,  $a \in \{C, G, E\}$  that the donor can take:

1. No effort, cash (**C**): Donor gives cash without exerting effort.
2. No effort, gamble (**G**): Donor does not exert effort and instead chooses his best guess.
3. Effort (**E**): Donor exerts effort at a cost  $c$  and always correctly determines the preferred gift.

Thus, the recipient can observe three possible outcomes: the correct gift, the incorrect gift, and cash, from which the recipient must determine  $\hat{e}$ . We let  $P(C)$ ,

$P(G)$ , and  $P(E)$  be the probabilities of the donor choosing the respective actions in equilibrium, where  $P(C) + P(G) + P(E) = 1$ . We assume that refunds are sufficiently costly, so that the recipient must consume even the wrong gift. We additionally assume that  $\lambda$  and  $c$  are publicly known by both agents.

So, to summarize the initial variables in this problem:

- $\lambda \in [0, 1]$  = the probability that the donor correctly guesses the recipient's preferences
- $e \in \{0, 1\}$  = whether or not the donor exerts effort to determine the exact preferences of the recipient
- $\hat{e} \in \{0, 1\}$  = the recipient's belief about the donor's effort conditional on the observed outcome
- $c \in [0, 1]$  = cost of effort
- $P(C)$ ,  $P(G)$ , and  $P(E)$  = the probability that the donor chooses to give cash, take a gamble, or exert effort respectively

After observing the donor's gift choice, the recipient then makes Bayesian updates about his level of effort. Our goal is to determine the combinations of  $\lambda$  and  $c$  that give rise to equilibria in this model.

To evaluate the donor's strategy, we assume that he cares equally about the following:

1. Recipient's utility from the gift,  $W\{0,1\}$ , at a fraction  $\alpha$  of the amount they value their own time and effort, where  $\alpha \geq 0$ .
2. The recipient's belief about the donor's effort,  $\hat{e}$ , at a fraction  $\sigma$  of the amount they value their own time and effort, where  $\sigma \geq 0$ .
3. Disutility from the cost of effort.

Hence, the donor's utility function thus can be written as the following additively separable utility function:

$$U^D = \alpha W + \sigma \hat{e} - c \quad (1)$$

Thus, with  $a \in \{C, G, E\}$ , let  $U_a^D$  denote the donor's expected utility for choosing action  $a$ :

$$U_C^D = \alpha \quad (2)$$

$$U_G^D = \lambda(\alpha + \sigma \hat{e}) \quad (3)$$

$$U_E^D = \alpha + \sigma \hat{e} - c \quad (4)$$

If the donor gives a cash gift, the recipient will automatically conjecture that he exerted no effort ( $\hat{e} = 0$ ), thus leaving the donor with a  $W = 1$  term scaled by a constant  $\alpha$ . If he chooses to gamble and give either A or B without exerting effort, then he will select the correct gift with probability  $\lambda$ , in which case he gets an addition  $\hat{e}$  term scaled by the constant  $\sigma$ . If he chooses the wrong gift (with probability  $(1 - \lambda)$ ,



then he receives no utility since the recipient neither values the gift nor does he believe the donor exerted effort. Lastly, if the donor exerts effort, he is guaranteed the  $\alpha$  and  $\sigma\hat{e}$  terms since we assume that he will choose the correct gift with effort at the cost of  $c$ .

Notice that the crucial variable here is  $\hat{e}$ , the recipient's belief about the donor's effort. In the context of our problem, this represents the sentimental value of a gift. After all, we appreciate a gift above its actual cost if we are convinced of and impressed by the effort that the donor made to find it. If the donor chooses to exert effort (E), he does so hoping that the benefits of getting the  $\hat{e}$  term will outweigh the cost of effort  $c$ .

We assume  $\sigma, \alpha \in [0, \infty)$ , so that an  $\alpha$  of 1.5 would indicate that the donor cares about the recipient's valuation of the gift 1.5 times greater than the cost of his own effort. A high  $\sigma$  implies a self-conscious or vain donor who values what the recipient thinks of him. We can interpret this kind of donor as someone who is seeking social approval and wishes to be thought of as a "good friend" (that is, someone who exerted effort). On the other hand, a high  $\alpha$  implies an altruistic donor who values the recipient's utility from receiving the correct gift. This is characteristic of a donor who wants the best for his recipient by ensuring that the recipient can derive positive utility from his gift (for example, a parent or an anonymous donor). Although  $\alpha$  and  $\sigma$  have no real effect on the model, we include them in order to make it easier to fit

our model to data<sup>4</sup>. We assume these variables also to be known by both agents and proceed to test possible equilibria.

## 4.1 Pure strategy equilibria

### 4.1.1 No effort, cash; $P(C) = 1$

For  $P(C) = 1$  to be an equilibrium, the donor must prefer giving cash to taking a gamble and to exerting effort. Thus, the following inequalities must hold:

$$U(C) \geq U(G) \tag{8}$$

$$U(C) \geq U(E) \tag{9}$$

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<sup>4</sup>If we adopt the conventional definition of altruism as caring about the recipient's entire utility function, we can interpret  $\alpha$  and  $\sigma$  in the following sense: Let the recipient's utility be expressed by  $U^R = W + \phi_R \hat{e}$ . Then, the donor's utility function can be written as:

$$U^D = \alpha(W + \phi_R \hat{e}) + \phi_D \hat{e} - c \tag{5}$$

$$\alpha W + (\alpha \phi_R + \phi_D) \hat{e} - c \tag{6}$$

If we let  $\sigma = \alpha \phi_R + \phi_D$ , then the above expression can be rewritten as

$$U^D = \alpha W + \sigma \hat{e} - c \tag{7}$$

Solving for the above inequalities, we arrive at the following constraints:

$$c \geq \sigma \hat{e} \quad (10)$$

$$\lambda \leq \frac{1}{1 + \frac{\sigma}{\alpha} \hat{e}} \quad (11)$$

To determine  $\hat{e}$ , it is necessary to consider out-of-equilibrium beliefs  $(\hat{e}_G, \hat{e}_E)$ . To do this, we assume that any mistake is equally likely:  $P(G|\neg C) = P(E|\neg C) = \frac{1}{2}$ . Hence,

$$\hat{e} = \frac{P(E|\neg C)}{P(E|\neg C) + \lambda P(G|\neg C)} \quad (12)$$

$$= \frac{\frac{1}{2}}{\frac{1}{2} + \lambda \frac{1}{2}} \quad (13)$$

$$= \frac{1}{1 + \lambda} \quad (14)$$

Substituting  $\hat{e}$  into (10) and (11), we find that for  $P(C) = 1$  to be an equilibrium, it must be the case that

$$\lambda^2 + \frac{\sigma}{\alpha} \lambda - 1 \leq 0 \quad (15)$$

$$c \geq \frac{\sigma}{1 + \lambda} \quad (16)$$

If we let  $\alpha = \sigma = 1$ , we find that  $\lambda \leq 0.61803$  and  $c \geq 0.61803$ . In other words, the donor must be relatively unsure of the recipient's preferences and face a relatively high cost of effort - sufficient conditions to make a cash an attractive option. If the donor becomes more altruistic and less self-conscious so that  $\frac{\sigma}{\alpha}$  decreases to 0.5, then our new conditions are  $\lambda \leq 0.78078$  and  $c \geq 0.56155$ , thus expanding the region in

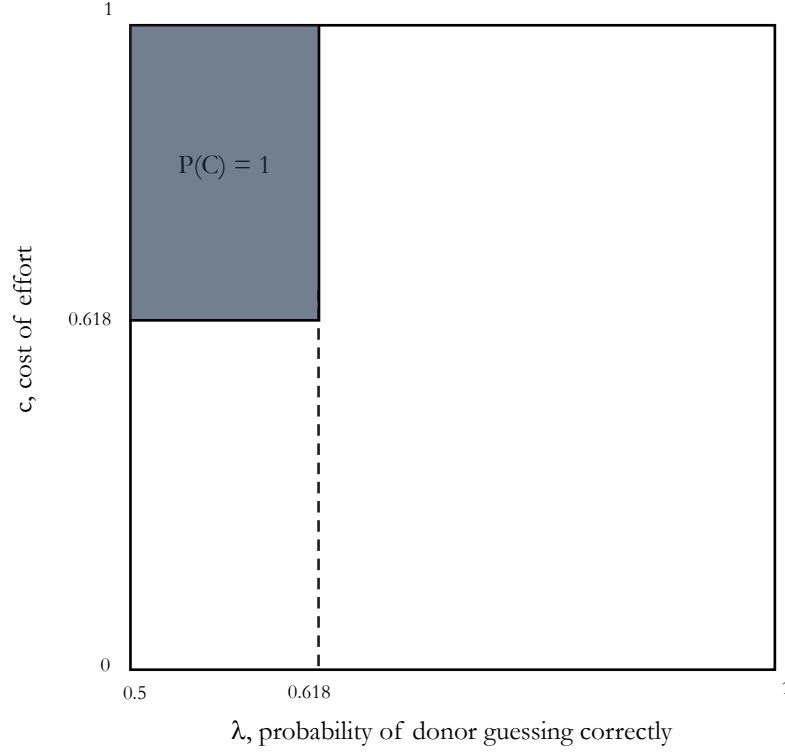


Figure 1: *Graphical illustration of region where  $P(C) = 1$  is an equilibrium for  $\alpha = \sigma = 1$*

which pure-cash outcomes can occur. If, instead,  $\frac{\sigma}{\alpha}$  increases to 1.5 or above, we find that  $\lambda \leq 0.5$ , which violates our initial assumption, so  $P(C) = 1$  is no longer an equilibrium for less-altruistic, more-self-conscious donors.

### 4.1.2 No effort, gamble; $P(G) = 1$

We repeat the steps above and arrive at the following conditions:

$$\lambda \geq \frac{1}{1 + \frac{\sigma}{\alpha} \hat{e}} \quad (17)$$

$$\lambda \geq 1 - \frac{c}{\alpha + \sigma \hat{e}} \quad (18)$$

For  $P(G) = 1$  to be an equilibrium, these inequalities must hold. When the recipient observes the correct gift, he would conjecture that the donor took the gamble. Thus,  $\hat{e} = 0$ , independent of the outcome, would require  $\lambda \geq 1$ . Since our initial assumption was that  $\frac{1}{2} \leq \lambda \leq 1$ , it is only possible for  $\lambda = 1$ . Therefore,  $P(G) = 1$  is an equilibrium only when  $\lambda = 1$ . The donor is already slated to receive  $\hat{e} = 0$  even if he picks the correct gift, so he would be able to do better or the same by giving cash, which would at least guarantee him  $W = 1$ . Only if  $\lambda = 1$  would it make sense for him to take the gamble, since he will always guess correctly. For  $G$  to be a possibility in this model for other values of  $\lambda$ , the donor has to employ mixed strategies, which we will discuss later.

### 4.1.3 Effort, gift; $P(E) = 1$

The constraining conditions are:

$$c \leq \sigma \hat{e} \tag{19}$$

$$\lambda \leq 1 - \frac{c}{\alpha + \sigma \hat{e}} \tag{20}$$

$E$  being an equilibrium implies that  $\hat{e} = 1$ . Substituting this into (20), we find that the following relation must hold:

$$c \leq (\alpha + \sigma)(1 - \lambda) \tag{21}$$

The donor will exert effort to find the right gift whenever he is unsure about the recipient's preferences, when he faces a low cost of effort, or both. Notice here that the sum of  $\alpha$  and  $\sigma$ , rather than the ratio of the two, is a driving variable for the upper bound of  $c$ . As the donor becomes more altruistic and more self-conscious (thus placing less weight on the actual cost of effort), exerting effort becomes a more attractive option.

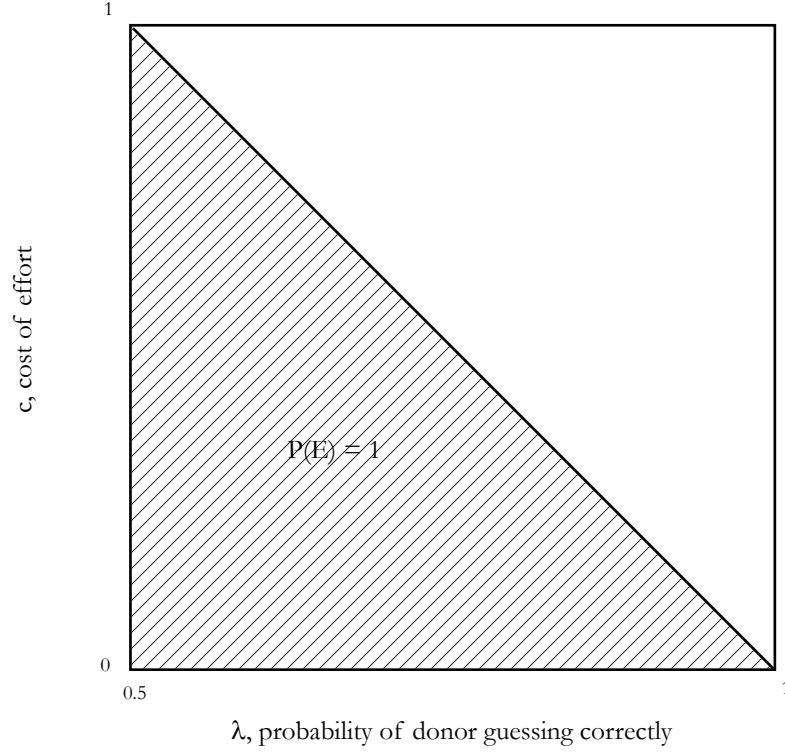


Figure 2: *Graphical illustration of region where  $P(E) = 1$  is an equilibrium for  $\alpha = \sigma = 1$*

## 4.2 Mixed strategy equilibria

### 4.2.1 $P(E) + P(G) = 1$

For this to be an equilibrium, the donor must be indifferent between E and G, but prefer both over C. Formally,

$$U(E) = U(G) \geq U(C) \quad (22)$$

which, after substituting, can be rewritten as

$$\alpha + \sigma \hat{e} - c = \lambda(\alpha + \sigma \hat{e}) \geq \alpha \quad (23)$$

In this strategy space, the expected effort level,  $\hat{e}$ , is determined by the probabilities  $P(E)$  and  $P(G)$ . If we let  $p = P(E)$  and  $1 - p = P(G)$ , we obtain the following expression for  $\hat{e}$  in terms of  $p$  and  $\lambda$ :

$$\hat{e} = \frac{p}{p + \lambda(1 - p)} \quad (24)$$

Substituting this into (23), we find that for the donor to be indifferent between E and G,  $\hat{e}$  must be:

$$\hat{e} = \frac{\alpha(\lambda - 1) + c}{\sigma(1 - \lambda)} \quad (25)$$

To generate this, the donor must be mixing with weight

$$p = \frac{\lambda(\alpha\lambda + c - \alpha)}{(1 - \lambda)(\sigma + \alpha(1 - \lambda) - c)} \quad (26)$$

We can also use our expression for  $\hat{e}$  to find the following relation between  $c$  and  $\lambda$ :

$$c \geq \frac{\alpha(1 - \lambda)}{\lambda} \quad (27)$$

This is unlike our pure strategy equilibrium  $P(G) = 1$  which was possible only when the donor would guess correctly every time. The donor is now willing gamble even for lower values of  $\lambda$  since the recipient would be unable to determine if he chose G or E. Thus, the donor is able to safely gamble while tricking the recipient into



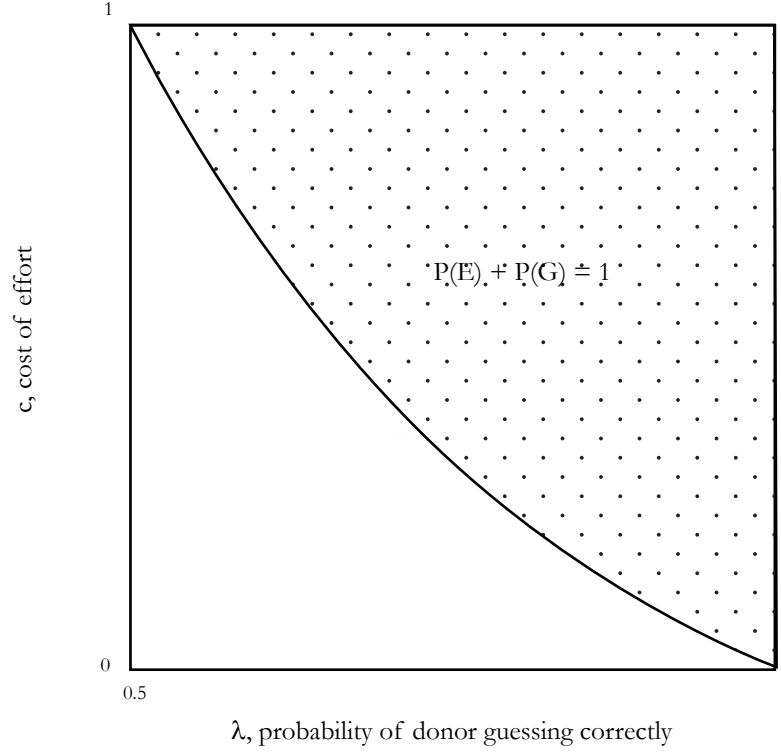


Figure 3: *Graphical illustration of region where  $P(E) + P(G) = 1$  is an equilibrium for  $\alpha = \sigma = 1$*

believing that he may have exerted effort. For the donor to mix between exerting effort and gambling, the donor must face a high  $\lambda$  (so that he guesses correctly with a higher probability) and/or a high  $c$  (since gambling is costless). Otherwise, he will choose to only exert effort ( $P(E) = 1$ ) or even give cash instead.

### 4.2.2 $P(E) + P(C) = 1$

Once again, we know this to be true if the following holds:

$$U(E) = U(C) \geq U(G) \quad (28)$$

$$\alpha + \sigma\hat{e} - c = \alpha \geq \lambda(\alpha + \sigma\hat{e}) \quad (29)$$

This time, the  $\hat{e}$  is 1 whenever the donor receives the correct gift. Thus, every outcome that results in a gift will clearly be because the donor chose E. However,  $\hat{e} = 1$  creates a problem for us if  $\alpha < \sigma$  because for  $U(C) \geq U(G)$ , it must be that  $\lambda < \frac{1}{2}$ . Since we already established that  $\lambda \geq \frac{1}{2}$ , this is a contradiction, and  $P(E) + P(C) = 1$  is *not* an equilibrium if  $\alpha < \sigma$ . If  $\alpha \geq \sigma$ , we find the following conditions that must hold for the donor to mix between E and G:

$$c = \sigma \quad (30)$$

$$\lambda \leq \frac{1}{1 + \frac{\sigma}{\alpha}} \quad (31)$$

With either E or C, the recipient will surely enjoy the gift ( $W = 1$ ). Thus, the donor must be sufficiently altruistic, and for him to be indifferent between E and C, the disutility from exerting effort ( $c$ ) must exactly offset the self-consciousness of the donor ( $\sigma$ ). As an example, if  $\sigma = 0.5$  and  $\alpha = 1.5$ ,  $\lambda \leq 0.75$  and  $c = \sigma = 0.5$ .

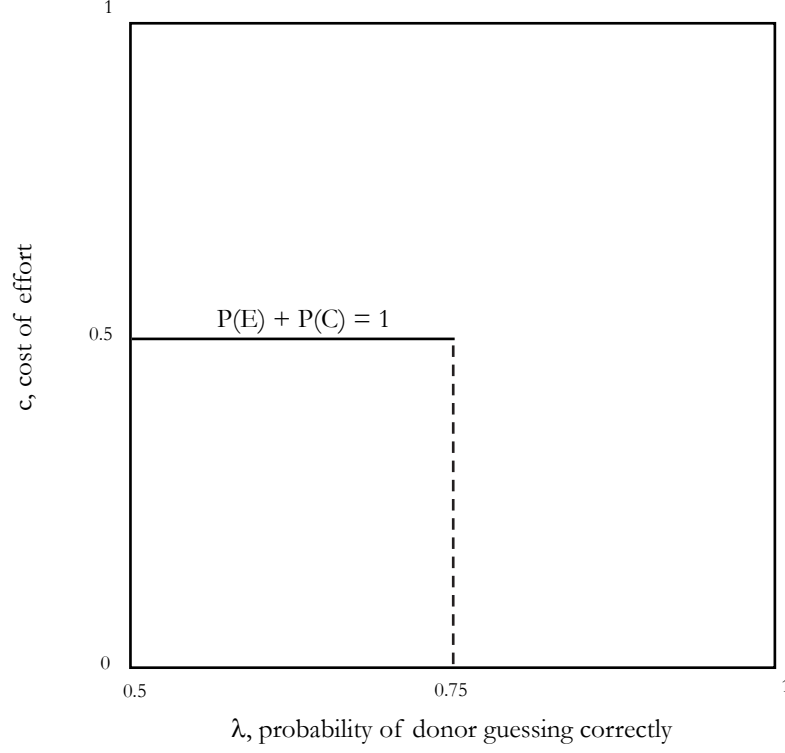


Figure 4: *Graphical illustration of region where  $P(E) + P(C) = 1$  is an equilibrium for  $\alpha = 1.5$ ,  $\sigma = 0.5$*

#### 4.2.3 $P(G) + P(C) = 1$

$$U(G) = U(C) \geq U(E) \quad (32)$$

$$\lambda(\alpha + \sigma\hat{e}) = \alpha \geq \alpha + \sigma\hat{e} - c \quad (33)$$

In this equilibrium, the donor would never exert effort. Hence,  $\hat{e} = 0$  even if the recipient receives the correct gift, ruling out sentimental value. Therefore, the recipient's

valuation of the gift,  $W$ , must be the same in either the gambling or cash case. This is only possible with the the following conditions:

$$\lambda = 1 \tag{34}$$

$$c \geq 0 \tag{35}$$

This is intuitive: if  $\lambda < 1$ , giving cash is more efficient than gambling since  $W = 1$  is guaranteed. Only when  $\lambda = 1$  is the payoff from gambling equivalent to that of cash. The donor would not choose to exert effort because the recipient would assume that  $\hat{e} = 0$  regardless.

#### 4.2.4 $P(E) + P(G) + P(C) = 1$

For this to be an equilibrium, the donor must be indifferent among all possible actions. So,

$$U(E) = U(G) = U(C) \tag{36}$$

$$\alpha + \sigma\hat{e} - c = \lambda(\alpha + \sigma\hat{e}) = \alpha \tag{37}$$

If we let  $P(E) = p$ ,  $P(G) = q$ , and  $P(C) = 1 - p - q$ , we get the following expression for  $\hat{e}$  in terms of  $p$  and  $q$ :

$$\hat{e} = \frac{p}{p + \lambda q} \tag{38}$$

$$= \frac{1}{1 + \frac{q}{p}\lambda} \tag{39}$$

To work with the two independent variables  $p$  and  $q$ , we rearrange (38) to be dependent only on the ratio of the two. Simplifying, we obtain the following expressions:

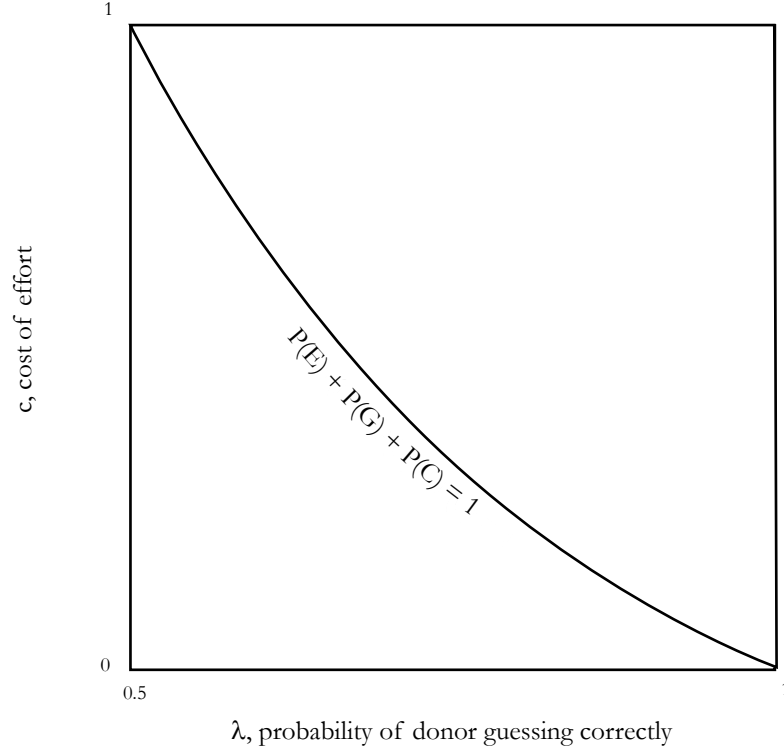


Figure 5: *Graphical illustration of region where  $P(E) + P(G) + P(C) = 1$  is an equilibrium for  $\alpha = \sigma = 1$*

$$\frac{q}{p} = \frac{1 - c}{c\lambda} \quad (40)$$

$$\hat{e} = \frac{\alpha(1 - \lambda)}{\sigma\lambda} \quad (41)$$

$$c = \sigma\hat{e} = \frac{\alpha(1 - \lambda)}{\lambda} \quad (42)$$

### 4.3 Discussion

Let us revisit our outcomes and determine the likelihood of each. For simplicity, let us first assume that  $\alpha = \sigma = 1$ .

1. **Non-monetary gift, correct** It is possible for the donor to exert effort and give the correct gift for any combination of  $\lambda$  and  $c$ . For lower costs and higher uncertainty about the recipient, the donor will almost always choose effort. The underlying concept here is that if the donor cannot strongly determine what gift the recipient prefers, he would rather pay the price of doing some work to learn more about his preferences than risk choosing the wrong gift. Likewise, if the cost of effort is low, then the donor does not lose much in exchange for a guaranteed correct gift. It is interesting to note here that desperate times really do call for desperate measures: if the donor has no idea which gift the recipient prefers ( $\lambda = \frac{1}{2}$ ), he would be willing to exert effort for *any* cost,  $c$ .
2. **Non-monetary gift, incorrect** The donor may have also guessed at the donor's preferences, in which case there is a probability  $1 - \lambda$  that he selects the wrong gift. Since this can only occur if he gambles, the donor must face higher costs of effort and higher certainty. He then mixes between guessing and exerting effort to find the right gift, where the probability of exerting effort is determined by  $\lambda$  and  $c$  so that the added benefit from receiving  $\hat{e}$  exceeds the

cost of exerting effort. It is interesting to note that this can only be an outcome if the donor is mixing between exerting effort and not. The donor's motivation in guessing the recipient's preferences is to trick the recipient into believing that he had indeed exerted effort, but the recipient would be hard to convince unless the donor was expected to mix between G and E. This can be an equilibrium when the cost of effort is high or he is reasonably certain about the recipient's preferences, in which case he may not find it worth the cost of effort to remove the remaining uncertainty. In fact, if he *does* choose the right gift, the recipient might be led to believe that he had exerted effort even if he did not. Thus, when the donor is relatively sure about what the recipient wants, it is more advantageous for him to save his time and energy and still get some benefit of the doubt. Likewise, if the cost of effort is very high, the donor may also find it better to go along with his initial belief about the recipient's tastes rather than pay the cost of effort.

3. **Cash gift,  $e = 0$ :** Depending on the donor's  $\lambda$  and  $c$ , he may actually find it best to give a cash gift. This usually happens when the cost of exerting effort is high or the donor has relatively little information about the recipient's tastes. A cash-gift outcome can arise from both pure-strategy and mixed-strategy equilibria. A donor with a high cost has very little incentive to exert effort, and a

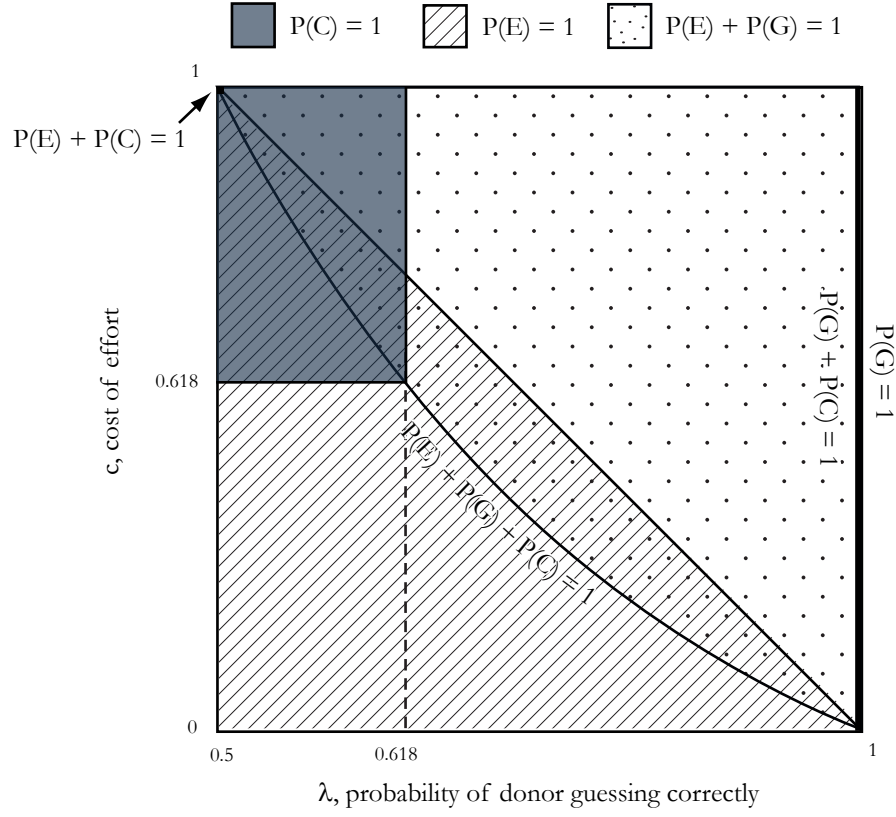


Figure 6: *Graphical illustration of equilibria for  $\alpha = \sigma = 1$*

donor who is uncertain of what the recipient likes will be better off giving cash than take the risk of choosing the wrong gift. The donor may also mix between giving cash and taking a gamble for  $\lambda = 1$ , since  $\hat{e} = 0$  regardless of what he chooses, both options give him the same payoff. In addition, he is guaranteed to choose the correct present even if he takes a gamble. He can also mix among all three actions (cash, effort, and gamble) if the added benefit from the  $\hat{e}$  term



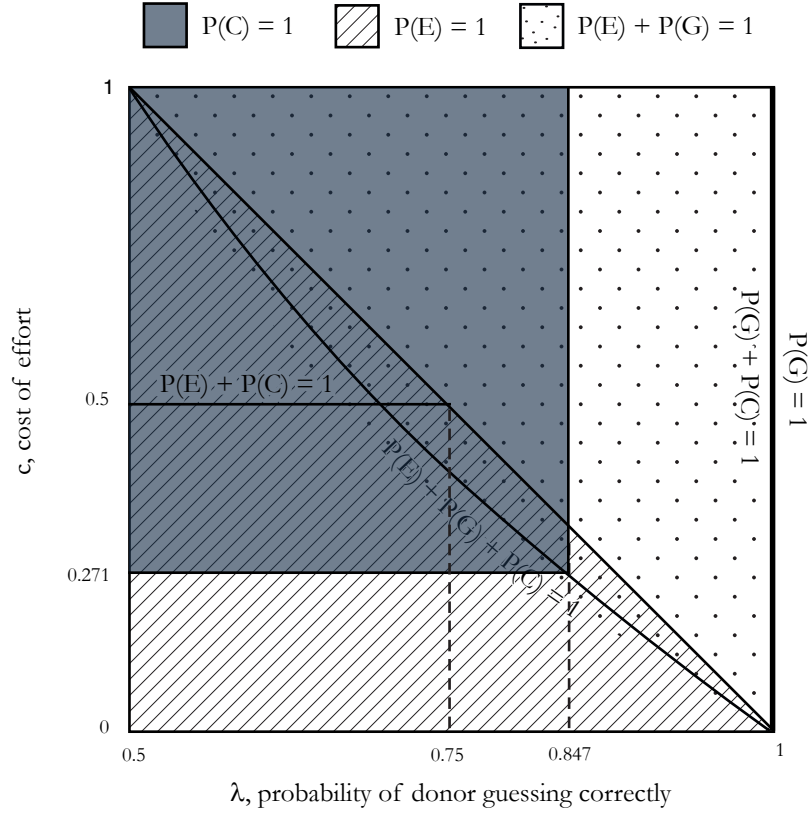


Figure 7: *Graphical illustration of equilibria for  $\alpha = 1.5$ ,  $\sigma = 0.5$*

exactly offsets the cost of effort and decreases as  $\lambda \rightarrow 1$ . In other words, as the donor becomes more certain of the recipient's preferences, the recipient becomes increasingly doubtful of his effort.

Figure 6 summarizes the results from our analysis for  $\alpha = \sigma = 1$ . Note that there are regions where multiple equilibria exist. In Figure 7, we allow  $\alpha = 1.5$  and  $\sigma = 0.5$ . In Figure 8, we experiment with  $\alpha = 1$  and  $\sigma = 1.2$ . It is clear that cash

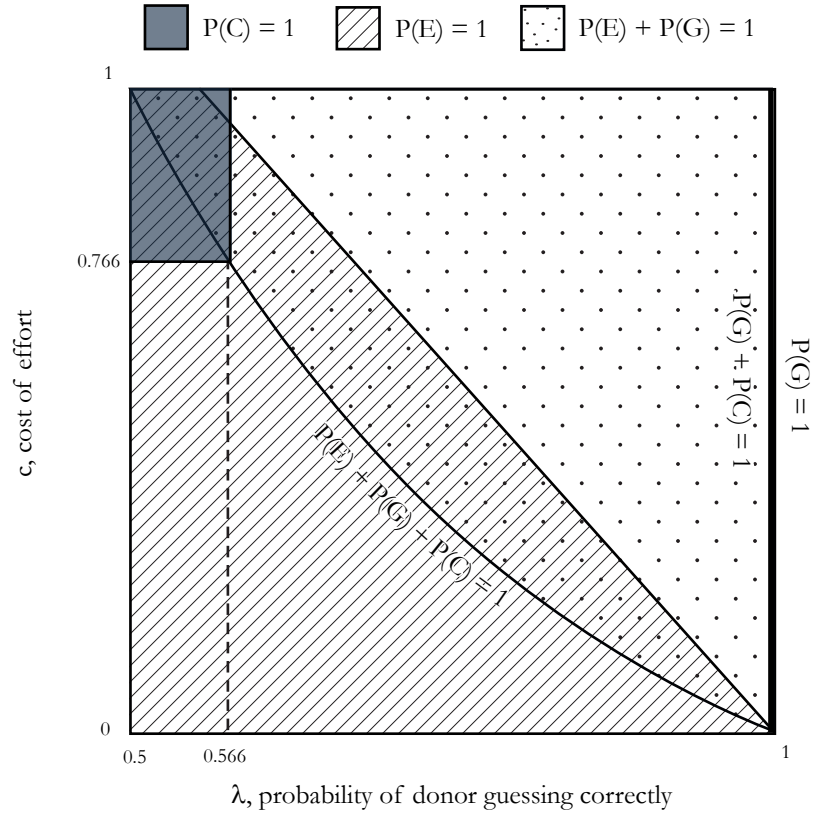


Figure 8: *Graphical illustration of equilibria for  $\alpha = 1$ ,  $\sigma = 1.2$*

gifts are more common under high altruism and low self-consciousness, gambling is more attractive when altruism is low, and exerting effort is more worthwhile when altruism and/or self-conscious are high.

### 4.3.1 Explanations for common gift-giving patterns

To put our results in context, we examine some common gift-giving standards that can be explained by our model.

*Bonuses to employees.* — In most business professions, employers routinely give cash gifts (e.g. Christmas bonuses) to their employees. As an employer, one is unlikely to know each employee on a personal level—at least not to select an appropriate gift for them. While this might usually call for some effort, between running an office and handling clients, these employers are unlikely to have enough free time and energy to incur the cost of effort. It may also be that employers are less self-conscious since they feel of higher status than their employees. In some cases, the employee may actually reciprocate the gift, but these gifts never consist of money. Unlike the employer, the employee may be very self-conscious (and looking for every opportunity to make a good impression) and face a lower cost of effort.

*Intergenerational giving.* — Gift-giving within families presents some interesting customs. As children grow older, parents begin to give them cash, not because they have a high cost or are uncertain (neither should be the case), but rather because they are extremely altruistic and not self-conscious. After all, they are not seeking social approval from their children and want the best, most efficient gift for them.

*Lavish gifts in courtship.* — It is not uncommon to see individuals spend enormous

amounts of effort to develop creative and extravagant gifts ideas for their significant other. Individuals in relationships are both seeking to impress (indicating high self-consciousness) and caring about each other (indicating high altruism), making them more likely to exert effort in searching for the best gift possible.

## 5 Conclusion

Although there are several suggestions in related literature as to why economic rationale fails to predict actual behavior, such as social stigma attached to cash gifts, to the best of my knowledge this is the first paper to link sentimental value with the donor's effort. After all, the task of identifying an appropriate gift is a crucial part of gift-giving. The donor wishes the recipient to believe that he spent time and energy to pick out a desirable gift; that is, he derives added benefit from a well-chosen non-cash gift. Giving cash would show that the donor did not incur any costs to consider what the recipient might like. This may explain why cash gifts are so infrequent despite their economic efficiency.

Of course, this model does not address the fact that there are more than two goods to choose from when giving a gift. If we were to increase the number of gift options, donors would likely be more inclined to exert effort since the probability that they select the correct gift is lower. A more appropriate method of measuring

the “quality” of a gift would be to plot a spectrum of many possible goods, with each point representing a different gift option. There would be either one or several points that are marked desirable by the recipient, and the quality of a gift would be measured in terms of the distance between that point and the closest desirable gift. In addition, the assumption that effort is binary is rather unrealistic. A better alternative would be to allow for various thresholds of effort, especially if dealing with more than two gift options, where increasing effort will further narrow down the donor’s choices. A potential effect of this would be that donors who are more certain about the recipient’s tastes would choose lower effort levels at lower costs.

This model also does not reward quality of information, which can become a problem in the case of close friends and immediate family who are actually at a disadvantage for knowing the recipient too well. Consider a case in which a close friend and a casual friend both happen to give the correct gift. The recipient believes that the casual friend chose the gift because he exerted effort (even if he just happened to choose correctly by chance) and that the close friend chose the gift because he knew the recipient better. Thus, the close friend would not get the additional utility from  $\hat{e}$ . Interestingly enough, it’s true that we often times take close friends and family for granted, even sometimes expecting that they would choose the correct gift. However, a more realistic model would take into account how well the donor understands the recipient’s preferences in calculating the sentimental value of a gift.

An interesting extension of this problem would be to look into the market for gift cards. For the economically-minded recipient, a gift card to an apparel store would be preferable to a pair of socks of equal value in that the gift card allows for more flexibility for the recipient and less risk for the donor. However, what does a gift card say about how much thought and effort the donor put into the gift? The answer would depend on how specific the card is. For example, a gift card to a music store illustrates more thought than a gift card to a department store, especially if the recipient enjoys music. At the same time, a gift card to a department store offers the recipient greater product variety and would still allow him to derive positive utility from it. The donor would therefore need to choose how specific he would like the gift card to be, with a specific card offering a greater return to perceived effort, and a general card bearing smaller risk.

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