Experiments on Charitable Giving: Study of the impact of restricted choice and imperfect information on warm glow givers

Zarak Mirza

Submitted to the School of Economics for the degree of Doctor of Philosophy

July 2017

Acknowledgments

I want to thank my supervisors Professor Christopher Heady and Dr. Edward Cartwright for their invaluable advice, tremendous patience, unmatched wisdom and unparalleled support at every step. I am deeply indebted to both of them. I also like to thank Professor Miguel, Professor Davidova, Dr. Collier, Dr. Pearson, Dr. Guy, Dr. Mathan, Dr. Adelina, Dr. Zaki, Dr. Barde and Dr. Alastair for their valuable time.

I am grateful to the School of Economics, University of Kent for the financial support for the experiment work. Special thanks to Jess, Emma, Siobhan, James, Hillary, Tracy, Charlotte, Catherine, Katy, Rosanne, Katie, Lisa and Steve for being truly awesome bunch.

Thank you to my family for their unflinching support, their patience, their love and uncompromising belief in me. This work would not have been possible without them. A very special thank you to the great man who is my Dad, who pushed me to believe in myself and undertake this PhD.

A special thanks to Matt for all his help and the laughs. Thanks to Daniel for tolerating me as his office mate. Thanks to Alessandro for all the coffee breaks. Thanks to Denise for all her help. Thanks to Christian for sharing my pain, Joshua for tolerating my endless questions, Sifaat for always smiling, Francis for being my brother and Neha for the truly desi touch. A special thanks to Gin for the coffee talks.

Thanks to Mahreen for her comments, help and support, you are truly the oracle and an amazing friend.

A very special thank you to Dr. Fernanda Lopez de Leon and Dr. Michalis Drouvelis (University of Birmingham) for their invaluable comments.

For my dad and my late elder brother.

Contents

Tables

Figures

Chapter 1
Introduction

1.1 Motivation

According to Charities Aid Foundation[1], charitable giving is a £10 billion annual business in the UK. A non-profit endeavour with a corporate outlook: mission statement, target audience, marketing, promotions etc. Like any good business, charities compete for market share by matching potential donors with their objectives. Charities aim to increase the amount and the frequency of donations. To this end charities pursue strategies based on the understanding of donor behaviour. If the charitable organizations were to type in "Charitable Giving" in google they would get over 5 million results. These results range from blogs, newspaper articles, books to specialized sites. If the search is narrowed down to "Charitable Giving Motivation" google would churn out over 800,000 pages.

A closer look at these results reveal that there is a considerable body of literature available on philanthropy stretching across multidisciplinary fields. Research on the topic appears in journals on economics, anthropology, social psychology, sociology, political science, marketing, biology, neurology and brain sciences etc. Most of the studies have either used surveys, experiments or empirical data to understand the philanthropic motives (Bekkers & Wiepking, 2011; Sargeant & Woodcliffe, 2008; Havens et al., 2006; Lindahl & Conley, 2002). It is obvious that if charities need to choose between courses of action for fundraising they face a daunting task.

Let us suppose that marketers, managers or policy makers are tasked with anticipating how people respond to charitable giving and design fundraising activities. A

[1] Registered charity number 268369: UK Giving Report 2015. https://www.cafonline.org/docs/default-source/personal-giving/caf_ukgiving2015_1891a_web_230516.pdf?sfvrsn=2 [Accessed 13 June 2016].

general perusal of the literature would reveal that the charitable motivation can be classified under different headings: psychological benefits, values, reputation of the organization, religiosity, need, solicitation, costs & benefits, efficacy and altruism (Bekkers & Wiepking, 2011). To facilitate this seemingly mammoth task they classify the literature under two major headings: psychological reasons and economic reasons.

1.1.1 Psychological reasons

A good place to start would be to take a closer look at different motivations for giving. Initially they might find that people are driven by the "social responsibility norm" (Berkowitz & Daniel, 1964) or they are simply pro-social, inclined to lend a helping hand (Staub & Baer, 1974).

Alternatively, they might find giving to be a matter of attitude, based on core values. Core values might emanate from a set of ethos that connects the individual with society, a notion of social justice (Reed & Selbee, 2002). Sense of justice translates into pro-social behaviour which increases giving (Van Lange et al., 2007), a behaviour which is shaped by the sense of obligation (Wilhelm & Bekkers, 2010).

At times it comes down to how a charitable organization is perceived. If the work of the organization is viewed as making a considerable difference it would attract donations (Trussell & Parsons, 2007). Other times it the organizations that profile potential donors and sift out those who would be more inclined to donate (Bekkers, 2005). Organizations identify people with extensive social networks as a possible target for soliciting donations (Wiepking & Maas, 2009). However this exercise of too and fro is a product of time and doesn't necessarily increase the number of donors but rather is geared towards retaining those who are charitable.

Charities may also find that selecting a worthy organization or cause is based on the impact factor of the donation. If donors are shown proof about the efficacy of donations they will be inclined to contribute (Smith & McSweeney, 2007). Sometimes giving can result in rewards and benefits for the contributor. Donations solicited via lotteries tend to be higher as compared to those solicited through more conventional methods (Landry et al., 2014).

Charities may find that it might simply come down to religiosity. There is a positive relationship between religiosity and giving (Bekkers & Wiepking, 2011). In fact religious giving can easily be extend to secular causes (Bekkers & Schuyt, 2008), and might even result in comparable donations (Wilhelm et. al., 2007).

1.1.2 Economic reasons

The charities will soon realize that apart from mostly psychological motivations there are equally compelling economic arguments for charitable giving. altruism and warm glow. Under altruism, welfare of others enters the individual's utility function, an altruistic person would be more inclined to give if it enhances the utility of the recipient (Becker, 1976). However, the same reasoning cannot be simply extended to a warm glow giver who is influenced by the internal satisfaction from the act of giving, a form of 'impure altruism' (Andreoni, 1989, 1990). Charities might find it worthwhile to keep this distinction in mind in their efforts at fundraising.

The charities might find that sometimes the donors look for gifts and fringe benefits as an incentive to increase contributions (Buraschi & Cornelli, 2002). At times a simple tax incentive can lead to an increase in the desire to give to charity; elasticities range between -0.3 and -0.5 (Randolph, 1995) or -0.79 and -1.26 (Auten et al. 2002).

The underlining motivation could be to enhance one's reputation among peers (Wiepking, 2008; Clark, 2002). People tend to be charitable when they sense that their contributions would be made public (Bereczkei et al., 2007) or at least is observed by a former or subsequent contributor (Soetevent, 2005). An agent could be pro-active and give to avoid the negative connotation of being perceived as lazy (Filiz-Ozbay & Ozbay, 2014) or she might simply be driven by a desire to be liked and respected by others (Ariely et al. 2009). However, core values and seeking to enhance reputations are personal traits and product of the environment. Changing circumstances might render both the motivations as impediments.

The charities might come across strand of literature which looks at the effects of category reporting (e.g. Li & Riyanto 2017; Cartwright & Patel 2013; Andreoni & Petrie 2004; Harbaugh 1998a, 1998b). The question of interest here is whether category thresholds above which donations are publicized can increase donations. A category threshold results in similar trade-offs to that of a minimum constraint in that there will be some with incentives to increase their donation and some with incentives to decrease their donation. The main focus with category thresholds, however, is one of signalling. In particular, the motive to give more than the threshold is to obtain a public signal of generosity (e.g. Munoz-Garcia, 2011; Harbaugh 1998a; Glazer & Konrad 1996).

Another strand of the literature looks at suggested donations (Adena et al., 2014). The evidence here is mixed. For instance, Park et al. (2017), Luccasen & Grossman (2014), Adena et al. (2014) and Charness & Cheung (2013) find that suggestions increase giving. Relatedly under certain conditions a threshold increases contributions Glazer (2015) and Rondeau et al. (2005). While Goswami & Urminsky (2016), Murphy et al. (2015), Edwards

& List (2014) and Karlan & List (2007) report no significant effects while Reiley & Samek (2015), Carlsson et al. (2015), Shearman & Yoo (2007) and Briers et al. (2006) find that suggestions can reduce giving. The mixed evidence would suggest that the level of suggestion is crucial to have a positive impact (Charness & Cheung, 2013; Dale & Morgan, 2010). This finding, however, is derived in a context where suggestions were nothing more than suggestions. Also, the main focus has been on suggestions that convey some information either about the charity or norms of giving (Murphy et al., 2015; Croson & Shang, 2013; Shang & Croson, 2009; Croson & Shang 2008).

Now, let us suppose that charities have sifted through the myriad of information and have designed a market strategy which focuses on matching motivations with mission statement. Their understanding that motivational factors influence the choices people make might encourage them to strategically "nudge" people's choices without dismantling their preferences (Sunstein & Thaler, 2008). Effective use of nudges – default amounts, menu of amounts, specific time bound amounts – can positively affect fundraising appeals (Goldstein & Dinner, 2013).

What if after all the effort charities concluded that effecting nudges requires considering the opportunity cost of giving. Subsequently, they are faced with number of questions: What if the nudge is perceived to be restrictive? What if motivations for giving can be shown to be seriously limited by this restriction? What if this restriction increases the explicit and implicit cost of giving? How would this restriction affect the warm glow givers? The answers to these questions could be of importance to charities as otherwise they might find their fundraising strategies to be severely limited.

1.1.3 Contribution

In this research, we lend a helping hand to our searching charities and investigate how opportunity cost effects giving behaviour. We attempt to separately measure both the explicit and implicit components of charitable donations.

To put these differences in context we could put charitable solicitation on a spectrum from instances with a binding minimum (possibly to recover some fixed costs), to situations where there are suggested amounts are framed in a way that appears like a minimum (such as sponsorship schemes), to situations where the suggestion is a very loose piece of information about, say, the amount other people have given in the past. Previous experiments have been positioned on the latter end of this spectrum with loose suggestions or information. Our setting is positioned at the other end of the spectrum with an explicit minimum amount; the explicit cost of giving.

Implicit cost, the other primary component of opportunity cost, is taken to be the effort in acquiring information about charity or a charitable cause. The importance of the cost stems from the assertion that the warm glow giver would be interested in selecting a charity that would yield the highest level of satisfaction. Recall warm glow giver is more interested in the act of giving and therefore it would be important for such a donor to actively seek information on charities. Charities either signal information about their mission/activities or potential donors utilize screening to gauge their performance; literature covers both these forms separately as a counterweight to imperfect information.

Information tends to be important especially for those who give donations regularly and give a considerable amount (Karlan & Wood, 2017). Information could be in the form of money spent on overhead costs and on actual charitable work, the latter

attracting more donations (Gneezy et. al., 2014; Li et. al., 2012). Large and small donors tend to see ratings as a valuable signal about the performance of the charity (Brown et. al., 2017; Yoruk 2016). Sometimes charities use specific information about how many persons have been helped as a result of donations, a technique which increases charitable giving (Erick & Fischhoff, 1998). Sometimes the charities include pictures of the recipients which also increase overall donations (Feld et. al., 2013). Facebook is one of the more popular platform and studies have shown that it increases donations (Saxton & Wang, 2014). Studies have shown that by announcing past contributions charities signal their quality (Vesterlund, 2003; Andreoni, 2006a). Charities voluntarily signal their quality by providing information on matching grant (donated amount is matched by either an anonymous or well know benefactor) from a well-known philanthropist (Karlan & List, 2012). Which of these methods, signalling (information voluntarily provided by the informed party, Mas-Colell et al., 1995) or screening (uninformed party finds a mean to solicit information, MasColell et al., 1995) lowers the implicit cost of giving for warm glow givers seems to be missing in the literature.

As far as we are aware we are the first to focus on minimum donations and comparing screening with signalling. We would argue that it is important to do so in order to build a complete understanding of how interventions can influence giving.

1.2 Outline

The thesis consists of four interconnected chapters. The first of which proposes a theoretical model of giving derived from religious motivation. To estimate the model a series of experiments are undertaken both measuring the between-subject and within-subject variations. The thesis can be practically divided into two parts. The first part focuses

on the explicit cost, how restriction affects giving behaviour among warm glow givers. The second part deals with the implicit cost of giving by looking at the type of information that solicits maximum donations.

Chapter 2 proposes a theoretical model based on religious giving. The chapter compares giving behaviour within two popular religious dogmas. We investigate different approaches of religious giving and try to ascertain if any one of them could be considered as restrictive. We use the premise of Islamic compulsory giving of zakat together with voluntary giving of sadaqa to compare and contrast giving behaviour under restrictive and unrestrictive conditions. We argue that religious model could be adapted to explain secular giving by considering utility maximization. We essentially rely on Berger's (1967) argument that characterizes religious giving as being similar to a market transaction; religious giving entails consumer behaviour. Using a utility maximization function we construct a general model to explain giving behaviour. In order to see the changes in the giving behaviour we vary the parameters. We find that charitable giving is lower conditional on the value of the parameters; warm glow giver gave less when restricted to a specific amount. We conclude that charitable giving has an explicit cost which needs to be empirically tested.

A charity will clearly be interested in aggregate giving over a number of potential donors, all with different degrees of preferences and income. The overall effect of imposing a minimum will, thus, depend on the distribution of preferences and income within the population. It may be that a carefully set minimum donation can increase total giving. It seems clear, however, that a badly set minimum could decrease total giving. The overall effect is, therefore, somewhat ambiguous which necessitates experimental work.

In Chapter 3 we test the prediction of the model through a between-subject experiment using a modified dictator game setup (experiment #1). We consider what

happens to giving behaviour when we impose a specific cost of giving: a specific restriction. The explicit cost is imposed in terms of the minimum amount of donation as well as the possibility of losing on high end items and relatively high payoff. We incorporate seven specific and one choice charity, we provide some basic information on the charities. We divide the subjects into two groups and expose one to the restricted treatment. We estimate the model using Count, Probability and Tobit type-I models and find that restriction does increase the cost of giving on both the intensive and extensive margins.

In Chapter 4 we motivate another experiment but this time we use the within-subject design and a modified linear public good game setup (experiment #2). In experiment #2 our aim is to test whether results from experiment #1 could be replicated by utilizing a more complexed decision making process. We increase the number of rounds with all subjects being exposed to the restricted and unrestricted treatments. We also make the decision making process more competitive by introducing group dynamics; the higher the individual contribution to charity the greater the chances of the group winning. The subjects from the winning groups were entered in a draw to win high end items in addition to a possible payoff. We use similar estimators as in chapter 3. We were able to show that restriction decreases the giving on both the intensive and extensive margins. In addition, we were able to show that the timing of the restriction played an important role in determining the level of total donations.

In Chapter 5 we study how information affects the implicit cost of giving. We modify experiment #2 by dropping the restricted treatment rounds and comparing unrestricted rounds across two different sources of information. We compare screening with signalling to see which source of information has a greater impact on giving behaviour. Within-subject variation across eight rounds were observed. As with previous experiments, Count,

OLS and Tobit type-I models were used. We find a general preference for signalling over screening. We believe that this completes the picture of opportunity cost playing a significant role in the giving behaviour across warm glow givers.

Chapter 6 is the final chapter of the thesis; we provide an overview of all the individual chapters and give our main conclusions, policy implications and recommendations for future research.

Chapter 2
Charitable Giving:
A Theoretical Warm Glow Model of Restriction

2.1 Introduction

There is considerable body of literature on charitable giving stretching across multidisciplinary fields. These studies highlight the importance of behavior in giving and in fact some argue on use of such findings to develop strategies that could be employed to influence donations (Camilleri & Larrick, 2014; Allcott & Mullainathan, 2010; Sunstein & Thaler, 2008; Johnson & Goldstein, 2003). Looking at behavioral patterns may offer clues as to how heterogeneous economic agents decide on charitable giving. In order to find the common thread, we explore a giving mechanism whereby heterogeneous agents act in a similar fashion and for a specified cause. Religious motive for giving is investigated in detail and a theoretical model is extrapolated from its basic tenets.

Studying individual behavior within the context of religious decision making provides for a unique approach. Religious giving is akin to warm glow. Under this concept the act of giving is what gives satisfaction as opposed to the efficacy of the actual donation. As the reward for religious giving is spiritual in nature, utility is primarily derived from the act of giving (which includes implicit cost of giving), as the final reward is usually not of this world. This is not to suggest that there is no altruistic giving in religion, it is only possible if a worldly reward is pursued. However, because the ultimate reward is spiritual (and therefore not observable) the act of giving becomes more relevant to the donor.

According to Paloutzian et al. (1999) two-thirds of the world's population has various religious affiliations which can be attributed to intentions and behavior. Research

has shown that percentage of income given as charitable donation increases with religiosity (Casale & Baumann, 2015; Kim, 2013; Forbes & Zampelli, 2013). Given the choices of religions, we only look at those that levy some type of compulsory deduction on the adherents. Furthermore, it was necessary that the religious charity was practiced by majority of its followers as this would help in identifying the homogenous behavior patterns in giving. Besides it would allow the model to support external validity.

Christianity and Islam stress the importance of charity (Ranganathan & Henley, 2008). Whereas there are other religions that also subscribe to some form of charity, only these two religions were considered on the strength of their number of aficionados.

The adherents of Christianity are expected to earmark 10% of their income for charitable purposes, known as Tithe. Whereas research shows that the New Testament does not require Christians to Tithe (Blomberg, 2013) there are number of biblical teachings that encourage charitable giving. Charity is viewed as an act of "investing with God" (Lk 6:38), considered as "sacrificial and generous" (Mk 12:41-44), is "met with God's blessing" (Prov 19:17). As an example for the followers, certain personalities have been highlighted for their charitable ways in the New Testament (Brister et al., 2016).

Modelling Christian notion of charitable giving presents number of challenges. The Christian concept of giving has evolved from laws, letters, gospels and philosophies which have mandated charity through different practices. The multifarious sources of giving result in lack of uniformity, making identifying a single mechanism difficult to model. Moreover, studies have also shown variations in charitable giving across different Christian denominations. For instance, Bowen (1999) and Forbes & Zampelli (1997) find Protestants to be more charitable than the Catholics. Furthermore, role of religiosity in giving behavior depends on number of issues such as relationship between giving and attending church

(Gruber, 2004). The variations in the mode and behaviour of giving would require controlling for such aspects, making the model complicated and too specific for the intended purpose.

In comparison, the Islamic concept of charitable giving tends to be uniform. In Islam two forms of charity can be distinguished in terms of marginal rate of giving: a mandatory zakat and a voluntary sadaqa. Zakat is charged at the rate of 2.5% (explicit cost) on excess wealth – the portion that does not have a liability or claim against it. The amount is due at the end of each Islamic year. The amount and timing of zakat remains uniform across denominations and cultural variations.

On the other hand, sadaqa is voluntary giving which does not have a preordained amount or form and can be given at any time during the year. The purpose of voluntary giving is to allow for a balance between those who qualify to give zakat and those who are unable to do so. Because zakat & sadaqa are the closest to the notion of homogenous giving both in theory and in practice, they provide a simplified version of religious giving that can be modelled with less restrictive assumptions and with greater possibility of external validity.

The rest of the chapter will be set out as follows. After the introduction, we present the concepts of zakat and sadaqa. Next, we motivate the reasons for developing a different theoretical framework. After this we present the model and its implications. We then move on to discussion and conclusion.

2.2 Religious concept of giving

In Islam the redistribution of wealth is mandated through charitable giving. This stems from the belief that everything belongs to God and man is the vicegerent of God on earth. Among other responsibilities, a Muslim is to ensure that socio-economic justice prevails

throughout the society. Islam does not however preach equal distribution but rather equitable distribution of wealth. For achieving this end, the religion enforces two similar but functionally different mechanisms of charitable giving, zakat and sadaqa.

2.2.1 Zakat

In order to understand the concept of zakat it is essential to have a brief background of the basic tenets of Islam. The word Islam means peace and its follower's belief that it was revealed to Muhammad. The Muslims regard Muhammad as a restorer (as opposed to a founder) of past monotheistic faith which is traced back to Adam. The Quran (Holy Book of the Muslims) and the practices of Mohammad constitute the Sunnah. While the words, actions and personal attributes of Mohammed makeup the Hadith (Maududi, 1974). Together they form the foundation of theological thought and the basis of legal system, known as the Sharia (Coulson, 2011).

Muslims are required to adhere to the Five Pillars of Faith; these are essential religious duties and practices (Lippman, 1995; Espposito, 1998). The first is belief in the oneness of God and Muhammad being the final messenger. Associating partners with God or negating God's absolute sovereignty is tantamount to disbelief (Lang, 1996). The second pillar is the obligatory ritual worship which is to be performed five times a day. Prayer represents a necessary expression of gratitude and worship (Esposito, 1998). The third pillar is zakat (alms), a mechanism for redistribution of wealth (Farooq, 2008; Siddiqui, 2009). The fourth pillar is fasting in the month of Ramadan. During the thirty days the Muslims are to refrain from eating and drinking from dawn till dusk. Even though fasting is compulsory, in certain circumstances flexibility is permissible (Schimmel, 1992). The last

pillar of faith is Hajj (pilgrimage), this is to be undertaken by a Muslim once in his/her lifetime during the Islamic month of Dhu al-Hijjah (Ali et al., 2004).

The third pillar zakat, is a form of obligatory charity. It's not pure charity since it is not purely voluntary; as it is owed on wealth considered to be held by an individual as a trust from God (Esposito, 1998; Sabahaddin, 1993). Zakat is not a pure tax either as it differs from taxation on grounds of theological foundations, legislative resources and achievable objectives (Al-Qaradawi, 1999; Abo Baker & AbdulRahman, 2007).

Zakat mainly serves two purposes according to Islamic ideology, the purification of the soul and the redistribution of wealth (Hudayati & Tohirin, 2010). The word zakat means purification, praise, blessing, to grow, increasing and goodness (v91:9; v53:32; v9:102; v34:39; v2:276)[2]. As mentioned, the basic concept stems from the assertion that all wealth has been provided by God as a trust (v31:20; v2:3,29,254,284; v25,180; v5:88; v8:114,115; v13:22,26; v42:12) and therefore the poor in the society have a right in it (Sadeq, 1980; Al-Qaradawi, 1999).

Zakat is of two basic types: zakat al-fitr and zakat al-mal (Zayas, 2003). Zakat al-fitr is an amount equivalent to 2.5 kilogram of staple food paid on the first day following Ramadan (end of Fasting). This is relatively a small amount with the primary purpose of enabling the poor to share in the festivities of Eid (celebrations marking the end of the fasting month). Zakat al-mal, which is the focus of the paper, is a charge on the wealth when it crosses a prescribed limit referred to as nisab and is primarily meant for redistribution purposes (Rahman, 1980; Sabahaddin, 1993; Sadeq, 1980; Rahman, 2007; Zuhayly, 2008).

[2] Quranic Verses.

The Quran does not clearly mention or define zakat deductible assets other than gold, silver and spoils of war (v8:41). Other assets are mentioned in general such as wealth (v9:103), agricultural produce (v2:267), wealth earned over a course of time (v2:267) and what is grown from the earth (v2:267). In the Hadiths specific categories of items are more clearly defined, though the list is not exhaustive. The Islamic jurists[3] have different opinions of what sources of wealth fall under zakat. These viewpoints range from a narrow definition of gold and short term deposits to much broader interpretation of buildings, furniture and machinery (Kahf, 1997).

The rate of zakat is based on the Hadith of the Prophet, which is agreed upon by majority of Islamic Jurist (Zaman, 1980). On gold, silver, liquid assets the rate is 2.5%; on agriculture produce: irrigated land 5%, non-irrigated 10%; livestock 1.5% to 2.5%; mines and treasure trove 20% of its value (Norulazidah et al., 2010).

As mentioned earlier, zakat only becomes mandatory when it crosses a prescribed limit which is referred to as nisab (Qaradawi, 1999). Nisab is based on two principles, first that amount must be in excess of the person's personal needs and second it must have remained in the possession of the person for one full year[4]. With reference to gold the nisab is 85 grams of gold, for silver it is 595 grams of silver, for liquid assets amount equivalent to 85 grams of gold. With reference to agriculture produce it is 653 kg of the final harvest. With regards to farm animals jurists tend to differ, Hanafi prescribes the limit of more than 30 cows, more than 41 goats, more than 5 camels; Shafi proposes more than

[3] The Quran, the Hadith and Ijtihad (independent reasoning) are the three main sources of Islamic law. The science of these religious laws is referred to as Fiqh and expert in the field are known as Islamic Jurists (Faqih). The five popular jurists in Islam are: Imam Abu Hannifa, Imam Malik bin Anas, Imam Muhammad al-Shafi, Imam Ahmad bin Hanbal and Imam Jafar al-Sadiq (Ann, 1981).

[4] This time limit is not applicable to agricultural crops as zakat is due when crops are harvested.

30 cows, more than 40 goats whereas other animals are not considered; Maliki and Hanbali are by and large silent on the matter (Rehman & Ahmedov, 2011).

To summarize, zakat is only permissible if the liability free wealth crosses nisab and is held for one year, in case these conditions are not fulfilled zakat is not due. Recall that the idea behind zakat is for equitable distribution of wealth in society and therefore there could be a possibility that those who are unable to give zakat can end up claiming it. For instance, there could be a situation whereby a person who otherwise was wealthy enough to pay zakat can become sufficiently needy (substantial business loss or serious illness etc.) to lay claim to zakat funds. In other words, a person can transform from a facilitator of equity to being its beneficiary. This is practically possible as zakat is largely self-assessed and therefore a person can make a case for receiving zakat as opposed to giving it. However, to claim zakat the individual would need to fall in one of the predetermined categories of recipients.

The distribution of zakat is clearly mentioned in the Quran v9:58,59,60 which includes the poor (Fuqara), the needy (Masakeen), to free slaves (Ar-Riqaab), those in debt (Al-Ghaarimeen), the wayfarer (Ibn-us-Sabeel), officials responsible for management of the fund (Al-Amileen), persons who have recently accepted Islam and are in need of money (Mu-Allafatul-Qulub) and those who are unable to carry out an obligation due to loss of wealth (Fi-Sabilillah). It may be mentioned that whereas broad categories have been enumerated, the Quran does not expand on the categories themselves (Benthall, 1999), allowing for a fair degree of interpretation in the matter.

Generally the poor would mean people with sufficiently low income who fall below a minimum standard of living. The poor will include (but not restricted to) anyone who is homeless, orphan, unable to afford a doctor etc. Needy refers to individuals that might not

otherwise be categorized as poor but are in need of financial assistance due to peculiar circumstances. A single mother who is very ill for instance would be classified as needy (Baker & Abdghani, 2011). Even though slavery has been outlawed in most parts of the world, there is still human trafficking and therefore zakat funds can be utilized to buy victim's freedom. Furthermore, anyone who is under debt can claim zakat, however recipients would be prioritized conditional on the size of the debt and ability of the debtor to repay (Mohsin & Ismail, 2013). The definition of wayfarer is relatively wide, from a refugee to someone stranded on the side of road. As long as they are away from home and do not have recourse to cash/funds they are eligible for zakat. The administrator of zakat could be government officials or non-profit organizations that offer to collect and distribute zakat, both are eligible to receive zakat payments for their services (Wahid & Kader, 2010). Lastly, recent coverts or reverts (Islam is believed to be the original religion) are eligible to receive zakat as it strengthens bonds of cooperation and friendship between the old and the new Muslims.

It is permitted in the Quran that either direct payment can be made to the recipient or a more formal channel (such as a government or organization) could be utilized (Mannan, 1986). Pakistan (Shirazi, 1996), Malaysia (Hasan, 1987), Singapore (Ahmad et al., 2006) and Saudi Arabia (Kahf, 1990) have made their Governments responsible for deduction, collection and distribution of zakat funds.

2.2.2 Sadaqa

Unlike zakat, sadaqa is voluntary and has broader implications. The Quranic lexicon transfigures this verbal root into sadaqa - a term used for gift offered to someone for the pleasure of God. Zakat and sadaqa though conceptually different are interchangeably used

to connote charity. However, sadaqa is considered to encapsulate any activity which is for the sake of God. The extensive dimension could be gauged from the Hadith in which sadaqa is denoted as “every good deed is a charity (sadaqa)” (Busiri, 1999).

In contrast to zakat, sadaqa transcends religious discrimination and can be given to followers of other faiths (v77:6). Moreover, one of the main characteristics of sadaqa is the element of secrecy. The aim is to maintain effective attention to devotion and self-purification as well as protecting the dignity of the recipient. This however is not a mandatory provision but is considered as a better form of voluntary charity (v2:271).

Unlike zakat which aims at social redistribution of wealth for the creation of a just society, the concept of sadaqa is to give without expecting either compensation in return or establishing a socio-economic equilibrium. Sadaqa starts from nearest relation and moves outwards. These categories are enumerated in the Hadith, Muhammad is reported to have said: Give sadaqah. A man said: I have a dinar. He responded accordingly: Give it to yourself as sadaqah. He said: I have another dinar. He replied: Give it to your wife as sadaqah. He said: I have another dinar. He replied: Give it your child as sadaqah. He said: I have another dinar. He thus replied: Give to whom you like (Bukhari, 1987).

Moreover, Islam expands the notion of sadaqa beyond monetary giving and includes whatever can be done to help society. This may include teaching, writing books, giving professional advice, sponsoring buildings, donating land, taking care of animals etc. A Hadaith clarifies the scope of what can be considered as sadaqa, Muhammad is reported to have said: Every Muslim has to give sadaqah. The people then asked: What about the one who has nothing? He said: He should work with his hands to give sadaqah. They asked: If he cannot find (work)? He replied: He should help the needy who asks for help. They asked: If he cannot do that? He replied: He should then do good deeds and shun evil, for

this will be taken as sadaqah, (Eaton, 2008). The efficacy of sadaqa is measured with respect to its impact on sustainability of religion, life, progeny, wealth and the intellect (Bensaid et al. 2013).

Zakat and sadaqa are an important part of Islamic ideology. Both are mutually exclusive modalities for charitable giving. Nevertheless, they endeavour to bring about a balance between personal development and communal responsibilities. They also share the ultimate provision of reward promised by God. Both of these aspects are described as a loan to God which carries with it a high reward (v64:17), similarly it is mentioned "Believe in God and His Messenger and spend (in charity) out of the (substance) whereof He has made you heirs. For, those of you who believe and spend (in charity); for them is a great Reward." (v57:7).

2.3 Literature review

Available literature has categorized giving of zakat as warm glow, altruistic, an act of worship/faith/religiosity, based on intentions or manifestation of charitable attitude. These explanations are a product of psychological and sociological influences. Whereas the literature aims to include economic analysis to explain zakat behavior, the conclusions are heavy influenced by non-economic rationale. These approaches both provide for a premise for understanding zakat behavior as well as exposes the shortcomings in terms of considering zakat and sadaqa with reference to opportunity cost.

It may be mentioned that finding literature on zakat was relatively challenging. A number of available resources were utilized such as online journals, google, google scholar, academic databases and references cited in the searched articles. Articles in language other than English were only used if a suitable translation was available or it could be

translated by google translator (most of these articles were either in Malaya or Indonesian languages). As mentioned most of the studies have put forth psychological and sociological explanations for zakat, while others have discussed economic parameters which will be covered in some detail. The other relevant articles have been summarized, focusing on their main conclusion.

Khamis et al. (2014) attempted to combine the zakat evasion model with other internal and external factors in a utility maximizing framework. Using factors such as religiosity, level of knowledge, length of business operation, organizational features, government incentives and law enforcement the study attempted to construct a utility maximizing model for a Muslim business community. The study was able to show that the probability of compliance to pay zakat was directly correlated with the factors. Even though the study identifies number of factors, it does not test any of them to determine which might have a greater influence. The study gives the impression that all the factors are equally important. Furthermore, there is no mention about the correlation between level of knowledge and religiosity.

Ahmed et al. (2011) highlighted that zakat not only depends on the perceived penalty but also on the sense of religious obligation. The study focused on either paying or not paying zakat to a formal institution. The model demonstrated that probability of an individual to pay zakat through formal institution depended on seven factors: law enforcement, religiosity, knowledge, payment mechanism, institutional trust, perception of the tax system and environment. Whereas the model does highlight factors essential for zakat compliance it does not however discuss why an individual would choose to pay zakat in the first place. The study again does not test the importance of each factor. The absence

of such an approach casts a doubt on the consistency of consumer behavior in terms of completeness and transitivity.

Analyzing the impact of zakat on capital accumulation by using an overlapping generation model, Norulazidah et al. (2010) found that the preference for zakat was determined by a feeling of warm glow which resulted in higher capital-labor ratio in the steady state. Using heterogeneous consumers and endogenous population growth, the study concluded that zakat resulted in greater redistribution of wealth helping to sustain a substantial portion of the poor population. Simulations also confirmed the findings. The study assumes warm glow as a precursor for preference for zakat. The obligation of zakat is a necessary but not sufficient condition for a Muslim to attain a spiritual reward. Therefore, the mere act of giving by itself becomes a point of gratification.

Diabi (1993) used the consumer behavior theory to study compliance on zakat by employing a modified version of tax evasion model. The model was set up as standard tax evasion model first proposed by Allingham & Sandmo (1972) with the exception that penalty rate was specified and attitude towards zakat was incorporated. The study concluded that a Muslim individual would declare his/her real zakat deductible income based on his/her faith, risk aversion and to avoid penalty for not paying zakat. Even though the study is one of the first attempts at looking at zakat from a consumer behavior perspective however the tax evasion approach leaves much to be desired. The main difficulty is that the ultimate penalty or reward cannot be observed in this world and therefore the risk as such cannot be assessed. Moreover, because zakat is predominantly a religious concept, enforcement does not lie with any government or organization. The cost of enforcement is very high and there is no specific worldly punishment prescribed for nonpayment, making it difficult to calibrate the risk.

As mentioned earlier, other studies have dealt with psychological and sociological reasons, they have been subsequently summarized. Muda et al. (2009) using a sample from University College of Malaysia concluded that altruism was the most important motivating feature for paying zakat. Kamil (2005) while studying factors influencing compliance of zakat found law enforcement as a necessary motivation. Saad (2010) studying compliance behavior of zakat within the business community in Kedah (Malaysia) found service provision of organization collecting zakat to be an important factor. Oladimeji Abioye Mustafa et al. (2013) carried out a questionnaire survey of Muslim professionals who observed Itqaf (religious seclusion in the last days of Ramadan) across 12 mosques in four states of Malaysia. They found that zakat payment was dependent on board capital, disclosure practices, governmental model of zakat institution, and stakeholder management.

Ali et al. (2004) found religiosity as the most important motivational factor for paying zakat among the staff of National University Malaysia. Similarly Bakar & Rashid (2010) using data collected from academicians in three faculties of the International Islamic University Malaysia found religiosity to be the single most important motivating factor. NurAzura et al. (2005) using primary data of 120 employees from the Northern University of Malaysia also found religiosity to be significant and correlated with the decision to pay zakat. Using a sample of Malyasian zakat donors, Obaidullah & Manap (2017) were able to identify religiosity, purification and altruism as the key motivators behind giving behaviour. Additional motivators such as the sense of self-actualization through helping others or propagating the religion were also found to be significant.

Using sample from Malaysian state of Kedah, Bidin et al. (2009) were able to show norms, attitudes and intentions determining zakat behavior. Similarly, Hasan & Mohd-

Shahnaz (2005) while studying entrepreneurs in the Malaysian state of Terengganu found attitude and awareness as significant factors. Ayob (2001) using a sample of 353 government servants from the State of Kedah (Malaysia) found significant relationship between attitude and zakat. Similarly, Sapingi et al. (2011) using data collected from 201 academicians in Kuantan (Malaysia) also found attitude as an important factor in paying zakat. Huda et al. (2012) using a sample of 227 respondents in Jakarta, Indonesia also found attitude as an important factor towards paying zakat. Husna (2009) using a sample of 173 employees from the manufacturing sector of the Free Industrial Trade Zone in Bayan Lepas (Malaysia) also found similar results. Al Jaffri Saad & Hanifa (2014) conducted a survey of 227 businessmen in a district of Malaysia and using the theory of reasoned action found that intention to be significant predictor of zakat as compared to subjective norm or attitude.

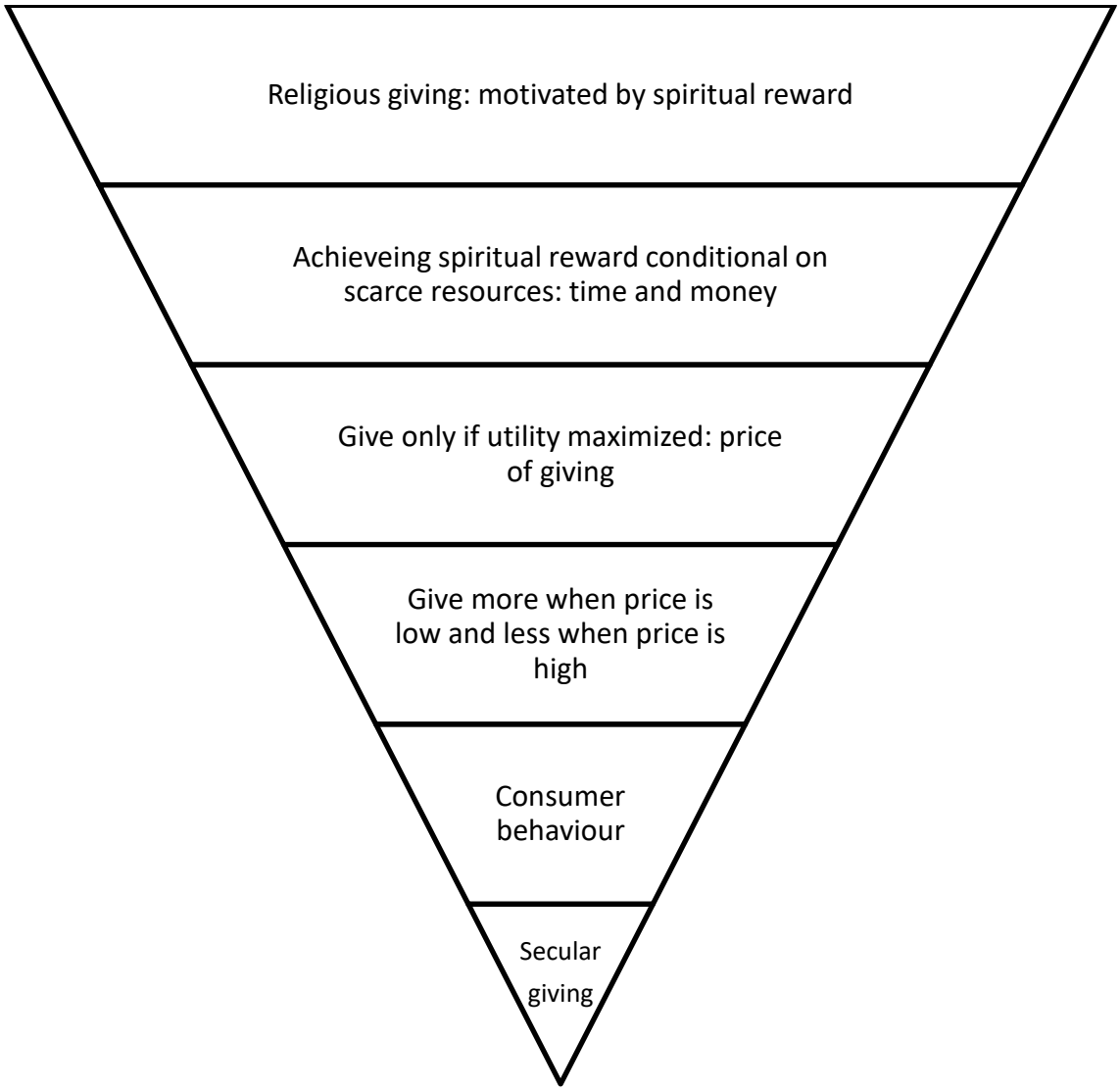
As is evident from the study of zakat the reasons for giving have been strictly in consonance with popular literature on general charitable giving behaviour. However, given the unobservable final reward these oft repeated motivations are unable to remain consistent across different studies. Moreover, the literature has not considered the possibility of treating zakat as restricted and its impact on sadaqa. In fact there is a gap in literature in terms of an economical model that combines both the elements of restriction and choice (zakat and sadaqa). Therefore, there is a need to develop a robust theoretical model which could show how warm glow giving is effected when the minimum rate of giving is considered as restrictive.

2.4 Motivation for the theoretical framework

The concept of zakat provides an interesting real-life example where restriction on donations can be observed. Whereas this aspect is very close to the novelty of our research question, what is the impact of restriction on charitable giving, it suffers from the religious element. Nevertheless, a general model can be developed by looking at the underlying common economic behavioural patterns. Berger (1967) describes religious giving as being similar to a market transaction. He argues that religious institutions transform into marketing agencies whereas the traditions (in this case giving) become consumer commodities. Actions under such circumstances can be viewed as affected by the price and structure of the market (monopoly and cartels etc.), "dominated by the logic of market economies" (1967, p. 138).

The market structure which determines the allocation of scarce resources affects the dynamics of the consumer demand not simply through a monetary exchange but rather through maximization of utility behaviour (Becker, 2013). Therefore, it is possible to isolate elements of giving with-in the religious context that can be shown through constrained optimization, comparative statics and equilibrium analysis to be fundamentally the same as secular giving (Berger, 2011; Iannaconne, 1988). Figure 2.1 highlights the connection between religious and secular giving behaviour, the common thread which could be used to model a behaviour which is consistent regardless of the nature of the motivation. In other words, characteristics commonly associated with religious giving depict fundamental consumer behaviour.

Figure 2.1: The economics of religious and secular giving



In order to devise a more generalized model, a simplified version of zakat and sadaqa utility maximizing model would be developed. The model will look at how giving behaviour would react to a minimum amount. The model will use the inherent assumption of warm glow and combine it with the minimum amount of zakat (restrictive aspect) with choice under sadaqa.

As stated, we will combine zakat and sadaqa into single charitable giving. This is possible as the ultimate aim of both the concepts is the same: to attain spiritual reward. To the best of our knowledge this has not be done before and therefore provides a unique look into giving behaviour. Combining both zakat and sadaqa is also in line with the tenets of the religion as charity is compulsory and therefore both or either of the modes could be utilized. Recall zakat and sadaqa only differ in the donor's ability to pay and not in terms of the spiritual reward.

The combining of zakat and sadaqa into a single charitable giving also helps in constructing a single period model. As charitable giving is a necessary tenet for attaining spiritual reward therefore it cannot be deferred over multiple periods. This notion is further strengthened by the substitution between zakat and sadaqa[5]. Whereas it is possible that a donor might initially give sadaqa and later (with increased endowment) substitute it with zakat, the attainment of spiritual reward would be possible under both the circumstances.

Moreover, multiple period model within the context of religious giving presents a unique set of complications. As the ultimate reward (or punishment) for giving (or not giving) is unobservable in this world, it is difficult to model these implications. A common methodology in literature is to either draw a parallel with worldly enforcement mechanism or assume the level of reward or punishment in the 'next' world. Both of these methods are not robust either to competing assumptions or varying mechanisms of reward and punishment, as Montgomery (1996) aptly observed that there is no rational way to assign probabilities to religious claims of reward and punishment. We did however attempt to

[5] Zakat and sadaqa are not perfect substitutes they are close substitutes under certain specific conditions.

model religious giving across multiple periods and found that the model became substantially more complex without adding additional insight. The single period model not only captures the fundamental parameters prevalent across giving behaviour in religious and secular settings but also sits well with the experiments in chapters 3, 4 & 5 which are based on one-shot giving (only one period is randomly selected for giving).

The inherent warm glow needs to be explained. Regardless of the form of giving, the act of giving assumes more importance because the ultimate reward is spiritual. As it is not possible to measure whether giving to a specific entity or cause will guarantee a greater spiritual reward the efficacy of giving is not of paramount importance. Moreover, zakat which is charged at a flat rate is due even in the presence of a crowding out effect. In other words, even if a country is not in need of the retributory element of zakat, its citizen would still need to give zakat[6]. A similar argument could be made for sadaqa especially when it is given in excess of zakat (in case where sadaqa is given in monetary terms), which might result in crowding out. Moreover, redistribution of wealth goal of zakat renders the donor practically content with the act of giving as no single contribution can achieve the mammoth objective on its own.

2.4.1 Steps towards deriving a generalized model

The important objective of the model is to provide a theoretical background to the experimental work that will follow in chapters 3, 4 and 5. As we shall discuss in detail in these chapters a lot of charitable giving is subject to restrictions. There are though important differences with zakat. In particular, zakat prescribes a minimum amount that a

[6] Surplus amount is usually sent to other Islamic countries where the need is greater. This act is consistent with the Islamic concept of one nation (Ummah) under one God.

person must give and is compulsory (conditional on nisab). Outside of zakat a person may have the option of giving zero. A donor is, thus, faced with either giving zero or giving the minimum amount allowed by the charity. We consider both of these type of restrictions in the model.

In the baseline model we look at the relationship between giving zakat or sadaqa, endowment (total wealth) and consumption parameters (proxy for preference for giving zakat or sadaqa). Zakat stipulates that giving is only possible if there is sufficient wealth. Therefore, higher endowment would increase giving (the absolute amount rather than the marginal rate, which is fixed). The model would also include a measurable parameter for preference for consumption, higher preference for consumption would imply lower preference for giving, lower chance for zakat. By varying endowment or/and preference for consumption (and by extension preference for giving) we can model the explicit cost of giving under zakat.

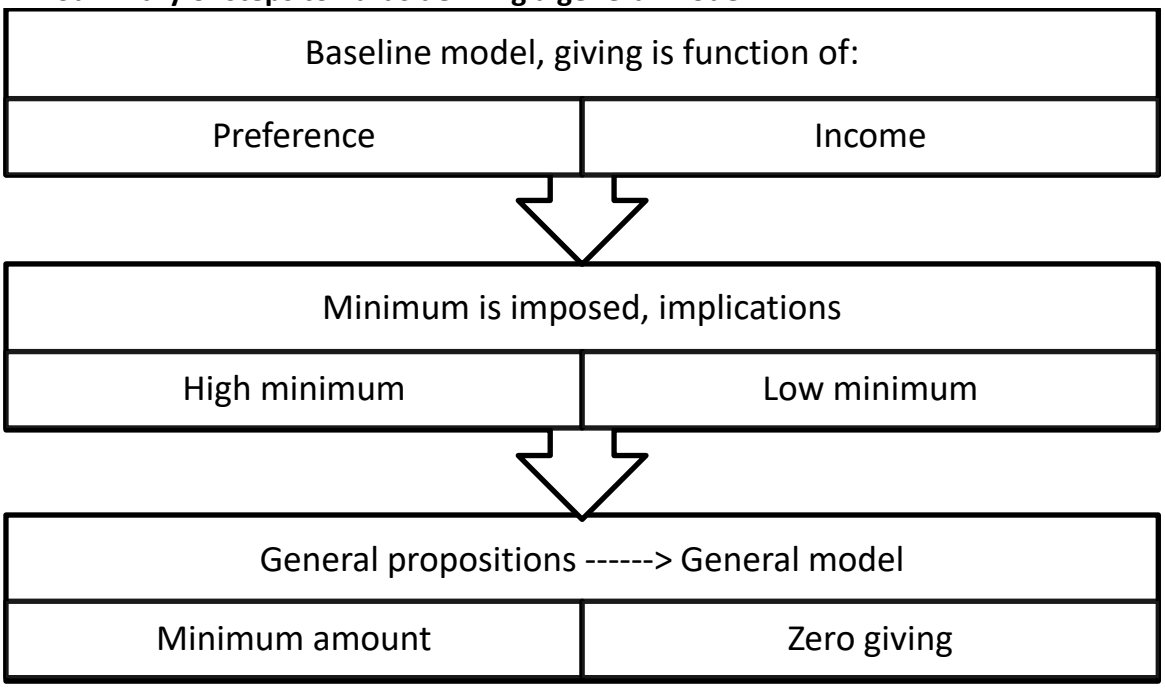
In the second part of the model a restriction will be placed on giving. This element is derived from the compulsory nature of zakat. The agent would have to give a minimum amount. Where an agent is unable to give zakat because the asking amount has a higher opportunity cost, giving would be negative. Under this scenario the agent would be more inclined to claim zakat and give sadaqa instead.

Third, a conditional minimum is considered, the secular model. Here, if a person wants to give she has to give at least the prescribed minimum amount. But, if the person does not want to give then she gives zero. This type of restriction fits better the charitable

giving we shall consider in chapters 3, 4 and 5. We will see that such restrictions result in two boundary solutions – some who give the minimum amount and some who give zero[7].

The variations in the model are necessary to map out a behavioural responsive which could be extrapolated to a non-religious setting. This would allow construction of a more generic model based on the common behavioural elements identified in the religious setting. Figure 2.2 summarizes all the interrelated steps towards a generalized model.

Figure 2.2: Summary of steps towards deriving a general model



2.5 The baseline model

In order to keep the model simple, income is taken as exogenous. This assumption helps in circumventing the leisure consumption decision which has no direct bearing on the hypothesis under consideration. The price of consumption is taken as 1 because the aim

[7] There is justification for this with reference to zakat evasion. Even though zakat is a religious obligation, there is still evasion for religious, administrative and management issues (Nienhaus, 2006; Guermat, 2003; Scott, 1987).

of the model is not to analyse what happens to consumption when price changes but rather what happens to charitable giving when choice is affected.

The model uses a simplified Cobb-Douglas configuration. As zakat represents a fixed proportion of income given to charity, donors will choose to spend constant proportions of their resources on consumption and charity at different levels of income motivating a Cobb-Douglas utility function. Besides, Cobb-Douglas preferences and utility function have been used in literature for modelling charitable giving, some examples include Ottoni-Wilhelm et al. (2017), Fraser (2016), Andreoni (2006b), Andreoni (1990) and Blinder & Rosen (1984). Consider an agent who tries to maximize utility:

$$U = \alpha LnC + (1 - \alpha)Ln(1 + G) \qquad (1)$$

where C is choice of consumption and α is the preference parameter. In a Cobb-Douglas setup the giving can be represented by a simple G however this would not be consistent with the zakat and sadaqa parameters. Recall that the model combines both the compulsory (zakat) and voluntary (sadaqa) giving parameters into total giving which in this case is given by $(1 + G)$. The expression suggests that the possibility of restriction crowding out the voluntary giving and therefore, in case where the opportunity cost of giving is considered to be high, total giving will be 0. Recall, sadaqa need not be in monetary terms therefore, if zakat is not possible then the individual can substitute a non-monetary sadaqa, monetary giving would be zero under the circumstances. The expression will help measure the opportunity cost of giving when a minimum amount (zakat) is imposed. Combining the two parameters (zakat and sadaqa / restrictive and unrestrictive giving) into total giving helps to decipher conditions under which the giving would be positive or zero.

The amount of consumption and giving is subject to total endowment (E):

$$C + G \leq E \tag{2}$$

The Lagrangean for this problem is:

$$L = \alpha LnC + (1-\alpha)Ln(1+G) + \lambda(E - C - G) \tag{3}$$

The first-order conditions are:

$$\frac{\partial L}{\partial C} = \frac{\alpha}{C} - \lambda = 0 \tag{4}$$

$$\frac{\partial L}{\partial G} = \frac{(1-\alpha)}{(1+G)} - \lambda = 0 \tag{5}$$

Using the Euler Equation with reference to (4) and (5) yields:

$$C = \frac{\alpha}{(1-\alpha)}\,(1+G) \tag{6}$$

Using (6) we derive:

$$G = \frac{C(1-\alpha)}{\alpha} - 1 \tag{7}$$

Substituting (7) in (2) gives:

$$E = C\left[\frac{1}{\alpha}\right] - 1 \tag{8}$$

Rearranging (8) in terms of C gives:

$$C = (E+1)\alpha \tag{9}$$

And substituting equation (9) in (2) and rearranging results in:

$$G = E - (E + 1)\alpha \tag{10}$$

Manipulating (10) gives:

$$G = E(1 - \alpha) - \alpha \tag{11}$$

So:

$$G \geq 0 \; if \; E \geq \frac{\alpha}{(1 - \alpha)} \tag{12}$$

According to equation (12) giving depends on the amount of endowment and on the preference parameter. In case the value of α is high, there is greater preference for consumption, charitable giving would be low[8]. The degree of preference for consumption or charitable good is related to the level of endowment. If endowment is altered the opportunity cost of giving can be affected which would then effect the overall giving behaviour. Therefore, placing a restriction of zakat would affect the endowment and would alter giving behaviour.

2.5.1 Minimum amount of giving

To see if restriction plays a role, for now assume that the agent has to give this minimum amount of zakat ($referred \; to \; as \; G_{min}$) as charity. Giving would be higher than the minimum level if the opportunity cost of giving is low (will give zakat as well as sadaqa). Equations (13) and (14) are derived under the assumption that there is no upper restriction on giving:

[8] Recall zakat is only due when wealth crosses nisab, in this case the amount

$$G \geq G_{min} \; if \; E(1-\alpha) - \alpha \geq [\alpha + (1-\alpha)]G_{min} \tag{13}$$

$$if \; E \geq \frac{[\alpha + (1-\alpha)]G_{min} + \alpha}{1-\alpha} \tag{14}$$

So, if the endowment is sufficiently high the constraint is not binding and makes no difference to giving. If the endowment is low or G_{min} is high then the constraint binds and the person has to give more to charity than they would ideally prefer or afford. Within this scenario a constraint on the minimum amount necessarily results in negative giving.

Table 2.1 illustrates the different combinations of G_{min} (in green) against α (in blue). A positive number means the constraint is not binding while a negative number means the constraint is binding. As can be observed from Table 2.1, as the preference for giving decreases (as the value of α increases) there is a value of G_{min} at which the constraint becomes binding. For instance, if preference for giving is relatively high $\alpha = 0.05$ the person continues to give across different values of G_{min} however, as preference for giving is low $\alpha = 0.65$ giving becomes negative.

Recall that with zakat the person is supposed to give a fixed amount so the G_{min} is not so much a minimum amount as the expected amount. Also recall that a person can also claim zakat depending on personal circumstances. Therefore, as long as the opportunity cost of giving is low the G_{min} results in positive giving however as the opportunity cost increases the agent transforms from a donor to a recipient (negative giving). The absence of choice in giving leads to agent claiming charity rather than giving it.

Table 2.1: Minimum Giving

G_{min}	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95
α																			
0.05	0.02	0.04	0.05	0.07	0.09	0.10	0.11	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.21	0.21	0.21
0.1	0.02	0.03	0.05	0.06	0.07	0.09	0.10	0.11	0.12	0.13	0.14	0.14	0.15	0.16	0.16	0.16	0.16	0.15	0.13
0.15	0.01	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.10	0.11	0.11	0.12	0.12	0.12	0.11	0.10	0.09	0.05
0.2	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.06	0.05	0.02	-0.03
0.25	0.01	0.02	0.03	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.02	-0.01	-0.04	-0.11
0.3	0.01	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.02	0.02	0.00	-0.01	-0.03	-0.06	-0.10	-0.19
0.35	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.00	-0.01	-0.02	-0.03	-0.05	-0.08	-0.11	-0.17	-0.27
0.4	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	-0.01	-0.01	-0.02	-0.04	-0.05	-0.07	-0.10	-0.13	-0.17	-0.23	-0.35
0.45	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.03	-0.04	-0.05	-0.07	-0.09	-0.11	-0.14	-0.17	-0.22	-0.30	-0.43
0.5	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.03	-0.04	-0.05	-0.06	-0.08	-0.10	-0.12	-0.15	-0.18	-0.22	-0.28	-0.36	-0.51
0.55	0.00	-0.01	-0.01	-0.02	-0.03	-0.03	-0.04	-0.06	-0.07	-0.09	-0.11	-0.13	-0.15	-0.18	-0.22	-0.27	-0.33	-0.42	-0.59
0.6	0.00	-0.01	-0.02	-0.03	-0.04	-0.05	-0.06	-0.07	-0.09	-0.11	-0.13	-0.16	-0.19	-0.22	-0.26	-0.32	-0.39	-0.49	-0.66
0.65	-0.01	-0.02	-0.02	-0.04	-0.05	-0.06	-0.08	-0.09	-0.11	-0.13	-0.16	-0.19	-0.22	-0.26	-0.31	-0.36	-0.44	-0.55	-0.74
0.7	-0.01	-0.02	-0.03	-0.04	-0.06	-0.07	-0.09	-0.11	-0.13	-0.16	-0.19	-0.22	-0.25	-0.30	-0.35	-0.41	-0.50	-0.62	-0.82
0.75	-0.01	-0.02	-0.04	-0.05	-0.07	-0.09	-0.11	-0.13	-0.15	-0.18	-0.21	-0.25	-0.29	-0.33	-0.39	-0.46	-0.55	-0.68	-0.90
0.8	-0.01	-0.03	-0.04	-0.06	-0.08	-0.10	-0.12	-0.15	-0.18	-0.21	-0.24	-0.28	-0.32	-0.37	-0.43	-0.51	-0.61	-0.74	-0.98
0.85	-0.02	-0.03	-0.05	-0.07	-0.09	-0.11	-0.14	-0.17	-0.20	-0.23	-0.27	-0.31	-0.35	-0.41	-0.48	-0.56	-0.66	-0.81	-1.06
0.9	-0.02	-0.04	-0.06	-0.08	-0.10	-0.13	-0.16	-0.19	-0.22	-0.25	-0.29	-0.34	-0.39	-0.45	-0.52	-0.60	-0.71	-0.87	-1.14
0.95	-0.02	-0.04	-0.06	-0.09	-0.11	-0.14	-0.17	-0.20	-0.24	-0.28	-0.32	-0.37	-0.42	-0.49	-0.56	-0.65	-0.77	-0.94	-1.22

2.5.2 Zero or the minimum amount

Suppose, now, that the person has a choice to not give at all. The constraint G_{min} is then interpreted as the minimum amount that must be given *if* the person decides to give. We know that if $\alpha/(1-\alpha) < E$ the person would give 0 and if $\frac{G_{min}+\alpha}{(1-\alpha)} > E$ they will claim charity rather than give it. So, it remains to look at what happens:

$$if\ \frac{\alpha}{(1-\alpha)} < E < \frac{[\alpha+(1-\alpha)]G_{min}+\alpha}{(1-\alpha)} \tag{15}$$

The agent faced with a minimum amount of charitable giving may simply choose not to give, $G = 0$. This would make the decision process a little more complex as the minimum amount would invariably affect the opportunity cost of giving. As a result of the minimum restriction on giving the preference would need to be matched with the G_{min}. Then:

$$U_{G=0} = \alpha Ln(E) \tag{16}$$

Whereas G_{min} will be given by a similar equation as in (16) with adjusted 'if' condition:

$$U_{G=G_{min}} = \alpha Ln(E - G_{min}) + (1-\alpha)Ln(1+G_{min}) \tag{17}$$

$$\text{if } E \geq G_{min} \tag{18}$$

Taking the difference of (16) and (17) where E=1:

$$U_{G=0} - U_{G=G_{min}} = \alpha[Ln(E) - Ln(E - G_{min})] - (1-\alpha)Ln(1+G_{min}) \tag{19}$$

$$= \alpha Ln\left(\frac{E}{E - G_{min}}\right) - (1 - \alpha)Ln(1 + G_{min}) \quad (20)$$

Equation (21) gives the relationship between endowment, minimum giving and preferences. Giving G_{min} would depend on whether the utility is higher from giving or is maximized by giving zero. In the case where the opportunity cost of giving is high either because there is greater preference for consumption or because the minimum amount is considered to be too restrictive, the overall giving will be 0. The decrease in giving will be a direct result of an income effect which would crowd out giving resulting in a boundary solution.

Table 2.2 illustrate the different combinations of α and G_{min} that results in positive or zero giving. The different ranges of G_{min} are in green, the varying values of α are in blue. The lower the value of α the greater the preference for giving. The positive and negative numbers in the Table 2.2 represent whether there is positive giving or giving is zero. Recall from equation (19) we took the difference between $U_{G=0}$ and $U_{G=G_{min}}$. Therefore the negative numbers in Table 2.2 imply that the person would choose to give G_{min} because the utility from giving is higher than the utility from giving zero. In the alternative if the numbers are positive that implies that utility from giving zero is greater than the utility from G_{min}. Notice that giving varies across changing parameters. For instance, if preference for giving is relatively high $\alpha = 0.15$ the person continues to give across different values of G_{min}. However, for another higher preference for giving $\alpha = 0.30$ the person continues to give till $G_{min} = 0.65$ after which the person chooses zero. Therefore, the minimum giving can either result in positive or zero donations depending on the opportunity cost of giving.

Table 2.2: Zero and minimum amount

G_{min}	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95
α																			
0.05	-0.02	-0.04	-0.05	-0.07	-0.09	-0.10	-0.11	-0.13	-0.14	-0.15	-0.16	-0.17	-0.18	-0.19	-0.20	-0.21	-0.21	-0.21	-0.21
0.1	-0.02	-0.03	-0.05	-0.06	-0.07	-0.09	-0.10	-0.11	-0.12	-0.13	-0.14	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.15	-0.13
0.15	-0.01	-0.03	-0.04	-0.05	-0.06	-0.07	-0.08	-0.09	-0.10	-0.10	-0.11	-0.11	-0.12	-0.12	-0.12	-0.11	-0.10	-0.09	-0.05
0.2	-0.01	-0.02	-0.03	-0.04	-0.05	-0.06	-0.07	-0.07	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.07	-0.06	-0.05	-0.02	0.03
0.25	-0.01	-0.02	-0.03	-0.04	-0.04	-0.05	-0.05	-0.05	-0.06	-0.06	-0.06	-0.05	-0.05	-0.04	-0.03	-0.02	0.01	0.04	0.11
0.3	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03	-0.04	-0.04	-0.04	-0.03	-0.03	-0.02	-0.02	0.00	0.01	0.03	0.06	0.10	0.19
0.35	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.01	0.02	0.03	0.05	0.08	0.11	0.17	0.27
0.4	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.01	0.01	0.02	0.04	0.05	0.07	0.10	0.13	0.17	0.23	0.35
0.45	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.07	0.09	0.11	0.14	0.17	0.22	0.30	0.43
0.5	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.10	0.12	0.15	0.18	0.22	0.28	0.36	0.51
0.55	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.06	0.07	0.09	0.11	0.13	0.15	0.18	0.22	0.27	0.33	0.42	0.59
0.6	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.09	0.11	0.13	0.16	0.19	0.22	0.26	0.32	0.39	0.49	0.66
0.65	0.01	0.02	0.02	0.04	0.05	0.06	0.08	0.09	0.11	0.13	0.16	0.19	0.22	0.26	0.31	0.36	0.44	0.55	0.74
0.7	0.01	0.02	0.03	0.04	0.06	0.07	0.09	0.11	0.13	0.16	0.19	0.22	0.25	0.30	0.35	0.41	0.50	0.62	0.82
0.75	0.01	0.02	0.04	0.05	0.07	0.09	0.11	0.13	0.15	0.18	0.21	0.25	0.29	0.33	0.39	0.46	0.55	0.68	0.90
0.8	0.01	0.03	0.04	0.06	0.08	0.10	0.12	0.15	0.18	0.21	0.24	0.28	0.32	0.37	0.43	0.51	0.61	0.74	0.98
0.85	0.02	0.03	0.05	0.07	0.09	0.11	0.14	0.17	0.20	0.23	0.27	0.31	0.35	0.41	0.48	0.56	0.66	0.81	1.06
0.9	0.02	0.04	0.06	0.08	0.10	0.13	0.16	0.19	0.22	0.25	0.29	0.34	0.39	0.45	0.52	0.60	0.71	0.87	1.14
0.95	0.02	0.04	0.06	0.09	0.11	0.14	0.17	0.20	0.24	0.28	0.32	0.37	0.42	0.49	0.56	0.65	0.77	0.94	1.22

2.5.3 Resulting propositions

According to the model the concept of opportunity cost appears to be the common thread in giving behaviour. Certain fundamental propositions can be extrapolated from the model:

- *Proposition 1*: Greater preference for consumption would imply greater opportunity cost of giving. Therefore there is more likely to be zero giving.

- *Proposition 2*: Higher value of G_{min} would affect the opportunity cost of giving. This would imply an exogenous increase in the cost of giving.

- *Proposition 3*: Relatively low preference for giving combined with lower values of G_{min} will increase the opportunity cost of giving. Even though exogenous cost (proposition 2) might be lower, the higher opportunity cost of giving (proposition 1) would result in zero giving. For instance, in Table 2.2 as α increases beyond 0.45 the giving starts to decline (zero giving) even for low values of G_{min}. Therefore, if in an agent is inclined to give less, any restriction would result in lower contribution.

- *Proposition 4*: Lower G_{min}along with lower preference for giving would decrease the opportunity cost of giving and therefore result in positive giving.

Panel 2.1 shows all the possibilities with respect to the different propositions. Proposition 1 highlights that as preference for consumption increases, $\alpha > 0.25$ the opportunity cost of giving increases and giving goes down to zero, $G_{min} = 0$. Proposition

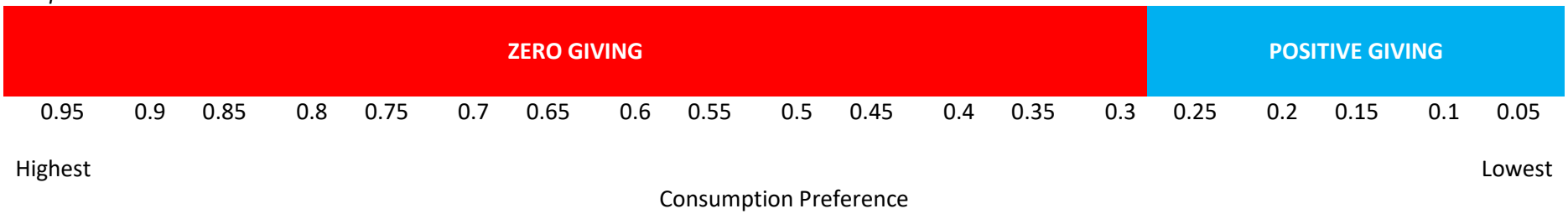
2 shows that as G_{min} goes above 0.65, the restriction increases the opportunity cost of giving resulting in zero giving. Proposition 3 looks at various combinations of the restriction and preference for giving. As can be observed from proposition 3 in panel 2.1, when preference of giving is high, there is positive level of giving. However, as the preference for giving decreases, for all levels of G_{min} charitable giving is zero. Proposition 4 reaffirms proposition 3 suggesting that as long as G_{min} is low combined with a low α (preference for giving is high) then the overall giving is positive.

As is evident from Panel 2.1 opportunity cost plays a pivotal role in giving behaviour. As mentioned there is the inherent element of opportunity cost of giving depending on consumption preference. The exogenous G_{min} adds to the total cost of giving and therefore depending on the interplay of different parameters total giving can increase or decrease. Therefore, the higher opportunity cost not only discourages a person from giving the minimum amount but also discourages any voluntary giving, moving towards a boundary solution of zero giving.

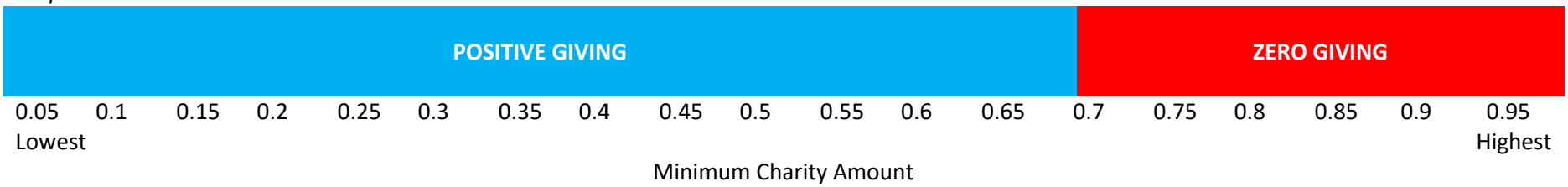
We are now in a position to construct a purely secular model of giving. Recall from Figure 2.1 are aim was to use the general elements of giving behaviour under religious restriction and extrapolate the behavioural patterns. Based on the derived propositions from the religious giving we can develop a generalized model.

Panel 2.1: Opportunity cost of giving

Proposition 1:



Proposition 2:

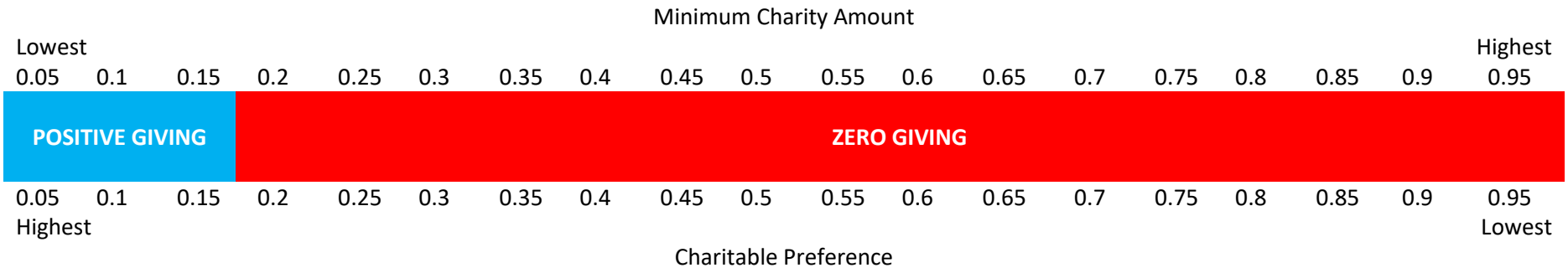


Proposition 3:

Minimum Charity Amount

α	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95
0.05	POSITIVE GIVING																		
0.1	POSITIVE GIVING																		
0.15	POSITIVE GIVING																		
0.2	POSITIVE GIVING																		0 G
0.25	POSITIVE GIVING																	ZERO GIVING	
0.3	POSITIVE GIVING														ZERO GIVING				
0.35	POSITIVE GIVING										ZERO GIVING								
0.4	POSITIVE GIVING						ZERO GIVING												

Proposition 4:



2.6 Generalized model: conditional minimum

We now provide an extrapolated model from the propositions in section 2.5.3 for a more general application. We attempt to model the warm glow more explicitly and explore the potential implications of a minimum constraint on giving, either give or give zero. Again consider someone who tries to maximize utility:

$$U = (1-\alpha)LnC + \alpha Ln(1+G) \tag{21}$$

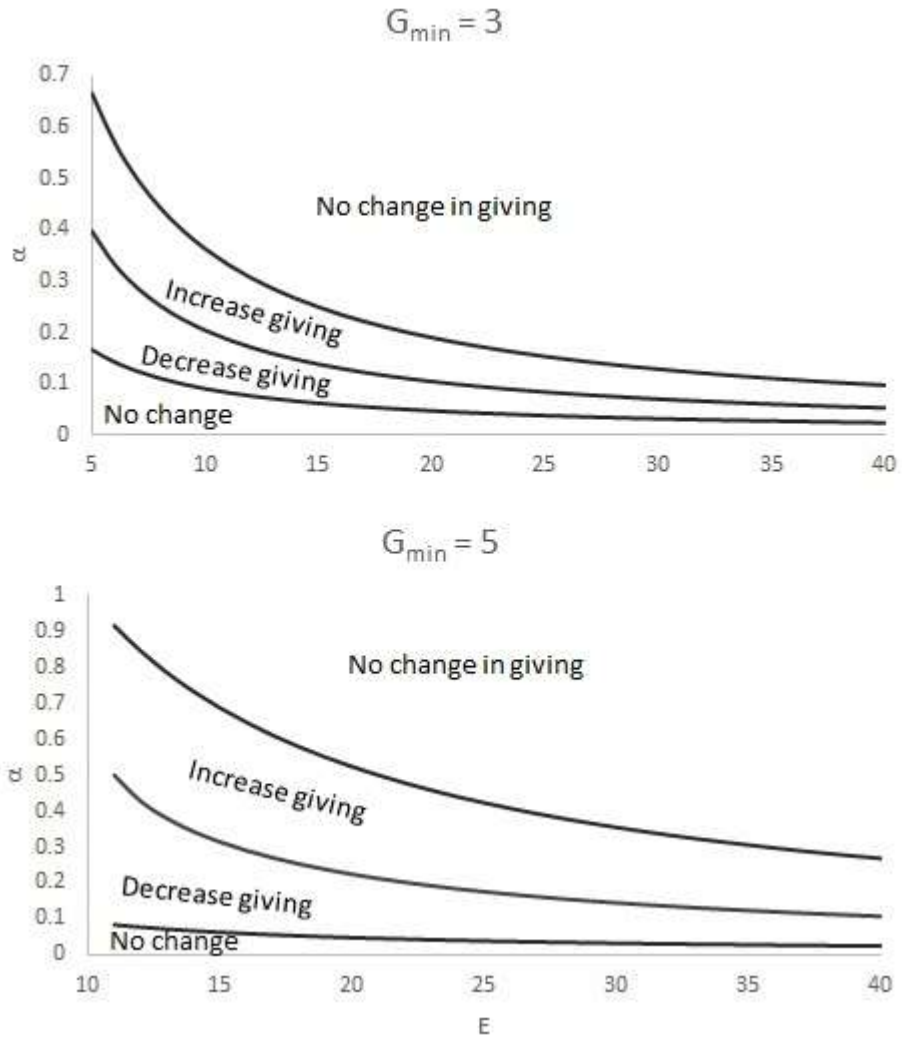
where $C \geq 0$ is choice of consumption, $G \geq 0$ is giving to charity and $\alpha \in [0,1]$ is a preference parameter. In interpretation, α can be interested as measuring warm glow (or altruism). The individual has total endowment E implying a budget constraint$C + G \leq E$. If there is no constraint on giving then it is simple to derive that the utility maximizing level of consumption is $C = (E+1)(1-\alpha)$ and $G = \alpha(E+1) - 1$ if $E \geq (1-\alpha)/\alpha$. Otherwise $C = E$ and $G = 0$. As expected giving to charity is increasing in warm glow and endowment.

Suppose that there is a restriction on giving meaning that if the individual gives to charity he must give a minimum donation G_{min}. We know that if $\alpha \leq 1/(1+E)$ the individual will give 0. We also know that if $\alpha \geq (G_{min}+1)/(1+E)$ the individual will give more than the minimum. Of primary interest for us is the intermediate case in which the individually intrinsically wants to give an amount between 0 and G_{min}. The constraint forces him to choose between giving zero and getting payoff $U_{G=0} = (1-\alpha)Ln(E)$ or choosing G_{min} and getting payoff $U_{G=G_{min}} = (1-\alpha)Ln(E-G_{min}) + \alpha Ln(1+G_{min})$. We get that $U_{G=0} \leq U_{G=G_{min}}$ if and only if

$$\alpha \geq \frac{Ln(E) - Ln(E-G_{min})}{Ln(E) - Ln(E-G_{min}) + Ln(1+G_{min})}. \tag{22}$$

To aid in the interpretation of equation (22) consider Figure 2.3. For two different value of G_{min} we plot the various conditions on α as a function of E. If the individual has a low α then he gives zero irrespective of the constraint and so the constraint has no effect. Similarly, if the individual has a high α he gives more than the minimum and so the constraint has no effect. We can then see that the condition in equation (22) essentially splits the intermediate region down the middle. If the individual is below the cut-off he will switch to donating zero and so we have a fall in giving. If he is above the cut-off he will switch to donating G_{min} and so we have an increase in giving.

Figure 2.3: Level of warm glow at which a minimum donation increases, decreases or makes no change to contribution.



A charity will clearly be interested in aggregate giving over a number of potential donors, all with different degrees of warm glow, as measured by α, and income, as measured by E. The overall effect of imposing a minimum will, thus, depend on the distribution of preferences and income within the population. The overall effect is, therefore, somewhat ambiguous and therefore motivates experiments.

2.7 Discussion and conclusion

An attempt has been made to delineate the Islamic concept of charitable giving with its compulsory and voluntary component into a general model. The aim of the model is to

take the religious concept of charitable giving and measure the effect of a minimum amount on donors. The findings suggest that direction of effect depends on the parameter value: the exogenous minimum amount and endogenous preference for giving.

Recall that our model showed that higher preference for giving resulted in G_{min} and therefore notion of suggesting an amount for donation cannot be simply dismissed. In fact literature points out to the efficacy of suggesting an amount for donation. Whereas none of these considers the possibility of the amount being perceived as restrictive it is equally important to look at different reasons for contextual purposes. Specific amount might reduce the effort in selecting alternative amounts which might require extra time and effort in gathering information on them (Johnson & Goldstein 2003). Similarly, the solicited amount could be considered as starting point, a sort of an anchoring effect (Epley & Gilovich, 2006). At times the stated amount can be taken as informative, a type of endorsement directly from the policymaker (McKenzie et al., 2006) or could be considered as action that is simply expected (Tannenbaum & Ditto, 2011). The stated amount can also be seen as a reference point, deviating from which might not be a feasible option for the donor (Kahneman et al., 1990). As mentioned, none of these studies have however, considered the possibility of the solicited amount to be perceived as restrictive. The closest comparison is found is in marketing where if the price quoted is counter to the consumers perceived price they will reject the default option (Brown & Krishna, 2004). As already mentioned, there is a gap in literature about impact of restriction on charitable giving behaviour.

What is the rationale for considering zakat as restrictive if the same has not be done before? Firstly, for those who cannot afford to give zakat the solicited percentage becomes restrictive. Secondly, the specific amount as compared to the greater choice under sadaqa

may provide an alternative narrative to zakat non-compliance. Even though zakat is a key religious obligation yet there have been instances where evasion has been suggested (Muhammad & Saad, 2016; Fidiana et al., 2014; Diabi, 1993). Whereas literature point to administrative and trust related issues, the restrictive element has not been explored. It could be easily argued that percentage amount could be considered restrictive for those who are just over the threshold as the opportunity cost tends to be high (greater loss of consumption). On the other hand, the marginal rate of zakat might mean a larger absolute deduction for high income earners which would translate into a higher opportunity cost of giving. Therefore, the specific amount of zakat under certain conditions could be considered as restrictive.

It could also be argued that giving is a product of intentions and intentions are influenced by motivational factors. According to Fishbein & Aizen (1977) attitudes and subjective norms help to shape intentions. Attitude under the model is influenced by the negative assessment of restrictive giving whereby the minimum amount, which determines the subjective norm, creates a pressure to give. Therefore, opportunity cost of giving can influence intentions towards giving. In other words, intentions towards giving can be counterweighed by the cost of the perceived restriction.

Alternatively it could be argued that giving is part of planned behaviour, therefore the restriction would not be a qualified deterrent. The theory of planned behaviour (Aizen, 1985) is built around two beliefs, 1) internal control which is based on whether one considers themselves to be well informed, 2) whether there is accessibility to needed resources which would either facilitate or inhibit behaviour (Kraft et al., 2005). With reference to the first aspect, opportunity cost makes giving to the 'right' kind of charity all that important therefore access to right type of information is inherent in the model. With

reference to the second aspect, to giving charity requires a certain level of income (endowment), if there is limited access to such resource then such a condition inhibits the giving behaviour.

The model brings in perspective an interesting paradigm namely that there could be a case made for opportunity cost of giving even in presence of a strong motivational underpinnings, intentions to give and under notion of planned behaviour. In other words, giving is not a simple exercise but requires consideration of implicit and explicit costs. The model clearly spells out a negative effect on giving for an increase in explicit cost. The model can be extended to implicit cost by considering the warm glow element whereby act of giving would be maximized depending on charity or cause[9]. The model reveals that restriction (compulsory charitable deduction) plays a considerable role in giving behaviour. The restriction directly impacts the consumption behaviour and therefore effects giving. The model predicts that regardless of the motivation, intentions and planned behaviour if restriction is imposed giving would be affected.

The model gives a theoretical conclusion as there is no specific empirical research (to our knowledge) that has tested the notion of restriction on charitable giving behaviour. The model nevertheless details a general rule that can effect giving across multifarious motivational underpinnings. This makes running a lab experiment with students feasible as the model gives a general impact and not a specific motivational reason.

We do recognize the possible objection of extrapolating a religiously motivated model to secular giving. However, as we have already shown via the generalized model that behavioural elements of giving would react similarly to restriction. Moreover, studies

[9] Under Zakat the recipients are defined and therefore the cost associated with giving is reduced to some degree. However, whether the actual recipients fall in the category incurs agency costs which is an implicit consideration.

have shown a positive relation between religious involvement (church membership/frequency of church visits) and secular giving (Bekkers & Schuyt, 2008; Brown & Ferris, 2007; Bielefeld et al., 2005; Chang, 2005; Bryant et al., 2003; Bennett & Kottasz, 2000). On the other side of the spectrum studies have found no relationship religiosity and secular giving. Experiments in which participants were given to donate to non-religious charities (Bekkers 2007; Bekkers, 2006; Eckel & Grossman, 2004; Marx, 2000) found no relationship between religious affiliations and giving to a secular cause; Lyons & Nivison-Smith (2006) and Lyons & Passey (2005) found no direct or indirect relationship between religious involvement and secular giving. Given the disagreement in literature on religiosity and secular giving, there is room for extrapolating a religiously motivated model to a secular setting. For instance, it can be argued that religion helps in habit formation which in turn predicts greater level of giving across both religious and secular charities (Brooks, 2004). The link between habit formation and giving is commonly assumed in in philanthropy research (Brooks, 2003).

It is assumed that due to the general nature of the model it should be applicable in most situations. The opportunity cost should play a role even when other incentives are considered. Therefore, the empirical testing of the model needs to take into consideration different parameters to test the veracity of the model's conclusions. The model's prediction would need to be tested using both between group and within group variations with incentives built in to make the decision process relatively realistic. It is hypothesized that even with different combinations of behavioural motivations and incentives the predictions of the model would hold true.

There are two ways in which we can construct a controlled environment in order to observe behaviour. In the first instance a between subject experiment will be designed to test the conclusion of the model. Subjects would be randomly divided into restricted treatment and unrestricted treatment groups, where the former is asked to consider giving a minimum amount. The Between analysis is simple to perform provided random assignment is achieved across groups. The two groups play a simple game of five rounds with choice of giving to charity, playing for payoff or/and winning an item. The primary reason for menu of choices in the game is to introduce the notion of opportunity cost. By comparing both the groups causal estimates can be obtained by comparing the restricted treatment and unrestricted treatment groups. Whereas the between analysis provides a good starting point it nevertheless suffers from statistical power as each group can only provide one statistical point.

Next we intend to conduct a within subject experiment which has some advantages over the between analysis. In the within analysis each subject is exposed to more than one treatments and causal estimates can be obtained by examining how subject behaviour changed boosting statistical power. Moreover, unlike the between analysis the within analysis does not depend on random assignment. In this experiment the subjects would be exposed to both restrictive and unrestrictive periods. The incentives would be carried over from the between analysis in order to keep the notion of opportunity cost intact. If the prediction of the model is correct then restrictive giving should have a negative impact on giving behaviour.

The within experiment would be further extended to see if implicit cost also effects giving behaviour. The model stipulates that there could be implicit costs associated with acquiring information about charity or charitable cause. Recall warm glow is derived from

the act of giving and therefore a worthy charity or cause would be important for maximizing utility. In order to determine if acquiring information has a cost, the subjects would be exposed to different types of information and their giving behaviour would be observed. The restriction element would be removed to minimize its effect and isolate the impact of the differing information on giving behaviour. This would then complete the analysis of opportunity cost effecting charitable giving behaviour as predicted by the model.

Chapter 3
Impact of Restriction on Giving Behaviour: Between-Subject Experiment

3.1 Introduction

In order to isolate the charitable giving behaviour researchers have developed experiments with innovative designs. The basic thrust is to develop elaborate experiments that address field related questions. As a consequence, the focus has not only been at drawing conclusions from the experimental data but also scrutinizing the experiment methodology itself.

A dictator game can be used to identify the motives for giving. The game entails a decision maker being given an endowment and asked how much she would give to an anonymous recipient in the laboratory (Forsythe et al., 1994) or an entity outside the laboratory (Fong & Luttmer, 2011). The response or the amount that is transferred to the other player/recipient is used to analyse the preference for giving. In our experiment we have replaced the role of the recipient with a non-profit charity (charities) which is consistent with a modified dictator game setup (Eckel & Grossman, 1996a).

According to Andreoni & Miller (2002) dictator games inform about motives/preferences of the subjects; from Utilitarian to Rawlsian to perfectly selfish. They also find that subjects do not violate the axioms of revealed preference and therefore contributions in the dictator game are rational. Fisman et al. (2007) replicating the results of the Andreoni & Miller (2002) found that choices were consistent with utility maximization. In dictator games charitable giving responds to changes in environment in manner which is consistent with utility maximization paradigm (Vesterlund, 2016).

However, Bardsley (2008) and List (2007) argue that the elicited revealed social preferences in the dictator games are sensitive to contextual changes within the game setting.

Therefore, studying preferences and strategies in an environment with multiple donors is possible under dictator games. Individuals interact across a number of rounds distributing the endowment between a private and charitable account. Isaac & Walker (1988) have suggested (along with other studies) that the dictator one-shot game results in more contribution than predicted in the Nash equilibrium version of the game.

This study builds on the model from Chapter 2 where restriction was identified as altering giving behaviour. It was hypothesized that opportunity cost was the common thread amongst multifarious motivational reasons for giving which can affect the intensive and extensive margins of giving. In terms of the rational economic agent the decision of participation and consumption of the charitable good is based on the opportunity cost; more specifically on the return from charitable giving which is conditional on explicit and implicit cost of giving.

The type of return expected from charitable giving largely depends on the type of individual. Recall altruistic individuals derive utility from the effect of the donation. They care about the total amount of public good provided; other's wellbeing enters directly in their utility function (Becker, 1976). Whereas those who give as a result of warm glow care about the act of giving (Andreoni, 1989, 1990); the act itself maximizes utility. This type of giving then acquires the properties of a private good; giving becomes a function of opportunity cost. A person will only give if the cost of giving is perceived to be reasonable; if the cost is perceived to be above the warm glow threshold, it would be regarded as too generous and could lead to choice deferral (Dhar, 1997) or boundary solution of zero

contribution. Therefore, choice is particularly important for warm glow contributors; these donors sit on the margins of giving and need to be given the right kind of incentives.

There is considerable literature that highlights the importance of suggestive/nonbinding amount (extensive literature review can be found in Adena et al., 2014), but none of the studies to our knowledge looks at the impact on giving behaviour when the said amount is perceived to be restrictive. The basic premise behind suggestive donation is that it helps in providing an anchor point against which potential contributions are compared (Fraser et al., 1988). These amounts are considered costless to implement and are thought not to incur any costs or benefits to the potential donor. This is where this chapter disagrees.

We argue that if the choice of a donor is constrained it increases the cost of giving and therefore lowers donations on both the intensive and extensive margins. We show that restriction imposes a cost on the donor, specifically those motivated by warm glow. We are aware of the possible objection about comparing suggestive amount with restrictive amount however, our argument centres on what if the suggestive amount is perceived to be restrictive. A parallel could be drawn with charities that ask for specific amount for a specific period. This framing could easily be perceived as restrictive, particularly if the money is supposedly allocated with a specific purpose, such as the Blue Cross sponsorship of a pet for £4 a month, or ActionAid asking for £20 per month to help a child. Whereas these specific charities place no restriction on the minimum amounts others do. Website of British Heart Foundation only accepts a minimum of £2 or more in donations, lower amount prompts the following message: “Due to processing costs, the

minimum donation we can accept is £2."[10] In case of Ronald McDonald House Charities UK the minimum is as high as £5, a lower amount generates the following message: "Your donation must be between £5 and £100000"[11]. Similarly, Sightsavers require at least £3 in donation otherwise the following message is displayed: "We really appreciate your donation but to keep our admin costs to a minimum we can only accept donations of £3 or more"[12]. Besides these examples we have already highlighted in chapter 2 a practical example restrictive religious giving.

The study utilizes an experimental design which unlike other designs tries to incorporate motivational markers in order to gauge the precise impact of explicit cost on giving behaviour. Specifically, apart from giving to charity the subjects can also spend money in order to bid for electronic items such as Sony headphones. This creates a more 'real world' situation where giving has an explicit cost. Moreover, by providing a considerable choice of charities, the experiment hopes to isolate warm glow behaviour. The choice not to run a standard dictator game was to avoid the framing effect (Korenok et al., 2014; Cappellen et al., 2013) and to avoid the lack of context inherent in dictator games (Grossman & Eckel, 2015; Eckel & Grossman, 1996b).

The findings of the study are important specifically for those fundraisers/charitable organisations who propose a specific amount to maximize donations. Previous studies have suggested that they should concentrate on finding the 'right' asking amount that would increase donations. However, the findings of this study are contrary to such recommendations. The results make an important distinction about individuals driven by warm glow. Ceteris paribus, warm glow givers will not respond positively to charitable

[10] https://www.bhf.org.uk/get-involved/donate-form [Accessed on 15/11/17]
[11] https://cafdonate.cafonline.org/2308#/DonationDetails [Accessed on 15/11/17]
[12] https://donate.sightsavers.org/smxpatron/uk/donate.html [Accessed on 15/11/17]

giving when asked to donate a specific amount. It would be more feasible if the amount is left unrestricted.

The Chapter is set out as follows: we start with literature review to put our study in context which includes review of both field and lab experiments. Next we detail our experimental design and data, followed by results. We conclude with a discussion and way forward.

3.2 Literature review

To our knowledge, this research is the first to discuss the impact of specific restriction on giving behaviour. We will cover literature looking at warm glow and the role of suggestion in charitable giving behaviour. These studies are closet to our research question.

Park et al. (2017) conducted a field experiment over five days which included 928 customers of a popular coffee shop. The customers were exposed to different pricing schemes for six most popular beverages. The customers had the option of Pay What You Will (PWYW) along with some suggestions. The categories of prices included: PWYW where half the amount was donated to charity, a PWYW inclusive of charity was suggested, a fixed amount for the items or a fixed amount inclusive of charity. The study found that more revenue was generated when a price was suggested. The study concluded that the suggested price acted as a reference and resulted in positive payoff and giving.

Goswami & Urminsky (2016) conducted a series of studies to investigate the impact of how defaults (donation amount suggestions) affect donations. They conducted a lab experiment with 106 undergraduates. The subjects were given a series of default choices to donate to the Red Cross. They found that low default attracted greater donations and frequency of giving increased. Extending the framework of the first study to a set of six

online studies they found that making a single option as default increased the choice for that option however it did not increase the amount or frequency of giving. They further extended the study to a natural experiment with 7,844 alumnus of the University of Chicago. They found that lower default lead to lower contribution while high default did not increase donations. They also found that lower default increased participation. Based on their findings they concluded that default generally doesn't work as effectively as was previously thought.

Reiley & Samek (2015) used mailing list of 14,421 members of three radio station and PBS TV in Tucson (USA) to conduct their field experiment. The experiment was divided into four treatments. Two treatments suggested fixed donation amounts while the other two treatments suggested donation amounts that varied (was set as a fraction of the donor's previous membership donation). In the first two set of treatments, the second treatment included an increase in the suggested amount. They found that change in suggested donation of 20-50% led to 15% fewer gifts received and around 20% reduction in the total amount given. The fixed amount in the experiment was not restrictive but was a specific suggestion, which could have been construed as informative or could have had an anchoring effect.

Edwards & List (2014) conducted a field experiment of alumni fund raising campaign consisting of 9,487 alumni who had graduated between 2000 and 2008. Control group subjects were given no suggestion about the donation amount; in the first treatment an amount of $20 was suggested; in the second treatment an amount from $20 to $20.08; and in the third treatment subjects were randomly suggested values of $20.01, $20.04, $20.07 and $20.08. They found that donations were relatively larger in the $20 suggestion group as compared to the no suggestion group. However, they found the difference

insignificant for the entire population. They hypothesised that individuals derive some utility from giving at least as much as the suggestion.

Luccasen & Grossman (2014) extended the work of Crumpler & Grossman (2008) by using 206 college undergrads and employing a nonparametric as well as a Tobit model approach. They found evidence of warm glow in giving. Participants were asked to do a real task which earned them $3 plus $10 for the experiment or just earn $10 for the experiment or $10 for the charity of their choice. The lowest giving was from the first category where the participants gave 30% of their endowment and the highest was from the third category where the participants gave 40% of endowment to charity. One of the more interesting results was an increase in participation when giving to charity was combined with taking from it as well.

Adena et al. (2014) conducted an experiment in conjunction with Bavarian State Opera to test whether asking an amount of €100 or €200 resulted in higher or lower donations. They found that the mean amount increased when people were asked €200 however the participation rate decreased. They concluded that reference donation and a desire for recognition were behind the higher rate of donations.

Nakamoto (2013) extended the work of Crumpler & Grossman (2008) to see if reference group had an impact on warm glow giving. Using a total of 110 students from two universities in Japan (Kyushu Sangyo University & Kyushu University) he found that warm glow was highly sensitive to the reference group. The lab experiment was designed in two parts, the first was borrowed from Crumpler & Grossman (2009) and in the second an amount was either deducted from the participant endowment or a certain portion was returned to them. Using semi parametric and Tobit model the results showed that when

50 yen were taken forcibly 43% matched the reference group and when 50 yen were returned 60% did not change their contributions.

Croson & Shang (2013), Shang & Croson (2009) and Croson & Shang (2008) found that providing information about the donation decisions of others had a positive impact on donations during a radio charity drive. They compared treatments across three papers with the same data set and procedures. Individuals who called the station were assigned to either a control group or a treatment group. In the treatment group the callers were told about the amount of a donation made by the previous caller. This amount provided social information to the caller, a reference point. They found that when the previous amount was either $300 or $600 it resulted in higher donations. However, Batmunkh et al. (2015) attempted to replicate the results and found no evidence that the social information effected donations.

Charness & Cheung (2013) conducted an experiment in a Chinese buffet restaurant in California where they measured the amount of donation customers made in the canister placed next to cashier's counter. They found that that charity received higher donation when $1 was asked as compared to when $0.50 or $2.00 was suggested. They concluded that asking people up to a point were more effective as compared to making no suggestion. The study however did not explain why the other suggested amounts were rejected.

Dale & Morgan (2010) investigated whether suggestions for high or low charitable giving made any difference. They found that a "high amount suggestion" lowered giving whereas a "lower amount suggestion" increased giving. Participants were divided into equal groups and were asked either to a give portion (suggestion of 14 tokens) or of all of their 20 tokens to charity. However, they were free to give any amount as the suggestion was not binding. The results showed that treatment group with suggestion of 14 tokens

gave more as compared to the control group. They also found that the frequency of giving was higher for 14 token suggestion as compared to the 20 token suggestion. Based on the responses to suggestions, they postulated that if suggestions were not correctly framed they could lead to less than expected giving behaviour; therefore it is safer to be silent. It would appear that the participants in the study took the suggestions as informative about the correct amount to be donated. The experiment does not consider the impact of restriction on donation behaviour.

Crumpler & Grossman (2008) conducted a lab experiment using 122 participants (from undergraduate and graduate schools) and found evidence of warm glow in charitable giving. In six sessions the participants were given the option of selecting the charity of their choice which would receive $10 ($15 in session 6) from the conductor of the experiment, in addition to their own contribution from their own endowment of $10 ($15 in session 6). Using a Logit model they found that 57% of the participants made a positive contribution and gave 20% from their own endowment.

Briers et al. (2006) showed that charitable giving was lower when the reference donation (anchoring) amount was higher. They conducted three studies where the participants (144 undergraduates) were administered three treatments: 1) make a donation without getting any item in return, 2) make a donation for an exchange of a reasonable item, or 3) make a donation for a near worthless item. In the exchange scenario the participants were asked to estimate the value of the item being offered. They found that higher value resulted in lower frequency but higher level of donations.

The literature points to a mix of results. This chapter moves away from the literature in that it tests the impact of a restricted amount on giving behaviour. Moreover, the design of the experiment proposes to isolate warm glow giving and incorporates other

dimensions in the decision making process for a more realistic appraisal of giving behaviour. Importantly, the research points to the responsiveness of warm glow donors to an environment where restriction is placed on their donations.

3.3 Experimental setup

The experiment consisted of five rounds. At the beginning of each round a subject was given a quasi-continuous[13] endowment of £10. The subject could then decide to: (1) donate money to charity, (2) buy a lottery ticket to win an electronic item, (3) keep some or all of the money, or any combination of these. Subjects entered their choice on a fill in sheet with one sheet per round. Subjects could not revisit choices made in a previous round[14].

Before we move on to the details of the experiment design it is pertinent to discuss our choice of the fixed endowment. At first it might appear to be a windfall however it can be argued that it is close to earned endowment, be it indirectly. In our experiment there was no show up fee and therefore, the subject had to 'earn' the amount by completing the game; the subject expected to earn £10 (or less) per hour[15]. In case the subject left before the experiment finished or at any time during the experiment or after the experiment but before completing the questionnaire, she did not receive any payoff or/and item. We acknowledge that this is quite different from what is generally found in literature, e.g. Cherry et al., 2002: endowment was earned based on how well subjects answered 17 GMAT questions.

[13] Donation could not be split into pennies.
[14] Subjects were provided with different coloured pen at the beginning of each round which was collected at the end of each round.
[15] The duration of the experiment was 60 minutes.

Additionally we contend that even if the amount is strictly interpreted as a windfall, literature is split about the effect of it on giving behaviour. Studies have shown that dictators are more likely to give when receiving a windfall compared to when they earn it (Oxoby & Spraggon, 2008; Carlsson et al., 2013). Martin (2016) finds no significant effect on giving behaviour regardless of the source of endowment. Reinstein & Riener (2009) have shown that effect of windfall is different when money is given in hand and when it is notional. We further contend that in our experiment even the windfall interpretation helps in isolating the treatment effect. Introducing an earned element similar to Cherry et al. (2002) would have made it difficult to disentangle the earned endowment effect from our restricted treatment effect.

Subjects could donate to seven specific charities (Salvation Army, Blue Cross, Actionaid, Cancer Research UK, Aid for Africa, Comic Relief and International Red Cross) or one charity of their own choice provided it was a registered in the UK. The selection of charities was specific to trigger a motivational response from the subjects[16]. Providing different choices of charities was also necessary to cater to warm glow giving (Null, 2011). Null has shown that if there is more than one charity option the individual might be inclined to either weakly substitute (give less amount to either one) or perfectly substitute (give the entire amount to one over the other) between them. In case of altruistic giving the individual would perfectly substitute as it would be considered efficient. The warm glow giver would be more inclined to spread the amount across the charities, in other words weakly substitute - an inefficient allocation.

[16] More specifically, the seven charities were chosen to cover the broad range of motivations for giving highlighted in the literature: Perception, Attitudes, Reputation, Organizational Influence, Impact, Rewards.

Subjects were given a coloured printout highlighting the main points of each charity, the printout also included a picture depicting the core value of the charity. One of the reasons for providing information was to facilitate the subjects in case they were unaware of the named charities. However, given that only 3 subjects in the restricted group (10%) and 7 subjects in the unrestricted group (22%) opted for giving to own charity (in addition to other charities) indicate that the subjects were familiar with the named charities. All donations were given to the specific charity/charities and a receipt was emailed to all the subjects.

At the beginning of each round an electronic item was displayed and a sheet containing its specifications was provided. Table 3.1 provides details on the item.[17] On the specification sheet the retail price of the item was listed as well as the amount that a subject needed to pay in order to buy a lottery ticket to win the item.[18] The item was shown to the subjects in its original packing, subjects could handle the product etc.; after the inspection the item was displayed at the front of the room. The price of a lottery ticket varied from round to round as detailed in Table 3.1. The range of lottery ticket prices reflected differences in the retail price of the item although we note that all items were offered at a very substantial discount. One of the motivations for varying price was to change the explicit cost of giving.

[17] In the advertising to recruit subjects there were pictures of 8 comparable items of which only 5 appeared in the experiment.
[18] A subject could only buy one lottery ticket per round.

Table 3.1 : Items, retail price and lottery price

	Rounds				
	1	2	3	4	5
Item	SONY ICDBX140 Digital Voice Recorder-Silver	HP ENVY 4507 All-in-One Wireless Inkjet Printer	SONY MDR-XB450APL.CE7 Headphones – Blue	PNY T2600 Portable USB Battery Charger	MISFIT Flash Fitness Activity Tracker – Onyx
Original Price	£28.99	£59.99	£34.99	£9.99	£39.99
Lottery Price	£3.00	£7.00	£4.00	£1.00	£5.00

Note: Probabilities of winning items depended on how many lottery tickets were bought in a particular round.

For example, in round 1 the item was a Sony portable dictation machine and the price of a lottery ticket was £3. A subject could, for instance, have chosen to donate £4 to Action Aid and bought a lottery ticket. This would give them £3 = £10 – 7 as balance to take away in cash. Or they could have simply taken £10, donated £4 to Action Aid and kept £6, etc. Note that a subject could also end up with £0 payoff if they gave all the £10 to charity or bought a lottery ticket, did not win and gave the rest to charity. There was no show up fee for the experiment making the decision process even more important if the subject was hoping to make some money from the experiment.

At the end of the five rounds each subject was asked to roll a dice. The number on the dice (1 to 5, six resulted in a reroll) decided which round would be used to determine the subject's outcome for the experiment. If they had bought a lottery ticket in that round then they were entered into the draw for the item. A draw was made for each of the five rounds. The randomization of the rounds was deliberate and was designed to have a specific impact Randomization of the rounds allowed to observe, for each treatment, the same response as if the round would have been the only one the subject faced (Bardsley

et. al. 2010). In other words, the random selection of the rounds increased the probability that the subjects would take their choice decisions seriously. Besides random selection of a specific round was consistent with one period theoretical model (chapter 2). Subjects received no feedback at the end of the rounds.

Let us briefly comment on the strategic aspect that the lottery brings to the experiment. For practical reasons we were limited in the number of electronic items we could 'give away', particularly as we wanted to have relatively desirable (i.e. not cheap) items. A lottery is a simple way to deal with this. It does add an element of strategy, in that a subject's chance of obtaining the item depends on what other subjects do. This, however, does not interact with our treatment variable in any way given that it is fixed across treatments. Moreover, the random selection of rounds mean that anybody who bids for an item has a very good chance of winning the item (at a significant price discount). We would suggest, therefore, that preferences for the item rather than risk aversion or strategic concerns were foremost in subject's mind. Table 3.2 shows that between a quarter and a half of subjects bought a lottery ticket in any one round. As can be observed from Table 3.2 the probabilities of winning items depended on how many lottery tickets were bought in a particular round.

Table 3.2: Number who bought lottery ticket

	Rounds				
	1	2	3	4	5
Price of lottery ticket	£3.00	£7.00	£4.00	£1.00	£6.00
Number who buy ticket	14	32	31	34	26
Number in restricted	5	14	13	14	10
Number in unrestricted	9	18	18	20	16

Table 3.3 shows how many tickets were purchased by the subjects. For instance, 15 subjects purchased two lottery tickets (bought lottery ticket in two out of five rounds)

while 4 subjects bought five lottery tickets (bought lottery ticket in each of the five rounds). As can been seen from Table 3.3 the lottery tickets effected opportunity cost of giving.

Table 3.3: Number of lottery tickets purchased

	Number of Lottery Tickets					
	0	1	2	3	4	5
Frequency of buying lottery tickets	10	11	15	13	9	4

There were two treatments. In the **unrestricted treatment** subjects could donate any amount to any number of charities (provided they did not exceed the budget for that round). In the **restricted treatment** subjects had to donate a minimum of £3 per charity if they donated at all. The amount selected was non-informative with reference to charities, but it was kept high enough to act as a threat to their own outcomes. Specifically the highest priced item was £7 which would mean no payoff if the subject decided to donate.

It may be argued that £3 might represent 30% of the total endowment which would signal considerable generosity. However, the £3 cannot be taken as 30% of income in context of the game otherwise £7 would be taken as 70% of the income for a lottery ticket to win a printer! As already highlighted, these amounts are not informative but are simply the rules of the game to help create an environment where decision making process requires qualitative and quantitative assessment. We do however, recognize the merit of the possible argument and the possible difficulty in disentangling the treatment effect in terms of lack of freedom to donate on the one hand and the high minimum amount on the other. This merits additional experiments where treatments are varied between £2 and £1. Nevertheless we argue that laboratory context is by its very definition is artificial (Benz & Meier, 2008), it lacks the real-life context of the field setting (Bardsley, 2005), however it has an important advantage of isolating the variables of interest from otherwise

confounding factors (Camerer & Fehr, 2005). Besides people tend to adjust to circumstances to reveal their preferences: the agent's preferences "are over the set of final outcomes available and the outcome finally chosen" (Koszegi & Robin, 2008, p.1823). To that extent the £3 seemed appropriate as the amount was not too small not to merit consideration and not to large that it could be ignored.

The average payment per subject was £7.30, recall that the payoff was based on randomly selected round provided it had a balance amount (after giving to charity or/and buying a lottery ticket), 44 subjects received payment.

We are also cognizant about allowing donations only in whole numbers which stands apart from experiments where subjects could donate any amount (in pennies). There are however situations in which charities insist on donors giving at or above some fixed, minimum amount. Typically this seems to stem from a need to recover the fixed costs associated with donations. For instance, anyone who wants to run the 2018 London Marathon for Guide Dogs for the Blind or Great Ormond Street Hospital has to raise a minimum of £2,000. In these examples there is an explicit minimum. Far more common are funding appeals framed in a way that suggests a minimum donation is required. For instance, 'donate £20 today to Cancer Research UK', or '£5 a month can provide lifesaving food for a malnourished child'. Therefore, charity donations are typically round numbers such as £5, £10 or £20 (e.g. Smith et al., 2015).

The experiment was conducted at the University of Kent, Canterbury UK. The time and date was advertised to the entire University and interested individuals were asked to register through return email. There were 4 sessions in total. In each session subjects were randomly allocated to a treatment and distributed around a large classroom. After signing

in the subjects made their way into the classroom and could sit at any of the 24 individual desks. Once seated the subjects could not change desks. All desks were identical and all the experiment material was available in the two coloured files placed on each desk (the files across all desks were identical). Subjects in the restricted treatment were unaware of the unrestricted treatment, and vice-versa. In particular, everything was exactly the same in both treatments except for one line in the instructions (Appendix A) and on the fill in sheet.

Before proceeding to the data and results it would be important to highlight how we attempted to minimize the experimenter demand effects (Orne, 1962). We acknowledge that the restricted amount might be construed by the subjects as a recommendation and might influence their actions towards donating the fixed amount. However, whereas we might not be able to completely rule out the experimenter demand effects we took certain steps which we hoped would otherwise minimize any such confounding issues.

To begin with, the experiment was advertised as a simple decision making game. The between subject design helps in obfuscating the experiment's objectives by dividing the subjects into treatment and control groups, Heinemann et al. (2004). Taking a leaf from Lei et al. (2001) we included a series of alternative options, give to charity, payoff or/and buying a lottery ticket. Therefore, the focus was not on simply contributing to charity but also included the possible and equally interesting hypothesis of buying a lottery ticket (for different items).

Moreover, cues were included in the experiment which pointed in different directions. Subjects were not only given information about charities but also about the

items that they could win. The information in both cases were sufficiently detailed. In addition, the minimum prices of the items and the minimum charitable amount for the treatment group were also explicitly stated. Therefore, subjects were exposed to at least two sets of behavioural directions without any additional information to clearly decipher the objective of the experiment with the flexibility to act according to their preferences (Sitzia & Zizzo 2011).

During the experiment, before the start of each round, the subjects were asked to look at the information on charities and at the same time the item for that round was passed from one subject to the other. They were allowed to handle the item, inspect it in its original packing, all without any time limit. Moreover, the subjects were not only allowed choice of charities but also choice of items (each round had a different item). This technique helped in part to make it difficult for the subjects to infer the true objective of the experiment; Bosman & Van Winden (2002) used different emotional stimuli to make it difficult for the participants to infer which one the experimenter was interested in.

We are confident that with these elements the experimenter demand effects were minimized. We however, acknowledge that even with our attempt to minimize the effect there still exists the chance that subjects were able to confer the real objective of the experiment. Under such conditions we offer a general defence against the experimenter demand effects. Charities in the real world typically do require that their advice and provisions may be taken seriously, to that extent the laboratory setting mirrors the real world scenario (Schotter & Sopher, 2003). Besides, there is both direct and indirect empirical evidence against experimenter demand effects, studies have shown that in a given setting its presence cannot plausibly explain the differences in observed strategic

behaviour (Bacharach et al., 2007; Guerra & Zizzo, 2004; Lei et al., 2001; Eckel & Holt, 1989).

3.3.1 Hypothesis

This would be a good place to remind the reader about the main hypothesis that we aim to test. In this chapter we explore the potential consequences of a minimum donation. Recall in chapter 2 we worked through a simple model of charitable giving in which a person donates to receive warm glow. In this experimental setting, no minimum is compared to one with a minimum, with a focus on those who would intrinsically prefer to give less than the minimum. We hypothesize that a minimum donation is predicted to decrease the giving of some, who choose not to give at all, and increase the giving of others, who donate the minimum. This, of itself, is not particularly surprising and so the more interesting question is whether the net effect on giving is positive or negative. There is no a-priori reason to expect things to go one way or the other, the ambiguity motivates experimental work.

3.4 Data

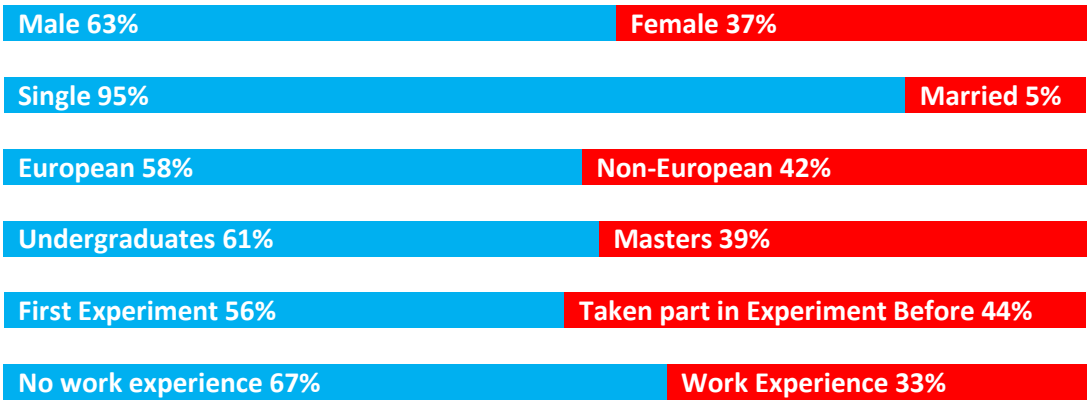
A total of 65 subjects took part in the experiment but the observations from 3 subjects were dropped because they failed to fill in the form correctly in one of the five rounds. This gives us 62 subjects and 310 observations. At the end of the five rounds subjects were given a standard questionnaire to fill in.

The questionnaire (Bell, 2014; Beiske, 2002) had a total of 50 questions of which 42 were closed-ended questions (fit into categories that had been predefined). The closed-ended questions were constructed using the Likert scale (Likert, 1932). The scale provided a method to solicit attitude towards a given statement or series of statements which could

be further classified into positive and negative behaviour responses (Garland, 1991). Special care was taken to ensure that questions were clear, precise and unambiguous. The questions were ordered to motivate and solicit accurate information. In order to ensure consistency in response, some questions were repeated (United Nations, Statistical Division, 2008). The questions were relatively wide ranging and included date of birth, gender, nationality, name of degree, marital status, work status, spending habits, charitable preferences, experiment experience, health status etc. Prior to the experiment it was tested using the five key criteria identified by Bloom et al. (1999).

The main purpose of the questionnaire was to elicit demographic characteristics. Most of the characteristics used in the study are standard in literature. Studies have shown that gender plays a role in giving behaviour. Women tend to give more as compared to men in most cases (Zagefka & James, 2015; Wiepking & Maas, 2009; Andreoni et al., 2003). Married people tend to be more generous (Kamas et al., 2008). Studies have also found positive relationship between giving and number of children (Wiepking & Bekkers, 2012). There is considerable evidence of positive relationship between income and charitable giving (Bekkers & Wiepking, 2011; Bakija & Heim, 2008). Studies have also shown a positive relationship between the age of the individual and charitable behaviour (Alpizar et al., 2008; Belfield & Beney, 2000; Clotfelter, 1997). Other characteristics were specific to student population. Selected general information on data is presented in Figure 3.1.

Figure 3.1: Distribution across selected categories



Moreover, 92% gave to charity at least once in their life, 41% gave to charity in the last one year, 50% preferred to give charity in cash, 83% gave to charity when solicited, 50% preferred to give to charitable organizations while 23% preferred to give to specific individuals, 47% preferred for local (home based) charities while 33% preferred international charities. Out of the total sample, 84% preferred to give to a worthy cause and 93% preferred choice of charity. With reference to the experiment, 80% found it interesting, 77% were in a happy mood while 13% stated that they were not physically feeling well.

Table 3.4 gives the breakdown of subjects per session with reference to restriction. As can be observed except for session 1 the subjects were evenly distributed between restricted and unrestricted groups. It is emphasised that the distribution was completely random and later in the chapter this is shown to be statistically true.

Table 3.4: Subjects per session

Session	1	2	3	4	Total
Unrestricted	9	6	7	10	32
Restricted	7	6	7	10	30
Total	16	12	14	20	62

3.5 Results

Figure 3.2 plots the average amount a subject gives to charity and spends on a lottery ticket, by round and type of treatment. The average charitable donation is represented by the yellow bar while the average amount spent on the items is represented by the dark green bar. The item offered in round 1 was priced at £3 which was relatively cheaper and the charitable giving was high. The most expensive items, £7 and £5, were offered in rounds 2 and 5 respectively, and charitable giving remained low in both these rounds.[19] The variation could also be due to the preference of the subjects for the items. However, in either case the items have an impact on the explicit cost of giving.

[19] The average amount given to charity when there was an expensive item, £2.69, was significantly less than the amount given with less expensive items, £3.82 (two-tailed p = 0.01, t-test).

Figure 3.2: Impact of items on charity giving

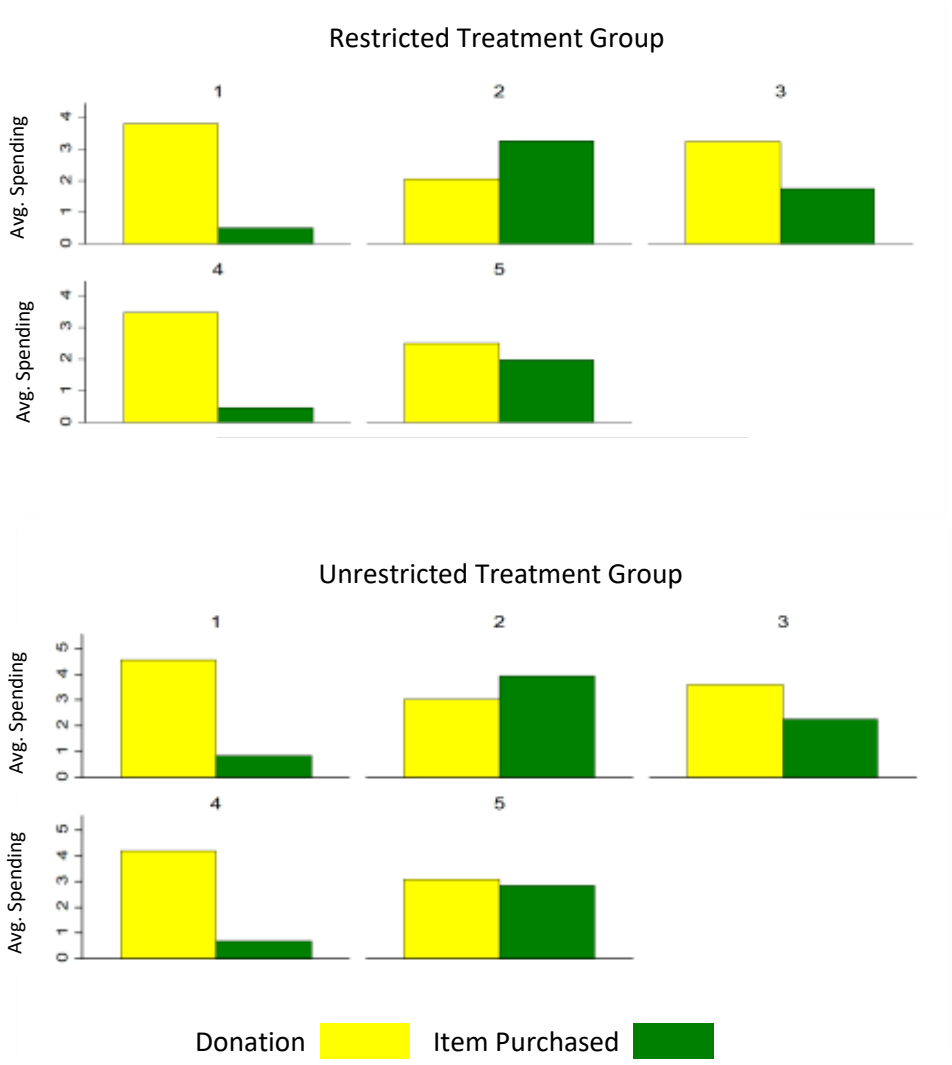


Figure 3.3 plots the average giving against each round. As already discussed, the amount given to charity by round systematically depends on the item that was being offered and the explicit cost of giving. Significant variation in giving is evident across restricted and unrestricted treatments. They give, on average, more in the unrestricted than restricted treatment. This difference is also economically significant at, at least, £0.50 per round. The pattern of overall giving has an almost identical curvature which shows that giving differs only due to the restricted treatment effect. However, this needs to be

confirmed by looking at the difference of mean between the characteristics of both the groups.

Figure 3.3: Group wise charity giving

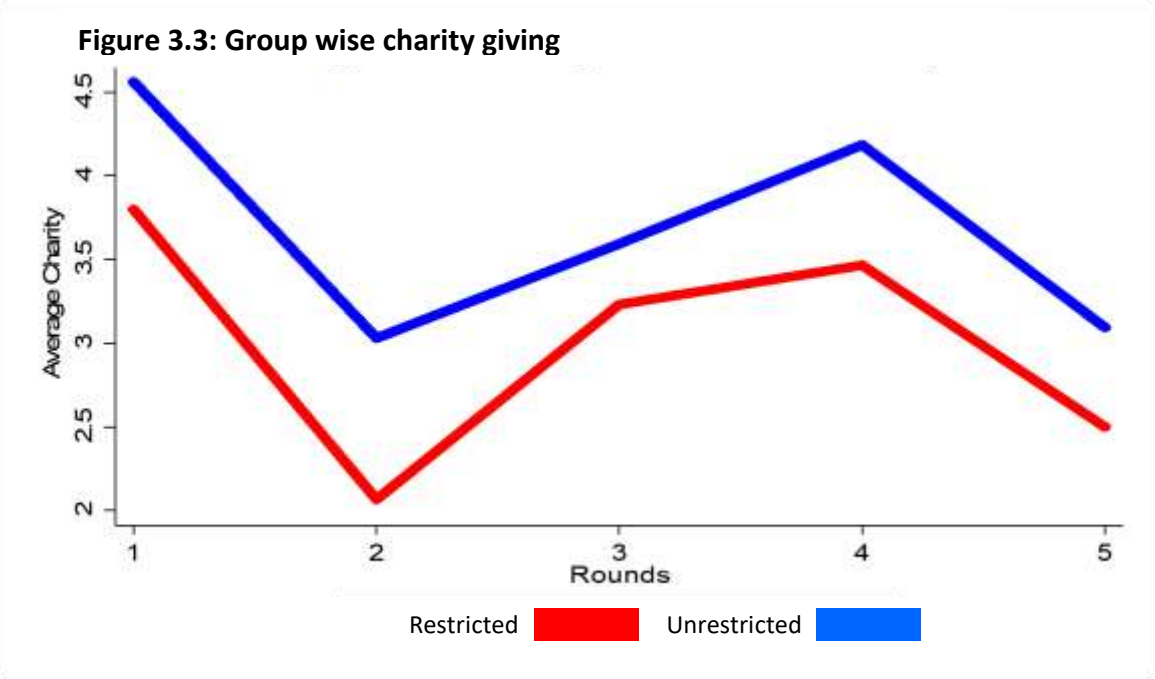


Table 3.5 details the number of times that subjects gave each possible donation. For example, there were 19 times that subjects donated a total of £6. One important thing to note is that 55% of observations are zeros in the restricted treatment while the unrestricted treatment only has 28%. This assumes we can treat each choice as an independent observation. Shortly we shall provide results that treat a subject as the unit of observation. This difference is significant (two-sided p=0.03, proportions test) and so the restriction to donate at least £3 clearly has an effect. If we look at the proportion of subjects who give less than £3 there is no significant difference between the restricted treatment, 55%, and the unrestricted, 46% (two-sided p=0.48, proportions test). This suggests that the restriction merely results in those subjects who would have given £1 and £2 giving £0.

For amounts of £3 or above there are no significant differences between treatments. In particular the proportion giving £3 is not significantly different between the

unrestricted, 11%, and restricted treatment, 10% (two-sided p=0.90, proportions test). This suggests that the restriction does not result in anyone giving more than they would have done otherwise. Note that a high proportion, 15%, of observations are maximum donations of £10.

Table 3.5: Total giving across groups

	Amount donated to charity										
	£0	£1	£2	£3	£4	£5	£6	£7	£8	£9	£10	Total
Unrestricted	45	12	17	18	9	15	12	1	1	7	23	160
Restricted	83	-	-	15	4	9	7	3	0	7	22	150
Total	128	12	17	33	13	24	19	4	1	14	45	310

Table 3.6 gives insight on the number of charities that a subject donates to per round. Subjects in the restricted treatment could give to a maximum of three charities in each round while those in the unrestricted could give to up to 8 charities (the 7 named plus one of their own choice). In the restricted treatment the frequency of giving was consistently less than in the unrestricted treatment. One might have conjectured that the restriction would have led to subjects giving to fewer charities but still giving a positive amount.[20] The proportion giving to 1 charity is, however, lower in the restricted than unrestricted treatment (two-sided p=0.30, proportions test).

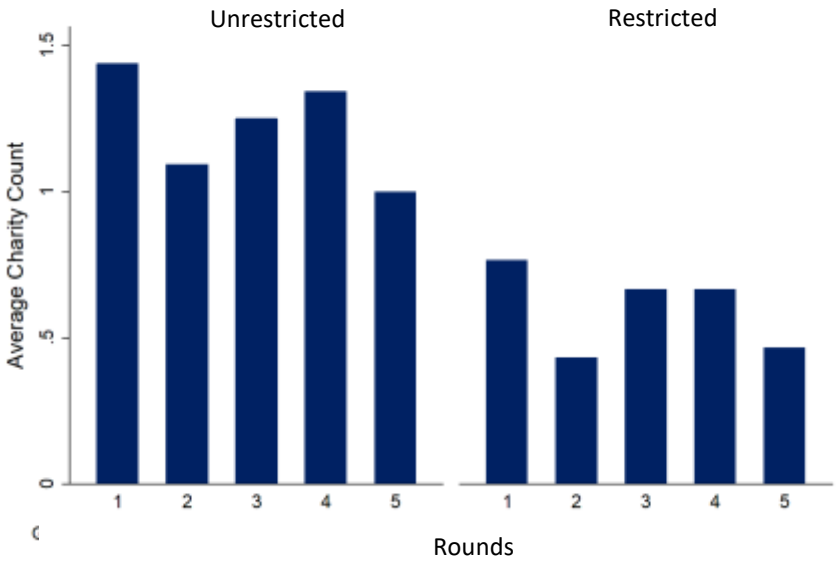
Table 3.6: Frequency across groups

	Frequency of giving									
	0	1	2	3	4	5	6	7	8	Total
Unrestricted	45	74	17	18	1	1	3	1	0	160
Restricted	83	49	13	5	0	0	0	0	0	150
Total	128	123	30	23	1	1	3	1	0	310

[20] For example, subjects switch from giving £1 or £2 to a number of charities to giving £3 to one charity.

Figure 3.4 plots a bar chart by restricted and unrestricted group which shows the average times the subject gives in each round. As can be observed, the restricted group consistently gives less times per round. There is a decrease in giving in round 2 possibly due to the expensive item being offered, it is relatively high in round 4 which offered one of the cheapest items.

Figure 3.4: Frequency of giving across rounds



We need to see whether the basic characteristics of the two groups are similar or significantly differ. As mentioned previously, due care was taken to ensure randomization of the restricted treatment and unrestricted treatment groups. The first two columns of Table 3.7 are divided by restricted treatment & unrestricted treatment group, and means of number of individual characteristics. In the last column we report the differences in means of both the groups. Results show that randomization has been successful. This in turn makes the restricted treatment and unrestricted treatment group comparable across the observable characteristics. Accept for marriage (two-sided p=0.00, 2 married and 1 divorced, Mann-Whitney test) there is no significant differences by treatment status in age, gender, degree, subject, work and nationality.

Table 3.7: Subject characteristics

	Means		Differences
	Restricted Treatment	Unrestricted Treatment	
Age	2.77	2.84	0.07 (0.06)
Gender	0.33	0.41	0.07 (0.06)
Marital Status	1.13	1.00	-0.13 (0.03)
Degree	1.40	1.38	-0.03 (0.06)
Subject	2.53	2.50	-0.03 (0.14)
Employment	0.33	0.32	-0.02 (0.05)
Nationality	6.60	6.78	0.18 (0.26)

Note: Standard errors are reported in parentheses. The characteristics were solicited through a questionnaire duly filled by the subjects at the end of the experiment. For age they had to put down the year of birth, under gender they had the option of selecting 'male' or 'female', under marital status they could select from 'single' married' or 'divorced' (coded 1, 2 and 3 respectively), they had to write down degree (coded from 1 to 4) and subject (coded 1 to 8), employment was a simple yes or no option and they had to write down their nationality (coded 1 to 11).

3.5.1 Empirical strategy

To study whether constrained choice impact giving behaviour, we first look at the probability of giving by subjects when treated. Next, we study whether subjects in the restricted treatment give less frequently over the rounds and finally whether they give less in amount in each of the rounds.

3.5.1.1 Probability of giving

For the first part of the analysis we use the following equation:

$$Pr[Y_{it}] = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (1)$$

where Y_{it} is a binary variable that takes on the value of 1 if the subject decides to give to charity and 0 otherwise. $\boldsymbol{X_i}$ is a vector of subject characteristics– age, gender, marital status, degree, subject specialization, nationality, work status and whether they prefer to give items as opposed to cash to charity. $\boldsymbol{W_i}$ is categorical variable which codes the most expensive item as 1 making it a base for comparison with other less expensive items. The remaining items have been coded as 2,3,4 and 5 based on the next expensive item and so on (5 being the least expensive item). This was necessary to avoid any endogeneity – including the items purchased would have introduced a choice variable on the right hand side, therefore categorization was a feasible way to avoid this issue. $\boldsymbol{Treatment_i}$ is dummy variable taking on the value 1 if restricted treatment and 0 otherwise. The summary statistics of these variables are given in Table 3.8.

Table 3.8: Descriptive statistics

Variable	Description	Mean	Std. Dev.
Dependent Variable			
Charity Binary	Dummy=1 if given to charity	0.59	0.49
Independent Variables			
Treatment	Dummy=1 for minimum charity contribution of £3	0.48	0.50
Items	Dummy=1 for expensive item	0.20	0.40
Age	Dummy=1 for born in the 1990s	0.81	0.40
Gender	Dummy=1 for female	0.37	0.48
Marital Status	Dummy=1 for single	0.95	0.22
Nationality	Dummy=1 for European	0.58	0.49
Degree	Dummy=1 for undergrad	0.61	0.49
Subject	Dummy=1 for social sciences	0.79	0.41
Work	Dummy=1 for yes	0.33	0.47
Cash Donations	Dummy=1 if preferred to give cash to charity	0.48	0.50

3.5.1.2 Empirical specification

The dependent variable is not fully observed but we do observe the discrete choice. This allows us to model the probability that given the treatment (and other covariates) whether the subjects would give to charity or otherwise. As giving to charity is a binary variable it is estimated using Logit.

We utilize random effects specification as opposed to fixed effects and therefore use of it needs to be justified. The variable of interest *Treatment* is time invariant and as a result would be dropped if fixed effects estimator is used. However, this might not be a convincing enough reason in econometrics term therefore there is a need for further explanation.

If the sample exhausts the population the corresponding variables could be considered as fixed, when the sample is small part of the population the corresponding variables can be treated as random (Green & Tukey, 1960). Furthermore, fixed effects are less efficient in cases where there is large between group variation coupled with small sample size (Wooldridge, 2010). Under fixed effects the only source of uncertainty is within variation while in this study the interest is on between subject and average variation which can be modelled through the random effects (Borenstein et al., 2009).

Along with random effects, the population average estimator with different working correlations[21]has also been estimated[22]. The primary motivation is to estimate

[21] The advantage of using different working correlations is that they are be able to obtain consistent and asymptotically normal estimates and therefore there is no need to model the correlation matrix of the dependent variable correctly (Cameron & Trivedi, 2005).

[22] An appropriate choice of the working correlation matrix results in large efficiency gains and bias reduction. Therefore, different working correlation matrixes have been used in order to arrive as close as possible to the true correlation matrix (Cameron & Trivedi, 2005).

average effects along with subject specific effects. The former is more acceptable from a policy point of view.

The structure of the matrix is user specified and is based on the occasion variable. One way of selecting the correlation structure is to fit different working correlation matrices and then use a goodness-of-fit to establish the best one. Four correlation structures have been specified: independent, exchangeable, autoregressive and unstructured. Independent correlation assumes zero correlations between repeated observations – residuals are mutually independent. Exchangeable correlation assumes uniform correlations across time periods – every pair of residuals has the same correlation. Autoregressive correlation decreases as the time between measurement increases – correlation between residuals decreases exponentially. Unstructured correlation implies that pair wise correlations are distinct for all other pairs – so residuals have correlations at time periods 1 and 2 would be different from the correlation between residuals in time periods 2 and 3. (Wooldridge, 2010).

The Logit model takes the following form:

$$Pr\ (Y_{it}|\boldsymbol{Treatment_i}, \boldsymbol{X_i}, \boldsymbol{W_i}\ ) = \alpha_{re,pa} + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (2)$$

All the variables are defined as in equation (1).The results for Logit model and population averages are presented in Table 3.9.

Column (1) gives the pooled results while column (2) contains the Logit random effects. Across all specifications, the odds ratio of giving for subjects in the restricted treatment group are less compared to the subjects in the unrestricted treatment group.

Column (3) gives the results with independent correlation which also shows that restricted treatment group is less likely to give to charity. Column (4) gives the results with

exchangeable correlation which also shows a lower odds of giving compared by the restricted treatment group. Column (5) rounds it up with autocorrelation matrix, the direction of giving behaviour remains negative for the restricted treatment group.

Table 3.9 also report the marginal effects which confirm that those in the restricted treatment group would give less both per subject as well as on average. The results demonstrate that if subjects are constrained in terms of giving a specific minimum amount their contribution to public good decreases. As was mentioned in the descriptive statistics that both the restricted treatment and unrestricted treatment groups do not vary in terms of characteristics therefore the reason for the difference is due to the restricted treatment effect.

Table 3.9: Odds ratio and marginal effects

	Pooled (1)	Logit (2)	Ind (3)	Exc (4)	Ar (5)
a. Treatment	0.18***	0.02***	0.18***	0.14***	0.26***
	(0.08)	(0.03)	(0.09)	(0.07)	(0.16)
b. Treatment	-0.22***	-0.37***	-0.22***	-0.34***	-0.13***
	(0.06)	(0.09)	(0.07)	(0.08)	(0.06)
No. of Observations	218	218	218	218	218

Note: Dependent variable is charity which is equal to one if given to charity and zero otherwise; a. Treatment odds ratio are reported, b. Treatment marginal effects are reported. Column (1) pooled average effects and column (2) panel logit include subject specific effects while column (3) independent, column (4) exchangeable and column (5) auto-correlated report population averages with correlation structures. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

3.5.2 Frequency of giving

Next, we look at whether the frequency of giving per round is affected by the restricted treatment. This is setup as:

$$Count_{it} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (3)$$

where the dependent variable is Charity Count. This is a discrete variable which includes the total number of times each subject gives to charity across the five rounds. Each subject had the choice to contribute a maximum of £10 across eight categories of charities; each contribution was taken as a single instance or count. For instance, if a subject gave to three separate charities in round one it would be counted as if the subject donated three times to charity in that round[23]. The descriptive statistics for the dependent variable is given in Table 3.10; the covariates are same as in equation (1).

Table 3.10: Dependent variable, frequency of giving

Variable	Description	Mean	Std. Dev.
Charity Count	Frequency of giving per round	0.92	1.12

3.5.2.1 Empirical specification

The nature of the dependent variable is such that it takes a Poisson distribution (see Figure 3.5). These are the instances where the subjects give to one or more charities. The data also satisfies the basic assumptions of the Poisson model. As with the previous section, population averages have also be included.

The Poisson model would take the following form:

$$Pr(Y_{it}|v_i) = \exp\left(\alpha_{re,pa} + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it}\right) \qquad (4)$$

[23] As mentioned, the experiment was paper based, all eight charities were listed separately and therefore counting how many times a subject gave to each was a straight forward exercise.

where, $\boldsymbol{Treatment_i, X_i, W_i}$ are the same as in equation (1).

Figure 3.5: Frequency of giving

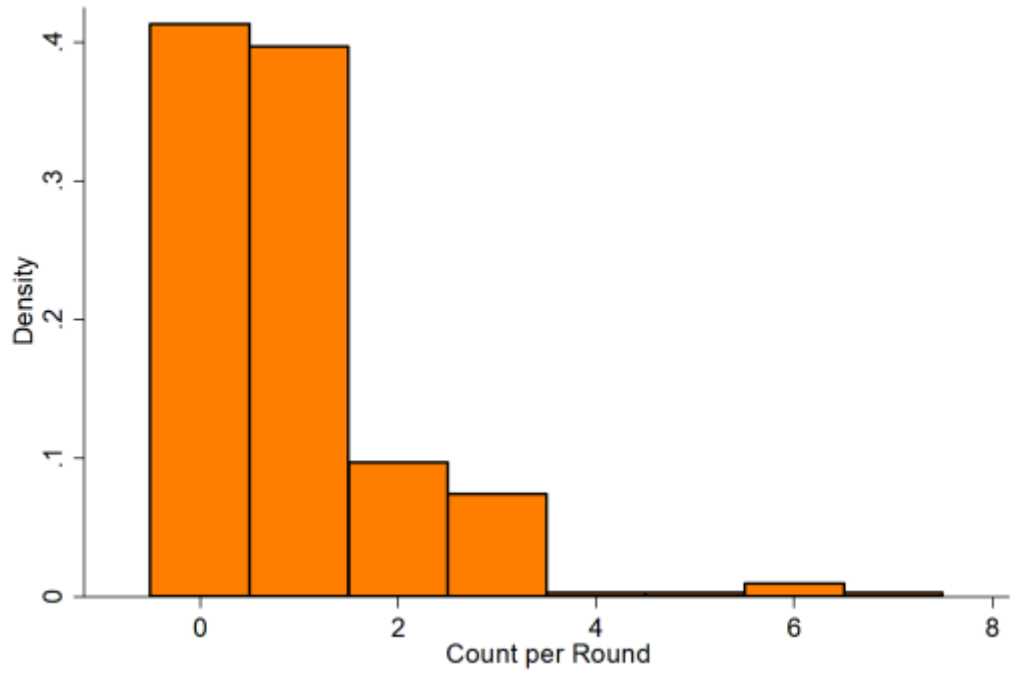


Table 3.11 contains the pooled Poisson regression output both for subject specific and population averages. Row 'a': Column (1) gives baseline pooled estimates while column (2) contains the panel Poisson estimates, restricted treatment has a lower incidence rate ratio as compared to the unrestricted treatment, they are likely to give less frequently to charity. Accounting for correlation across rounds, the frequency of giving remains consistently lower compared to when subjects are free to give any amount. As expected the restricted treatment effect has a negative impact on frequency of giving as compared to the unrestricted treatment group. Consistent with Figure 3.2 on giving per round, subjects who are restricted to giving £3 minimum tend to give less often as compared to those who have no such restriction.

The marginal effects are given in row ‘b’ of Table 3.11. As before the restricted treatment has a consistently negative effect on frequency of giving. Those in the restricted treatment group will give less frequently compared to the unrestricted group subjects.

Table 3.11: Incidence rate ratios and marginal effects

	Pooled (1)	Poisson (2)	Ind (3)	Exc (4)	Uns (5)	Ar (6)
a. Treatment	0.57***	0.57***	0.57***	0.53***	0.48***	0.49***
	(0.11)	(0.10)	(0.10)	(0.13)	(0.12)	(0.12)
b. Treatment	-0.50***	-0.57***	-0.50***	-0.55***	-0.63***	-0.61***
	(0.17)	(0.18)	(0.16)	(0.22)	(0.23)	(0.22)
No. of Observations	248	248	248	248	248	248

Note: Dependent variable is charity count which includes the frequency of giving per round; a. Treatment incidence-rate ratios are reported, b. Treatment marginal effects are reported. Column (1) pooled average effects and column (2) panel poison include subject specific effects while column (3) independent, column (4) exchangeable, column (5) unstructured and column (6) auto-correlated report population averages with correlation structures. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

One of the assumptions of the Poisson Model is that the mean is equal to the variance, which is seldom the case. Similarly, the variance (1.24) is lightly higher than the mean (0.92). Failure to adjust for over-dispersion would lead to underestimating the variability in our estimates and therefore point estimates will not be as precise. Usually this small difference can be dealt with using a dispersion parameter but we thought it appropriate to use the negative binomial model instead (Cameron & Trivedi, 2005). However, it needs to be mentioned that Wooldridge (2010), Cameron and Trivedi (2005) argue that even if there is over-dispersion the Poisson model can be used with robust standard errors[24]. The results for the Negative Binomial are given in Table 3.12.

[24] The logic behind the use of robust standard errors in case of over-dispersion is that the estimated coefficients of the maximum-likelihood Poisson estimator is not dependent on the assumption of E(y) = Var(y). Therefore even if the assumption is violated, the estimates of the coefficients remain unaffected. What does depend on the assumption that E(y) = Var(y) are the estimated standard errors of the coefficients, if the assumption is violated, the reported standard errors are incorrect (Wooldridge, 2010).

Table 3.12: Negative binomial

	Pooled (1)	NB (2)	Ind (3)	Exc (4)	Uns (5)	Ar (6)
a. Treatment	0.57***	0.57***	0.49***	0.44***	0.42***	0.42***
	(0.11)	(0.10)	(0.12)	(0.15)	(0.15)	(0.14)
b. Treatment	-0.50***	-0.57***	-0.79***	-0.73***	-0.76***	-0.76***
	(0.17)	(0.18)	(0.27)	(0.34)	(0.35)	(0.33)
No. of Observations	248	248	248	248	248	248

Note: Dependent variable is charity count which includes the frequency of giving per round; a. Treatment incidence-rate ratios are reported, b. Treatment marginal effects are reported. Column (1) pooled average effects and column (2) panel negative binomial include subject specific effects while column (3) independent, column (4) exchangeable, column (5) unstructured and column (6) auto-correlated report population averages with lagged response correlation structures. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

The results in Table 3.12 for the baseline pooled estimates column (1) remain the same as compared to the negative binomial estimates column (2). There is slight change in the panel estimates both across the subject-specific and population averages however the change in coefficient are very small. The overall results are consistent with the hypothesis that those in the restricted treatment group give less frequently to charity as compared to the unrestricted treatment group

3.5.3 Giving in total

Next, we look at whether the restricted treatment also has an impact on total giving. This is setup as:

$$Charity_{it} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (5)$$

where $Charity_{it}$ is the amount given in each round. Recall the subjects could give a maximum of £10 per round, the minimum amount varies depending on whether the subject is in the restricted treatment or unrestricted treatment group. The subjects in the restricted treatment group are constrained to give a minimum of £3 if they decide to give whereas no such restriction has been placed on the unrestricted treatment group. The covariates are exactly the same as in in equation (1); descriptive statistics for the dependent variable is given in Table 3.13.

Table 3.13: Dependent variable, total giving

Variable	Description	Mean	Std. Dev.
Charity	Total amount given per round	3.37	3.71

3.5.3.1 Empirical specification

We use the random effects model to estimate equation (5). The reason for choosing random effects over fixed effects is the same as per section 3.5.1.2. Moreover, random effects model adopts a subject specific approach, it can distinguish observations belonging to the same or different subjects. Since we are not only interested in the behaviour of specific subject but also in the 'average' behaviour we once again use population averages. The model specification is as follows:

$$Y_{it} = \alpha_{re,pa} + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (6)$$

The results are given in Table 3.14. As expected the restricted treatment has a negative impact on the amount of charity as compared to the unrestricted treatment. The population averages with varying correlations also highlight the inverse relationship between the restricted treatment and overall giving. With respect to the column (1) which gives the baseline OLS results, those in the restricted treatment group will give £0.66 less to charity as compared to the unrestricted treatment group. Column (2) gives the panel results which also confirm a negative impact on charitable giving for restricted treatment group as compared to the unrestricted treatment group. The population averages across the correlations (columns 3-6) also highlight that on average each additional increase in the restricted treatment will decrease giving by a range of £0.46 to 0.66 compared to the unrestricted group.

Table 3.14: OLS and panel estimates

	OLS (1)	Panel (2)	Ind (3)	Exc (4)	Ar (5)
a. Treatment	-0.66**	-0.66**	-0.66**	-0.46**	0.46**
	(0.31)	(0.32)	(0.31)	(0.26)	(0.26)
No. of Observations	248	248	248	248	248

Note: Dependent variable is charity which includes the total amount given per round; marginal effects are reported. Column (1) baseline OLS regression and column (2) panel regression include subject specific effects while column (3) independent, column (4) exchangeable, column (5) unstructured and column (6) auto-correlated report population averages. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

3.5.4 Tobit model

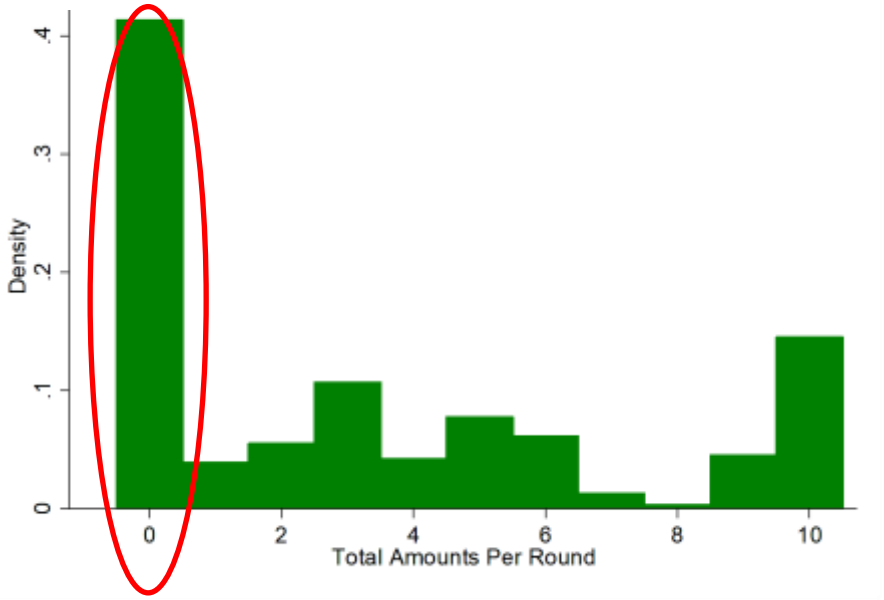
Next, we look at whether the restricted treatment also has an impact on the total giving when we take into consideration the censored nature of the data. This is setup as:

$$Charity_{it}^{*} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \quad (7)$$

$$Charity_{it} = (0, Charity_{it}^{*})$$

The nature of the dependent variable is such that it is censored at 0 and at 10 (see Figure 3.6). Our dependent variable cannot be considered as truncation because we do observe information (characteristics) of both restricted treatment and unrestricted treatment group. However, when $Charity_{it}$, the actual value of is below a threshold, $Charity_{it}$ gets recorded as 0[25] rather than the true value of $Charity_{it}$ making it a censored from below; for the censored from above the values collapse to 10. Tobit model uses all the information including that on censoring and provides consistent estimates.

Figure 3.6: Charity giving per round



[25] Recall that negative giving means that the agent feels he deserves to receive charity as opposed to giving charity, chapter 2.

It could be argued that preponderance of zeros in the data set is due to subjects choosing not to give. This would imply that the participation and consumption are two distinct processes. A Tobit model assumes that a single mechanism determines both the processes. A case of genuine zero would mean that the subject either had the choice or there were a set of characteristics that influenced the participation decision. As already mentioned, in the experiment we explicitly insured that assignment of the subjects to the restricted treatment and unrestricted treatment group was completely randomized (no selection bias). Moreover, during the experiment the subjects could not change their group therefore there is no question of self-selection either. Therefore the randomization of the experiment does not support use of Double Hurdle, Two-part or Heckman model; Type-I Tobit is the obvious choice to model the distribution.

3.5.4.1 Empirical specification

The model specification is as follows:

$$Y_{it}^{*} = \alpha_{re} + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (8)$$

Table 3.15 reports the Tobit specification. Column (1) gives the left censored pooled results, column (2) gives the right censored pooled results and column (3) give the left and right censored pooled results. Whereas column (4) gives left censored random effects results, column (5) right censored and (6) left and right censored. Table 3.15 also reports the marginal effect of treatment on charity giving conditional on being uncensored. In all the results it emerges that those in the restricted treatment group tend to give less in charity as compared to those in the unrestricted treatment group. Even when the censored nature of the data is considered, the restricted treatment has a negative effect on the giving behaviour.

Table 3.15: Tobit estimates

	Pooled Left Censored (1)	Pooled Right Censored (2)	Pooled Right & Left Censored (3)	Panel Left Censored (4)	Panel Right Censored (5)	Panel Right & Left Censored (6)
a. Treatment	-2.11***	-0.66**	-2.50***	-4.68***	-1.88***	-4.16***
	(0.53)	(0.33)	(0.68)	(0.63)	(0.56)	(0.97)
b. Treatment	-1.04***	-0.59**	-0.93***	-1.87***	-1.67***	-0.78***
	(0.26)	(0.32)	(0.25)	(0.21)	(0.47)	(0.20)
c. Treatment	-0.23***	-0.00	-0.20***	-0.36***	-0.03**	-0.16***
	(0.06)	(0.00)	(0.06)	(0.04)	(0.02)	(0.05)
No. of Observations	248	248	248	248	248	248

Note: Dependent variable is charity which includes the total amount given per round; a. Treatment tobit (left censored at £0, right censored at £10) estimates, b. Treatment marginal effects at expected means are reported and c. Treatment probabilities are reported. Columns (1) to (3) report the baseline pooled estimates censored from left, right and both respectively. Columns (4) to (6) report the panel estimates censored from left, right and both respectively. Left Censored columns (1) & (2): 128 left-censored observations, 182 uncensored observations, 0 right-censored observations; Right Censored columns (2) & (5): 0 left-censored observations, 265 uncensored observations, 45 right-censored observations; Right & Left Censored columns (3) & (6): 128 left-censored observations, 137 uncensored observations, 45 right-censored observations. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

3.5.5 Heterogeneity in giving

Giving to charity is essentially a matter of preference as a result there could be heterogeneous behaviour that could influence the results. Figure 3.5 shows a large preponderance of 0s, this then could be driven by the over presence of profit maximizers, those who want to have a maximum payoff or item or both. However, because the restricted treatment group was restricted to a specific amount the 0s cannot strictly be interpreted as a result of profit maximizers; might have given less than £3 if so allowed.

Consider, first, the total amount given. This could vary between £0 and £50. The mean amount given was £16.82 (standard deviation £16.38). The median amount given was £10. Therefore, in order to see whether there is a heterogeneous effect, the sample is split into low givers (who gave equal to or less than £10) and high givers (more than £10). As can be seen from Table 3.16 the subjects are fairly evenly divided between the two categories. The proportion of low givers is higher in the constrained (57%) than unconstrained treatment (47%) but the difference is not statistically significant (two-sided P=0.75, proportions test).

Table 3.16: Distribution of high and low givers

	Overall	Unrestricted	Restricted	
Low Givers	32	15 (0.29)	17(0.08)	52%
High Givers	30	17(1.79)	13(1.28)	48%
Total	62			100%

The average donation of high givers was £32.62 (median £32.00) in the restricted treatment and £29.88 (median £27.00) in the unrestricted treatment, while the average donation of low givers was £1.65 (median £0.00) in the restricted treatment and £5.53

(median £5.00) in the unrestricted treatment. The distributions in the two groups differed significantly (two-sided p = 0.00, Mann Whitney). This difference is primarily because 11 subjects in the restricted treatment gave a total of 0 compared to only 1 subject in the unrestricted treatment. This clearly shows how the constraint primarily influenced low givers to give less. Table 3.17 gives the results of a Tobit regression. Column (1) gives estimates for low givers while column (2) lists the coefficient for high givers. As is evident, the restricted treatment effect has a significant negative impact on the low givers while the restricted treatment has no impact on the charitable donations of the high givers.

Table 3.17: Tobit estimates, low and high givers

	Low Givers (1)	**High Givers (2)**
a. Treatment	-2.09***	-0.15
	(0.65)	(1.13)
b. Treatment	-0.56***	-0.07
	(0.16)	(0.55)
c. Treatment	-0.33***	-0.02
	(0.10)	(0.13)
No. of Observations	160	88

Note: Dependent variable is charity which includes the total amount given per round; a. Treatment tobit estimates, b. Treatment marginal effects at expected means are reported and c. Treatment probabilities are reported. Column gives estimates of low givers, 108 left-censored observations, 52 uncensored observations. Column (2) report estimates for high givers. 55 uncensored observations, 33 right-censored observations. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

As is evident from Table 3.17 that the restriction effected low givers, those who were inclined to give less than £3. As a robustness check we ran a quantile regression to confirm that those who were at median were affected by the restriction. Table 3.18 reports the quantile estimates and as expected those who give at the median or less are negatively affected by the restricted treatment.

Table 3.18: OLS and quantile estimates

	OLS (1)	Quantile (2)
a. Treatment	-0.59**	-0.96**
	(0.12)	(0.56)
b. Treatment	-	-0.91***
		(0.23)
No. of Observations	131	248

Note: a. Treatment: dependent variable is charity which includes the total amount given per round; column (1) OLS estimates at median and column (2) quantile estimates. For b. Treatment: dependent variable is charity count, number of times given per round; column (2) marginal effects at expected means are reported. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

3.5.6 A closer look at the preponderance of zeros

It has been hypothesized that the large number of zeros in the data set is due to the restricted treatment effect. The same has been shown with the use of number of estimators. It could be argued that the restricted treatment effect forced those on the boundary to give nothing to charity. As a robustness check we tried looking at the impact of restricted treatment on those who did not give anything in each of the five rounds or at least 0 in one of the five rounds, we call them zero-givers. If our assertion is correct about restricted treatment effect then it should result in a significant and positive change in the number of zero-givers; in other words, zero-givers increase due to the restricted treatment effect. This is setup as:

$$\Pr(\boldsymbol{zero-givers}_{it}) = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \quad (9)$$

where $\boldsymbol{zero-givers}$ is a binary variable that takes on the value 1 if the subject has not given (gave zero) to charity at least in one round. Other covariates are the same as in equation (1). The descriptive statistics of the dependent variable is given in Table 3.19.

Table 3.18: Dependent variable, zero-givers

Variable	Description	Mean	Std. Dev.
Zero-givers	Dummy=1 if gave zero to charity for at least one round	0.41	0.49

3.5.6.1 Empirical specification

The Logit model will take the following form:

$$\Pr(Y_{it}|\boldsymbol{Treatment_i}, \boldsymbol{X_i}, \boldsymbol{W_i}) = \alpha_{re,pa} + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (10)$$

All the variables are defined as in equation (1). The population average option is also included in order to capture the average effect. Results are presented in Table 3.20, column (1) gives the pooled results, column (2) gives the logit results, column (3) results with independent correlation, column (4) with exchangeable correlation and column (5) with auto-correlated correlation.

As suspected, the subjects in the restricted treatment group were more likely to give zero. Recall the groups have been randomized therefore the impact on giving is due to the restricted treatment. The tendency to be a zero-giver increased due to the restricted treatment effect.

Table 3.20: Odds ratio and marginal effects

	Pooled (1)	Logit (2)	Ind (3)	Exc (4)	Ar (5)
a. Treatment	5.54***	66.15***	5.55***	7.40***	3.91***
	(2.57)	(110.62)	(2.84)	(4.05)	(1.95)
b. Treatment	0.22***	0.37***	0.22***	0.34***	0.13***
	(0.06)	(0.09)	(0.07)	(0.08)	(0.05)
No. of Observations	218	218	218	218	218

Note: Dependent variable is charity which is equal to 1 if give zero to charity and 0 otherwise; a. Treatment odds ratio are reported, b. Treatment marginal effects are reported. Column (1) pooled average effects and column (2) panel logit include subject specific effects while column (3) independent, column (4) exchangeable and column (5) auto-correlated report population averages with correlation structures. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

3.5.7 Summary of main results

Table 3.21 provides summary of our main findings. Recall our hypothesis from section 3.3.1, our results clearly show that imposing a constraint on the minimum amount that could be donated to charity decreased the amount that was donated. This is because people who would have given a small amount seemingly chose to give zero rather than the minimum. A particularly interesting finding is that the crowding-out of giving was independent of the opportunity cost of giving (as influenced by the price of a lottery ticket). Recall that our theoretical model predicted some would decrease giving and some would increase giving once the minimum was imposed. Our experimental results clearly point more towards the decrease in giving. This would suggest that a constraint on giving can backfire.

Table 3.21: Summary of main results

	Logit	**Poisson**	**OLS**	**Tobit**
	(1)	**(2)**	**(3)**	**(4)**
Treatment	-0.37***	-0.57***	-0.66**	-1.87***
	(0.09)	(0.18)	(0.31)	(0.21)
No. of Observations	218	248	248	248

Note: Marginal effects are reported. Column (1) dependent variable is charity which is equal to one if given to charity and zero otherwise; column (2) dependent variable is charity count which includes the frequency of giving per round; column (3) & (4) dependent variable is charity which includes the total amount given per round. Column (4) report the panel estimates censored from left at £0: 128 left-censored observations, 182 uncensored observations, 0 right-censored observations. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Robust standard errors clustered by the subject in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

3.6 Discussion and conclusion

Our results provide evidence that if choice is constrained it affects giving behaviour even in the presence of different motivational components. The constraint on choice not only affects the total amount but also the frequency of giving. Therefore the overall pattern of the restricted treatment effect implies that the marginal utility of donating decreases when faced with a minimum amount. Contrary to previous studies subjects motivated by warm glow are less inclined to give when the amount is specified.

Recall in literature a quoted amount by charities is considered by a donor as an anchor when deciding on how much to give and how often to give. According to our findings if the amount is perceived to be above what the donor is willing to give then the chances for participation and consumption of charitable good stands to decline. Quoting a specific amount can possibly trigger feelings of exploitation or feelings of self-interest in the donor. In the case of exploitation the individual might feel that the amount is unfair given an endowment making her conscious about the explicit cost of giving. In the case of self-interest the restriction can be considered as an informative anchor against which cost and benefit (self-interest) for charitable giving is weighed. As mentioned, warm glow is only associated with the act of giving and therefore the anchoring effect would only work if the amount is equal to the utility maximization of the act itself.

This decision process is consistent with the preferences of a rational agent who depends on the marginal utility to switch between different amounts. This follows from the finding that there is a lower and upper bound which is essentially determined by the explicit cost of giving. To that end our findings find similarity with the suggested literature where a high suggested amount result in lower donations (Reiley & Samek, 2015; Briers et al., 2006; Dale & Morgan, 2002), however these studies do not further delineate the exact

impact of perceived restriction. If the explicit cost of giving is high as was the case with the restricted treatment group, giving was found to be at the lower bound. Therefore imposing an amount results in additional cost to giving and as such decreases the amount of donation. Similarly, in the case of suggestive amounts if the donor considers the socially optimal level of giving to be costly (then what she is willing to give) she would be less inclined to give. This then clearly moves away from the literature where suggested higher amount either results in positive giving or higher giving (Park et al., 2017; Edward & List, 2014; Corson & Shang, 2013; Charness & Cheung, 2013; Shang & Croson, 2009; Croson & Shang, 2008; Crumpler & Grossman, 2008).

If the individual perceives it costly to give then the utility from giving decreases and therefore she would not participate in consuming the charitable good. In such a case the individual would 'take away' from charity in the sense that she will keep the money for some other purpose till such time that it becomes rationally optimal to give or simply claim charity instead. Therefore, a quoted amount whether binding or non-binding will decrease the frequency of giving if it increases the explicit cost.

Our findings provide broad qualitative implications for practice. The suggested amounts by charities in their campaigns, on their websites and in their pamphlets have a direct cost for the potential donor; in addition to the indirect cost of deciding on the donation. Even if the amounts are nonbinding they still can be perceived as restrictive and might push the donor towards higher bound or lower bound or zero giving. Quoting a specific amount would result in lower donations and possibly be counterproductive. However, as mentioned earlier we acknowledge that it is hard to disentangle whether the lower donation comes from the lack of freedom to donate or from the relatively high minimum amount which was suggested. This would necessitate further experiment where

the restriction could be varied, let's say £2 or even £1. However, we contend that the game setting and its rules provide an opportunity for qualitative inference about causal relationship between giving and the explicit cost of it.

The pertinent question is whether our study can be generalized? According to Guala (2002, p. 262) external validity means: " [The experimental result] is externally valid … if A causes B not only in E, but also in a set of other circumstances of interest F, G, H, etc." While our results can directly be applicable to charities seeking to raise money through games played in the lab by university students, the qualitative findings can be generalized. Previous studies have made note of similarities in giving behaviour in the lab and in the field settings (Rondeau & List, 2008). In this study the emphasis is not on the specific parameter estimates but on the qualitative causality that they highlight. The qualitative aspect of the experiment has external validity primarily because of the design of the experiment. By mimicking an environment (decision making context) as close as possible to the real world we can make a case for generalizing (Camerer, 2010) of our conclusions.

Our qualitative inference sets in with the long-standing debate of whether the individual behaviour is determined by personality traits or by situation factors (Epstein & O'Brien, 1985; Mischel, 1968). Studies have shown that individuals' behaviour be it in laboratory setting or field setting it is influenced mainly by situational factors rather than personality traits (Ross & Nisbett, 1991; Mischel, 1968). The situation debate suggests that individual behaviour would be consistent across similar situational factors regardless of the setting. Benz & Meier (2006) reported a significant correlation between field and laboratory behaviour among students, especially. Moreover, Epstein & O'Brien (1985) suggest that aggregation of the individual in different situation captures the underlining

preferences better. Given that our experiment had a very similar cohort of students (randomization) facing a restriction spread over different decision making situations (different items, payoffs and different charities) we are relatively confident about the external validity of the qualitative aspects of our results.

The next step is to see whether the conclusion of restricted treatment would also apply in a within-subject/group setting (specifically when there is a possibility to free-ride), will the restricted treatment matter when the goal of each group is to outperform the other, whether altering the endowments would affect the decision process given the restricted treatment and unrestricted influences, is there any instance where a case for asking a specific amount can be made? These questions are the subject matter of the next chapter.

APPENDIX A

A.1 Instructions given to unrestricted treatment group

Thank you for participating in the experiment.

Please read the instructions carefully.

All the **relevant information and material** about the experiment is contained in the green and orange folders placed in front of you. Your folders contain:

Green Folder:	**Orange Folder:**
• Two page information about the selected charities • One page consent form	• Five forms for each of the five rounds • Five page questionnaire
Note: Please do not take any piece of paper from the folders outside of the room. At the end of the experiment please leave the folders on the desk it will be collected by one of the team members.	

The experiment would take between 40-50 minutes. The experiment has **five rounds**, please wait till asked by the conductor to start each round. You will be **provided with a different coloured pen for each of the five rounds**. **Once you have finished** with each round please **place the pen at the top of the desk** to be collected by one of the team members. Please note **once you have finalized the decision in each round and moved on** to the next round, you will **not be allowed to return** to the previous round.

You will have **notional £10 per round for the following choice options**:

- In **each round a randomly selected item would be displayed** and a paper containing its specifications (spec sheet) would be provided. On the **spec sheet the retail price of the item would be listed** as well as the amount that you would **need to pay in order to enter into a draw** for the particular item at the end of the five rounds. **If you do choose to spend money on the item** please **enter the amount in the column marked "Purchase"**.

- In **each round you will also have the choice of donating** to either the **specified charity/charities or charity of your own choice**. Please note that all the specified charities are real and are **registered in the UK**. If you decide to choose to give to your own choice of charity please make sure that it is registered in the UK. **All money donated would go to the selected charity** and receipt for the total amount given would be emailed to you separately.

- **If you do decided to make a donation** please **enter of the amount against the column of the relevant charity/charities or write down the name and amount of the charity of your choice**. Please note that you can **only donate in whole numbers** for instance donation of £5 is acceptable not £5.50.

- The **amount that is remaining** in each round needs to be **entered in the column titled "Balance"**. **Please make sure that you do not exceed £10 limit for each round.**

At the **end of the five rounds** you would be **asked to select a ball** from five possible balls. The **number on the ball will decide which round** you will **get paid on**, the **item** (if "purchased") for which you would **entered into the draw** (provided you have "purchased" it) and the **donation to charity** that you have selected or specified.

If you have any questions or clarifications please raise your hand now, you will **not** be **allowed to ask any question or communicate during the experiment**. Any **mistake made in the entry procedure** during any of the rounds would **result in automatic cancellation** of that round.

Please take out the Consent Form from the **Green Folder**, have a quick read, **sign it** and kindly **place it back in the Green Folder**.

Please wait for the signal from the conductor to begin the round.

Thank you.

A.2 Instructions given to restricted treatment group

Thank you for participating in the experiment.

Please read the instructions carefully.

All the **relevant information and material** about the experiment is contained in the green and orange folders placed in front of you. Your folders contain:

Green Folder:	**Orange Folder:**
• Two page information about the selected charities • One page consent form	• Five forms for each of the five rounds • Five page questionnaire
Note: Please do not take any piece of paper from the folders outside of the room. At the end of the experiment please leave the folders on the desk it will be collected by one of the team members.	

The experiment would take between 40-50 minutes. The experiment has **five rounds**, please wait till asked by the conductor to start each round. You will be **provided with a different coloured pen for each of the five rounds**. **Once you have finished** with each round please **place the pen at the top of the desk** to be collected by one of the team members. Please note **once you have finalized the decision in each round and moved on** to the next round, you will **not be allowed to return** to the previous round.

You will have **notional £10 per round**.

- In **each round a randomly selected item would be displayed** and a paper containing its specifications (spec sheet) would be provided. On the **spec sheet the retail price of the item would be listed** as well as the amount that you would **need to pay in order to enter into a draw** for the particular item at the end of the five rounds. **If you do choose to spend money on the item** please **enter the amount in the column marked "Purchase"**.

- In **each round you will also have the choice of donating** to either the **specified charity/charities or charity of your own choice**. Please note that all the specified charities are real and are **registered in the UK**. If you decide to choose to give to your own choice of charity please make sure that it is registered in the UK. **Please note that if you do decide to give to charity, you must give a minimum of £3 per round. All money donated would go to the selected charity** and receipt for the total amount given would be emailed to you separately.

- **If you do decided to make a donation** please **enter of the amount against the column of the relevant charity/charities or write down the name and amount of the charity of your choice**. Please note that you can **only donate in whole numbers** for instance donation of £5 is acceptable not £5.50.

- The **amount that is remaining** in each round needs to be **entered in the column titled "Balance"**. **Please make sure that you do not exceed £10 limit for each round.**

At the **end of the five rounds** you would be **asked to select a ball** from five possible balls. The **number on the ball will decide which round** you will **get paid on**, the **item** (if "purchased") for which you would **entered into the draw** (provided you have "purchased" it) and the **donation to charity** that you have selected or specified.

If you have any questions or clarifications please raise your hand now, you will **not** be **allowed to ask any question or communicate during the experiment**. Any **mistake made in the entry procedure** during any of the rounds would **result in automatic cancellation** of that round.

Please take out the Consent Form from the **Green Folder**, have a quick read, **sign it** and kindly **place it back in the Green Folder**.

Please wait for the signal from the conductor to begin the round.

Thank you.

Chapter 4
Impact of Restriction on Giving Behaviour: Within-Subject Experiment

4.1 Introduction

The results from Chapter 3 provide evidence that if choice is constrained it affects charitable giving behaviour. The constraint on choice not only affects the total amount but also the frequency of giving. The changes in the donation patterns imply that contrary to previous studies subjects motivated by warm glow are not as inclined to give when the amount is specified. In the literature the reference amount is interpreted as an anchor/reference/default which the potential donor considers in deciding whether to donate and how much to donate. If the amount is *perceived* to be above what the donor is willing and able to give then the chances for participation and consumption of charitable good declines. We are cognizant about the possibility of experimenter demand effects, refer to section 3.3 of chapter 3 for how we control for it in the experiment design. We carry over the control elements from experiment #1 along with the caveats.

This paper extends our work to a group setting to test whether the results remain robust. Subjects are assigned to groups that compete with each other in terms of overall charitable giving. The endowment which was fixed in the previous experiment is also varied, primarily to vary the explicit cost of giving. The number of rounds has also been increased to include strategic learning and play. The experiment was conducted on Z-Tree (Fischbacher, 2007) to minimize the errors inherent in a paper based experiment. Lastly, subjects are exposed to both restricted treatment and unrestricted treatment variations providing a within subject comparison.

A considerable literature has emerged on group impact on the giving behaviour. The basic premise has been to analyse how heterogeneity in preferences affect giving behaviour. Zelmer (2003) has highlighted factors that solicit cooperation within the group setting while Laury & Taylor (2008) and Croson (2007) look at the behaviour and motives of giving for a group. These studies point to the importance of impact of group dynamics on charitable giving. Therefore, it is pertinent to see whether restriction on giving would have an impact on charitable giving when group dynamics are considered.

A person who identifies with her group may free-ride on giving because she receives warm glow from the giving of others. This provides one motivation for looking at a group rather than the individual setting. As mentioned, we also consider competition between groups by awarding prizes (electronic items) for those in groups with the highest relative giving. Generally speaking group competition tends to increase cooperation within groups (Majolo & Marechal, 2017) and so may provide a countervailing force against free-riding (Sääksvuori et al., 2011); cost of being in the losing group for each member outweighs the benefit of free-riding (Puurtinen & Mappes, 2009; Choi & Bowles, 2007; Alexander & Bargia, 1978). It is also provides an extrinsic motive to donate which is not related to warm glow.

The use of group dynamics and competition in our experimental design is further motivated by two main considerations found in literature. The first, people with similar social norms or similar preference for charitable giving are likely to belong to the same group (Manski, 1993). This leads to the assertion that individual gifts to charities might be interdependent, Andreoni & Scholz (1998) find evidence of interdependent preferences. With-in group dynamics are influenced by different motivations: giving is influenced by the desire to enhance one's status (Bernheim, 1994), to achieve social recognition (Becker,

1974), are motivated by a feeling of social responsibility (Sen, 1977), to gain social approval (Hollander, 1990), signal of wealth (Glazer & Konrad, 1996) or to achieve a level of prestige (Harbaugh, 1998b). The second is the fact that human social interactions pave way for both within-group cooperation and competition (Tan & Bolle, 2007; West et al., 2007; Gunnthorsdottir & Rapoport 2006; Boyd et al. 2003). Besides it is well-documented that individuals behave overly cooperative in social dilemmas and collective action games (Chaudhuri, 2011; Ledyard et al., 1995).

Recall in chapter 3 a modified dictator game setup was utilized to ascertain the impact of restriction on giving. However, as there is only one decision maker in the game it fails to capture the effect of free-riding. The linear public good game on the other hand provides an opportunity to study behaviour in a setting where interaction between multiple donors is possible (Isaac et al, 1984). The setup of the game includes subjects which are paired in groups and are given a specific endowment to be divided between private and public good. Payoffs for both private and public goods tend to be linear, generating individual return on private good and collective return on the public good (Vesterlund, 2016).

Studies have shown that under the linear public good games, the charitable contributions are consistent with well-behaved utility function (Fisman et al., 2007; Andreoni & Miller, 2002). Within the framework of the public good game it has been shown that altruistic people are relatively more inclined to give to a public good (Anderson et. al., 1998; Goeree et al., 2002). However, Palfrey & Prisbrey (1997) have shown that when cost of giving is common knowledge and individual return is private information, giving is explained by warm glow.

This chapter considers, therefore, a relatively complex setting. In chapter 3 we looked at the relatively simple setting of individual decision making where warm glow provided the basic motivation to give. In this chapter we are looking at a more complex setting where subjects are assigned to groups. Our main question is whether a restriction on giving still lowers overall giving.

By varying the placement of restriction, the chapter also explores the impact of timing of restriction. By positioning the restriction at the beginning in two sessions followed by choice and introducing restriction at the end for two sessions, the impact on giving is analysed. The results are interesting, whereas the overall impact on giving is negative, the significance of the restriction varies across the sessions. The findings are especially relevant to fundraisers who solicit established and potential donors by asking them to contribute; the question is not only what to ask or not to ask (chapter 3) but also when to ask (looked in this chapter).

The chapter is organized as follows. First, we provide an overview of the relevant literature. Next, we introduce the experiment design for within-subject/group variation. Then we present results across different estimators. We conclude with discussion of our main results and the way forward.

4.2 Literature review

Recall we are attempting to test two interrelated aspects of restriction and timing on the intensive and extensive margins of giving. The gap in literature about restrictive amount has already been discussed in chapter 3 and therefore will not be reproduced. In this chapter we cover 'asking' for donation and explore research on the dynamic nature of

giving. The review will identify a gap with respect to interplay of restriction with timing and group competition.

Damgaard & Gravert (2017) conducted a field experiment in collaboration with one of the biggest charity organization in Denmark. They sent out email (20,293) and text (32,996) to prior donors giving them different deadlines for donations. In the email version of the experiment deadlines of 3 days (shorter deadline) and 10 days (medium deadline) were given for the treatment group and 34 days for the control group. The results showed that the both treatment groups (shorter and longer deadlines) gave as soon as the email was received while the control group did not explicitly wait till near the end of the deadline. With respect to the amount given they found that the control group gave more on average. The text message version of the experiment included a shorter deadline of 2 days and medium deadline of 3 days. The results showed there was no difference in giving behaviour between the short and medium deadline and there was 0.45 percentage point (insignificant though) likelihood of giving in the treatment group as compared to the control group (deadline of 34 days). Based on their findings they emphasised that charities need to give consideration to time preference of giving.

Andreoni et al. (2017) using the occasion of Salivation Army's annual Red Kettle Campaign wanted to see whether altruistic people attempted to control their empathic emotions by ignoring the call to give to charity. They positioned solicitors at the entrance of the grocery store with one verbally asking for donations while the other only ringing the customary bell, and avoiding eye contact. They found that the verbal request increased total donations from 45% to 69% as compared to when the solicitor was "silent". They also increased the number of solicitors to see if there was any change in giving. They found that doubling the solicitors did not double total donations but there was an increase from 65%

to 80%. They attributed the increase to “passive-givers” who neither avoid nor specifically seek opportunities to give. They concluded that asking was effective. They attributed the change in response to the fact that people reveal a preference to give in one setting, and reveal the opposite preference in another. Their study demonstrates that asking is dynamic, the variation in the process can lead to different responses.

Andreoni & Serra-Garcia (2016) conducted two longitudinal experiments to examine the role of time on giving behaviour. The experiment conducted over two week period asked 690 undergraduates to donate $5 to a Charity. The results showed that when subjects were asked to give in the second week giving increased by 50% as compared to when they were asked to give in the first week. Moreover, when the subjects were asked to back their future giving with a pledge, giving increased by 65% however, 45% reneged on their commitment. In the second experiment they used with-in variation and found that 65% of the subjects preferred flexibility in giving; they preferred to give in the second week as long as they did not have to make a pledge for giving. They concluded that the heterogeneity of giving behaviour with reference to timing highlighted the importance of dynamic giving behaviour.

Fielding & Knowles (2015) conducted a lab experiment to investigate whether giving was affected by verbal/non-verbal cues and whether participants had loose change. Running a dictator game, they divided the participants into two groups; one group received a verbal request while the other only saw a donation box. All participants were given $19 and asked to complete a survey. After completing the survey the participants proceeded to make a donation. They found that participants who were verbally asked to donate gave substantially more than those who were given no verbal prompt. They also found that the effect of verbal invitation considerably increased when participants had loose change. The

study establishes the importance of asking however, does not go into the timing of the request to donate.

Edwards & List (2014) examine how a direct request for money affects the intensive and extensive margins of giving. Running a natural experiment at the University of Wisconsin-Steven's Point they contacted one set of donors with a direct suggestion of $20 and others with no such suggestion. They found that the direct solicitation for the specific amount resulted in more alumni donating, an increase of 50%. However, there was a tendency for the donations to collapse to the suggested amount. The study showed that the individual's utility was highly flexible and responded to different techniques.

Andreoni & Rao (2011) wanted to investigate whether communication influenced giving behaviour through heightened empathy. Using 238 subjects they used the dictator game to conduct two experiments. In experiment #1 the participants were either allowed two way communication or one way communication only. In experiment #2 the feeling of empathy were intentionally heightened in the communication process. They found that every time the recipient spoke it increased endowment (amount passed to the recipient by the allocator) by 25% and every time there was two way communication the endowment increased by 30%. They found the subjects to be considerably more generous in experiment #2 when empathy was included in the asking process. Their conclusion was that asking did matter as long as it was not more than "one's fair share".

Yoruk (2009) using data from Survey of Giving and Volunteering in the United States and linking it with Internal Revenue Service data on total fundraising spending of public charities, explored whether asking increased donations. The study treated selection of individuals by charities for solicitation purposes as being endogenous. The argument was that charities deliberately target individuals or groups of individuals who tend to have

higher household incomes, are employed, well-educated, are married, have larger families and itemize charitable deductions. Using instrumental variables to control for the endogeneity (as a result of the selection process) found that when donors were asked to make a contribution it increased the frequency of giving by 19 percentage points and contribution amount by 3.5 natural logarithm points. As such asking was found to be robust even to possible endogeneity however, as with the other studies the timing of when to ask was not considered.

Meer & Rosen (2011) using data from an anonymous research university tried to examine the impact of personal solicitation on donation behaviour. The observational data was collected by the development office of a university which recruited 2500 volunteers to call their classmate alumni to solicit donations. Each volunteer was given a list of 20 names of alumni who hadn't donated for the last 11 months. The names were listed in alphabetical order and the volunteers were given a specific time to go through them. Meer & Rosen observed that volunteers often ran out of time before reaching the end of the list. Using this observation they tested whether alumni with names toward the end of the alphabet were less likely to give. They concluded that the location in the alphabet list did matter and found that individuals in the first part of the list were 1.2 percentage points likely to make a donation. Using this and difference in the probabilities of being solicited they estimated the elasticity of donation to be 0.15. However, they also found that the marginal personal solicitation did not affect the amount given as donation. In the study period the solicitation was initiated in July, it would have been interesting if solicitation took place couple of months earlier or later to see whether the timing would have had any impact on the giving behaviour.

Meer (2011) looked at peer pressure in charitable solicitation. Using data from administrative archives of anonymous research university from 1983 to 2007 looked at 35,583 alumni. The solicitation was made direct via the phone. In order to isolate the impact of solicitation they controlled for a variety of characteristics which included race, years since graduation, gender, academic and non-academic factors, sports and membership of social club. They found that donations increased both on intensive and extensive margins when it was solicited by volunteers whom the donors had social ties with. Moreover, the solicitor request was much more effective if they shared characteristics with the alumni.

Van Diepen et al. (2009) studied whether too many direct mailings may have a negative long-run effect on intensive and extensive margins of giving. They conducted a field experiment in cooperation with five of the largest charities in the Netherlands. The five charities sent mailings to their donors and the mailing schedule was selected to coincide with week where the regular mail was relatively high. The treatment group received a number of addition mailings apart from the charities regular mail schedule. The control group received the regular charities mail but no additional experimental mailings. The charity mail was sent to 4,230 donors who were also asked to fill in a questionnaire (1,002 were returned as completed). They found that the increased number of solicitations did irritate the donors but did not affect their actual donations. They concluded that irritation was not the key emotional driver behind charitable giving. There is hint to timing in the study as the additional mailings were done during the week which already had a high volume of mail. The time element had an impact to the extent of being irritable (receiving high volume of mail) and therefore it can be stipulated that timing of solicitation needs to be looked at closely.

Puurtinen & Mappes (2009) have shown that between-group competition increases the within-group cooperation in a public goods social environment. With a sample of 192 students they conducted a decision making experiment with two treatment conditions. The first treatment entailed a choice of either contributing to a public good project or keeping the endowment. The amount that was invested in the project was multiplied by a factor of 2 and equally divided amongst the group members. As such, there was additional benefit from investing in the group project as opposed to keeping the endowment. In the second treatment a similar payoff setup was used as in the first with the exception that the total donation of the two randomly selected groups were compared. The group with the highest contribution received a payoff along the same lines as in the first treatment however, the group with fewer earnings suffered a loss of an equal amount. The results showed that between-group competition encouraged higher overall giving and higher average earnings. This followed from the observation that between-group competition resulted in higher levels of within-group cooperation as it was the most profitable strategy. Thus between-group competition results in cooperation among otherwise unrelated individuals. Their findings were consistent with experimental research on between-group competition increasing within-group cooperation for a public good (Reeve & Hölldobler, 2007; West et al., 2006; Baron et al., 2005; Baron, 2001; Bornstein & Ben-Yossef, 1994).

Schervish & Havens (1997) using a cross-sectional sample of 2,671 Americans investigated whether solicitation resulted in increased giving. They divided the sample into clusters based on the percentage of income contributed by each household and ran multiple regressions controlling for demographic characteristics. They found that whereas

giving behaviour partly depended on generosity or other frameworks of consciousness however it was considerably affected by the solicitation which increased participation.

Literature establishes the importance of solicitation, group competition and hints towards the dynamic nature of giving. However, the restriction angle of solicitation/asking is missing and the impact of timing under such a condition has not been covered in the literature. The subsequent sections will attempt to address these issues within the context of warm glow giving.

4.3 Experimental setup and hypothesis

Chapter 3 provides a strong a priory that restriction negatively effects charitable giving. The purpose of this chapter is to test whether the findings (of chapter 3) can be replicated not only in a within-group setting but also in a more complex decision making matrix. Recall that in experiment #1 we deliberately abstracted away from things that might cause increased donations. In experiment #2 we include elements (found in literature) that encourage giving behaviour to further test the robustness of our earlier findings. In other words, whether restriction still has an effect in circumstances where giving is encouraged.

The elements that vary in experiment #2 are: i) restriction; ii) endowment and iii) information about charities. As for the restriction it is our main variable of interest which carry over from experiment #1 (chapter 3). However, as mentioned the aim is to see with the results of experiment #1 (chapter 3) are robust in a complex within-subject context. One of the main reasons for selecting a within-subject design was for its higher statistical power as compared to the between-subject design (Camerer, 2003). The value of the restriction was increased from £3 (experiment #1) to £5 in experiment #2 to cater to the predominantly high giving design of the experiment. In other words, if the subjects are

inclined to give higher amounts, then a low restriction value would not be considered as an impediment. Recall the heterogeneity argument of section 3.5.5 of chapter 3 where those who were predisposed to giving higher amounts did not consider the £3 as restrictive[26].

The varying of ii) endowment was introduced to effect the explicit cost of giving. This element was carried over from experiment #1 with the exception that this time the price of items were not varied. According to Ledyard (1995) heterogeneous endowment increases average contributions, especially when it results in higher marginal per capita returns (Isaac et al., 1984). The higher marginal per capita returns were equally affected by the lottery items. Studies have shown that large (expensive) lottery items have a positive effect on giving behaviour (Orzen, 2008; Seftan et al., 2007; Dale, 2004; Morgan, 2000).

The use of the third main element iii) information about charities had two specific purposes. One was to see how different type of information effected charitable giving (subject matter of chapter 4) while the other was to address the social distance and distributive concerns. Studies have shown that information about the recipient (in this case the charities) helps in decreasing social distance (familiarity about the recipient) and increases giving (Engel, 2011; Hoffman et al., 1996; Hoffman et al., 1994). Providing information on charities was essential to allow for greater trust and possible increase in giving. Engel 2011 also highlights that information helps the donors decipher between a deserving recipients or otherwise, addressing distributive concerns (which in turn increases giving behaviour).

[26] We continue to acknowledge the limitations mentioned in section 3.3 of chapter 3.

There were other minor elements of the experiment which were specifically included to encourage giving. One was provision of limited feedback after certain specific rounds. The amount of information was kept at a minimum in order to discourage any type of punishment for free-riding (Denant-Boemont et al., 2007; Anderson & Putterman, 2006). With reference to free-riding the size of groups were kept small to reduce the possibility of it (Isaac & Walker, 1988; Isaac et. al., 1984). The elements of recognition and shame were also included in the experiment. The winning and runner-up groups were announced and the winners of the items were asked to come to the front of the lab to collect their winnings, this approach helped in recognizing the members of the group with highest and second highest donations (Munoz-Garcia, 2011; Harbaugh, 1998; Glazer & Konrad, 1996). The members of the losing groups were asked to leave individually in front of all other participants, thus introducing element of shame (Andreoni & Petrie, 2004). It was hoped that the desire for recognition and avoiding shame would increase giving among the participants. Lastly, the dynamic nature of the experiment also created the possibility of greater giving. The game was spread over multiple rounds where participants could condition each of their decision on the level of total contributions in the previous round, allowing for charitable giving to be periodically updated (Duffy et al., 2007). Studies have shown that there is more giving in dynamic as compared to static games (Goren et al., 2004; Kurzban et al., 2001).

We hypothesize that negative impact of a minimum constraint found in experiment #1 will hold even in a setting with a very different incentive structure.

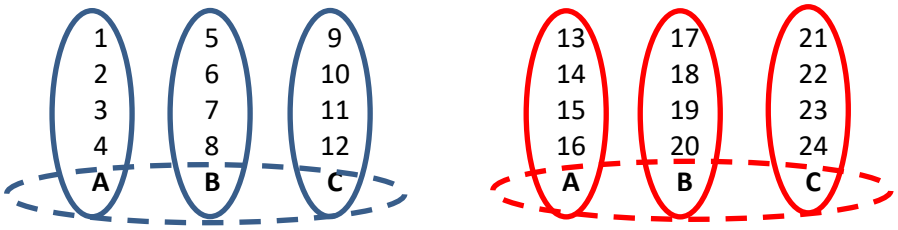
4.3.1 Experiment design

The experiment was held in a computer lab at the University of Kent, UK. The time and date was advertised to the entire University. The advertisement included posters, emails (inter as well as intra departmental), tweets, word-of-mouth and university Facebook page. The experiment was advertised as a simple decision making game with no prior knowledge of economics required. The interested individuals were asked to register for the session of choice by return email (it was open to everyone). The subjects were then confirmed by return email of their spot on the session of their choice, 24 hours before the experiment they were sent an email reminder with specific directions to the lab. A total of 96 subjects took part in the experiment over four sessions. Subjects needed to sign in before entering the lab on the day of the experiment. In order to ensure adequate participation more than the required number of subjects were allowed to register, those who could not participate (unable to sign in because the required number of subjects already had done so) were given £2 for their troubles. Once the subjects had signed in they were allowed to enter the lab and sit in front of any computer terminal of their choice. Z-Tree software (Fischbacher, 2007) was used for the experiment. The experiment had twelve rounds and took around 90 minutes to complete. Subjects were provided with instructions (Appendix B) before the start of the experiment.

In each session there were 24 subjects. The subjects were randomly split into 2 matching groups of size 12. Subjects were then further divided into groups of size four which remained constant across all rounds. The three groups within a matching group

were labelled A, B & C[27] (see Figure 4.1). Special care was taken to ensure that no member of the same group was sitting next to each other.

Figure 4.1: Matching groups and groups within a matching group



In the beginning of each round, each subject was given a specific amount of money to spend. The amount varied across the rounds and sessions. In each round the subjects had a choice of either giving to charity or keeping the money or both (provided the combined amount did not exceed the total endowment for that round). At the end of the 12 rounds, one of the rounds was randomly selected for each subject to determine their payoff. Subjects were paid accordingly. As with experiment #1 (discussed in chapter 3), there was no show up fee making the decision process important if the aim was for a positive payoff. The donations were made to the named or selected charities with receipt emailed to all the subjects.

Before the start of the experiment, the subjects were shown pictures of 10 items, five of which they could win at the end of the experiment. The five items varied by session but included X-box 500 GB (£242.99), Sony HDR Camcorder (£119.99), Kindle Wifi Touch

[27] The size of the group was deliberately kept at four as it led to less chance for free-riding (Isaac & Walker, 1988; Isaac et. al., 1984). This was important to ensure that free-riding was not the by-product of the group size but a deliberate choice by the subject.

(£59.99), Tomtom Sat Nav (£89.99)[28]. The procedure for determining winners was as follows. A running total was kept of the total amount each group donated to charity over the 12 rounds. The three groups within a matching group were then ranked according to total giving.[29] Subjects in the group with the lowest total giving were asked to leave the lab. This was visible to everyone creating an element of 'shame'. There is sparse literature in economics that suggest that social effects (like pride, shame, prestige etc.) have an impact on giving behaviour (Andreoni & Petrie, 2004). The remaining 8 subjects were entered into a draw, conducted by the experimenter, for five items.

As before, the subjects had an equal chance to take home a payoff from any of the randomly selected rounds, provided there was a payoff in the selected round (the average payoff was £4.95). However, opting for high payoff meant to forgo the chance of winning one of the items (not end up in the winning group); for the subjects in the winning group the chance of winning any one of the five items was 1 in 8. Therefore there was a penalty associated with purely going for a monetary payoff.

During the 12 rounds of a session, two things were systematically varied (a) whether subjects were constrained in the minimum amount they could donate to charity, and (b) the information provided to subjects about charities. In this chapter we shall focus exclusively on (a). The next chapter explores (b). In the treatment phase of the experiment the minimum amount that could be given to charity was £5. The amount did not provide any information on optimal value to be given to charity. Moreover, over the four sessions

[28]The other items included: HP ENVY 4507 All-in-One Wireless Inkjet Printer £59.99, PNY T2600 Portable USB Battery Charger £9.99, SONY ICDBX140 Digital Voice Recorder- Silver £28.99, SONY MDR-XB450APL.CE7 Headphones, £34.99 and Polaroid 18MP Camera £39.99.

[29] There were no ties.

the minimum amount was placed in different rounds primarily to gauge the order effect; for sessions 1 & 3 it was in rounds 1 to 4 and for sessions 2 & 4 it was in rounds 9 to 12.

In each round there were two components that varied: (i) Endowment varied between £5 and £10 as detailed in Table 4.1. This allows us to consider the explicit cost of giving. (ii) In unconstrained rounds subjects could donate any (whole number) amount to charity while in constrained rounds they had to give a minimum donation of £5[30] (red ovals). Our primary objective is to see if the constraint changes giving behaviour.

In Table 4.1, notice that the pattern of variation is also different for sessions 1 & 3 and 2 & 4. This was done deliberately to minimize any transference of information from one subject to the other, between sessions. Moreover, it was also important to see whether the ordering of the variation had any substantive effect on the giving behaviour.

Table 4.1: Endowment variation across rounds and sessions

	Rounds											
	1	2	3	4	5	6	7	8	9	10	11	12
Session 1&3	£7	£7	£10	£10	£8	£8	£9	£9	£5	£5	£6	£6
Session 2&4	£10	£8	£9	£5	£10	£8	£9	£5	£10	£8	£9	£5

Just as before the charities were selected to trigger a motivational response from the subjects. However, unlike experiment #1 this time only five specific charities were offered. Furthermore, in at least four rounds in each session only general area of donation were offered with the donation to specific charity to be made at the discretion of the experimenter. This involved the subjects trusting the experimenter to make donation on their behalf in the specific area identified by them. As before donations were made to the charities and the receipts were emailed to all the subjects.

[30] In constrained rounds they could donate £0.

The basic motivation behind introducing the experimenter's choice of charity was to keep the design of this experiment (experiment #2) consistent with warm glow setting. Null (2011) has shown that altruistic person prefer to directly give to charity as opposed to trusting someone else to give on their behalf. For instance, if the choice is to give to the charity directly or give to an intermediary, the altruistic person would prefer the former. The reason is efficiency, direct giving would ensure that the 'deserving' charity receives the amount minimizing the chances of crowding-out; this is of course different for warm glow giver.

The inclusion of the items in this experiment was mainly to introduce the element of reward and shame. Those in the group with highest contributions would receive a reward by having a chance at winning an item and those in the losing group would not get the same chance or even be allowed to see the draw. It is important to note that qualifying for the draw and winning the items were two separate thing. Therefore, because of the element of chance the subjects had to strategically manoeuvre in the rounds as it was possible that they could end up with nothing.

The groups at specific times during the experiment were informed about the highest and lowest groups in terms of the total charitable giving. This information was provided at the end of rounds 3, 7 and 11. There were no details provided on either the individual amount given by the members of the group or total amount given by the group. The information only showed rankling of two groups, the highest and the lowest.

The experimental procedure outlined above represents a link between lab and actual field experiments to a certain extent. Even though experiment #2 was conducted in strictly controlled laboratory setting the inclusion of explicit cost, the uncertainty of ending up with nothing, real time allocation decisions and the desire for private good

counterweighed by group benefit are all similar to a non-lab setting. A timeline of the experiment is provided in Figure 4.2.

Figure 4.2: Timeline

Total Minutes	Activity Minutes	Significant Activity
0	0	Sign in and select a computer terminal (they could sit at any terminal).
6	6	Welcome by the experimenter, asked to sign the consent form, asked to read the instructions and ask any questions.
9	3	First set of information on charities for rounds 1-4 are given to the subjects.
24	15	Subjects play rounds 1-4. Information about the highest and lowest group contribution provided after round 3.
27	3	Second set of information on charities for rounds 5-8 are given to the subjects.
42	15	Subjects play rounds 5-8. Information about the highest and lowest group contribution provided after round 7.
45	3	Third set of information on charities for rounds 9-12 are given to the subjects.
60	15	Subjects play rounds 9-12. Information about the highest and lowest group contribution provided after round 11.
70	10	Experimenter announces the end of the experiment, subjects asked to fill in the questionnaire displayed on their computer screens.
90	20	Winning groups, runner-up groups and losing groups announced. All the paper material collected from each terminal. Payoff (if any) disbursed to losing group and its members are asked to leave the lab one at a time. Lottery is conducted in front of the remaining groups and winners are asked to select their gift by coming to the front of the lab. Subjects sign receipts for the items as well as for the payoff received. End of experiment, subjects leave the lab.

4.4 Data

96 subjects were observed over twelve rounds a total of 1,152 observations (the unit of independent observation was the subject till round 3 when no feedback was provided, round 4 onwards the unit of observation was the group). General information on the subjects was collected through a questionnaire.

The questionnaire was similar to experiment #1 except for additional questions on risk averseness, social responsibility and time preferences. Unlike experiment #1, the questionnaire was programmed into Z-Tree so the subjects could complete it on their computer screens.

To account for risk averseness the subjects were presented with a list of 11 decisions between paired gambles (lottery) where the probabilities remained fixed and the payoffs varied (Eckel & Grossman, 2008). For instance, A: £110 for sure, B: 50% chance of £300 and 50% chance of £0. The certain payoff varied for each gamble while the probability and payoff for option B remained constant. We analysed the pattern across the 11 gambles and used the switch point to determine the individual's risk preference. The risk averseness measure was not incentivised. We acknowledge that this is a step away from the economic practice however, we feel that the use of this specific method is acceptable for three reasons. One, the measure was used as a control variable and therefore was not of primary interest to our study; not to mention that our high cost of running the experiment made it even more difficult for an incentivised technique. Second, studies have shown that degree of risk aversion is sensitive across incentivised elicitation techniques (Dave et al., 2010; Berg et al., 2005; Isaac & James, 2000). Third, there are studies which have used hypothetical gambles (Anderson & Mellor, 2008; Deck et al., 2008) and questionnaires to

solicit measure of risk averseness with a certain degree of consistency (Reynaud & Couture, 2012). We do however acknowledge that incentivised environment where subjects must choose an actual gamble would have provided for more accurate measure.

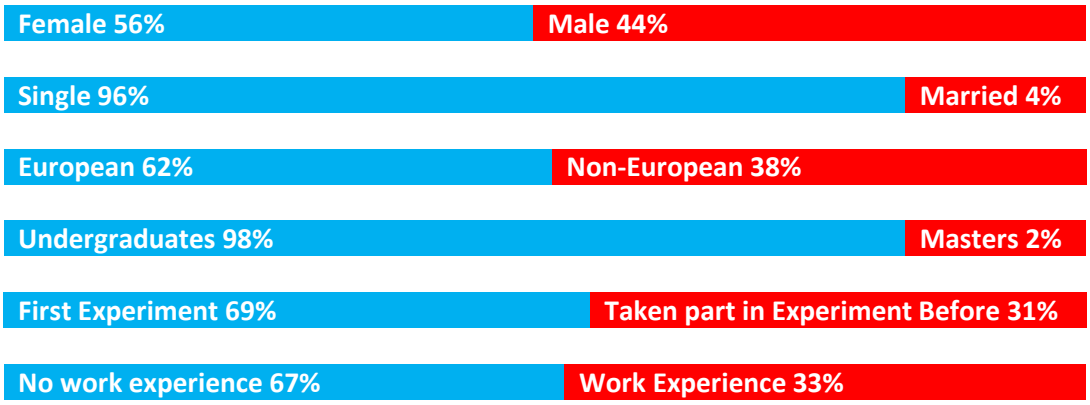
As experiment #2 included an interdependent group dynamics it was thought worthwhile to have a control for social value orientation (SVO) as well. Keeping with the finding that the SVO effect would be smaller when subjects are paid (Balliet et al., 2009; De Cremer & Van Lange, 2001), we do not incentivize the measure. A set of 11 decisions were put to the subjects. We asked the subject to imagine that she was randomly paired with another person, whom we referred to as the "other." The subject had to make choices by selecting either the letter A, B, or C. For instance, A: You get 560, the other gets 360, B:You get 500, the other gets 500, C:You get 490, the other gets 90. Each choice produced points, every point had a value, higher the points the greater the value. We then compiled responses for each subject and determined whether the subject was altruistic, egoistic or competitor (6 or more responses in each of the three categories were considered as a type). (Rusbult & Van Lange, 2003).

As mentioned earlier, subjects had to be part of the winning or runners-up group to have a chance at winning one of the mega (and other expensive) items. Therefore, forgoing immediate benefit (higher payoff) for long term benefit seem to be an important consideration. As a result time preference was considered to be somewhat relevant, at least as a control variable (we do acknowledge that our experiment time horizon was very limited). Using a discount rate test developed by Kirby and Marakovic (Kirby, 2000; Kirby & Marakovic, 1996), a set of 11 intertemporal decision problems of monetary rewards were presented to the subjects to assess their time preferences. The subject was given the option of to receive money today or in 12 months' time. Smaller-sooner amounts ranged

from £100 to £115, and the larger-later amounts ranged from £100 to £140. All choice problems were presented individually, later time period choices were varied along a scale. We then observed their switch point from smaller-sooner option to the larger-later option and estimated the discount preference. As with the other measures, this was not incentivized either (limited resources being the predominant reason).

Selected general information on data is presented in Figure 4.3.

Figure 4.3: Distribution across selected categories



Moreover, 93% had given to charity at least once in their life, 45% had given to charity in the last one year, 53% preferred to give charity in cash, 86% gave to charity when solicited, 51% preferred to give to charitable organizations while 19% preferred to give to specific individuals, 54% preferred local (home based) charities while 33% preferred international charities. Out of the total sample, 87% preferred to give to a cause and 96% preferred choice in charity. With reference to the experiment, 78% found it interesting, 72% were in a happy mood while 13% were not physically feeling well.

4.5 Results

Figures 4.4 and 4.5 plot the charity average (black bar) against the endowment average (yellow bar). As can been seen for sessions 1 & 3 in rounds 3, 4, 7 and 8 charitable giving is

relatively high as endowment is high. In comparison in rounds 9,10,11 and 12 charitable giving is relatively low as endowment is low. Similarly for sessions 2 & 4 charitable giving is relatively high for rounds 1,5 and 9 as endowment is high and relatively low for 4,8 and 12 when endowment is low. In both the cases the endowment has a direct impact on the explicit cost of giving to charity.

Figure 4.4: Giving and endowment, sessions 1 & 3

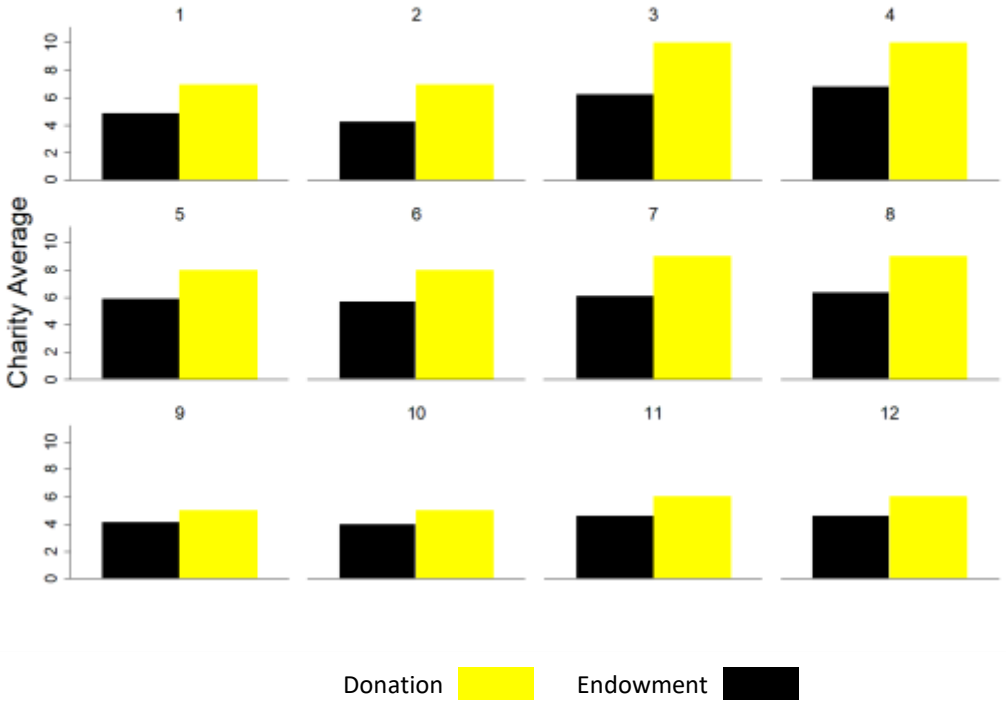


Figure 4.5: Giving and endowment, sessions 2 & 4

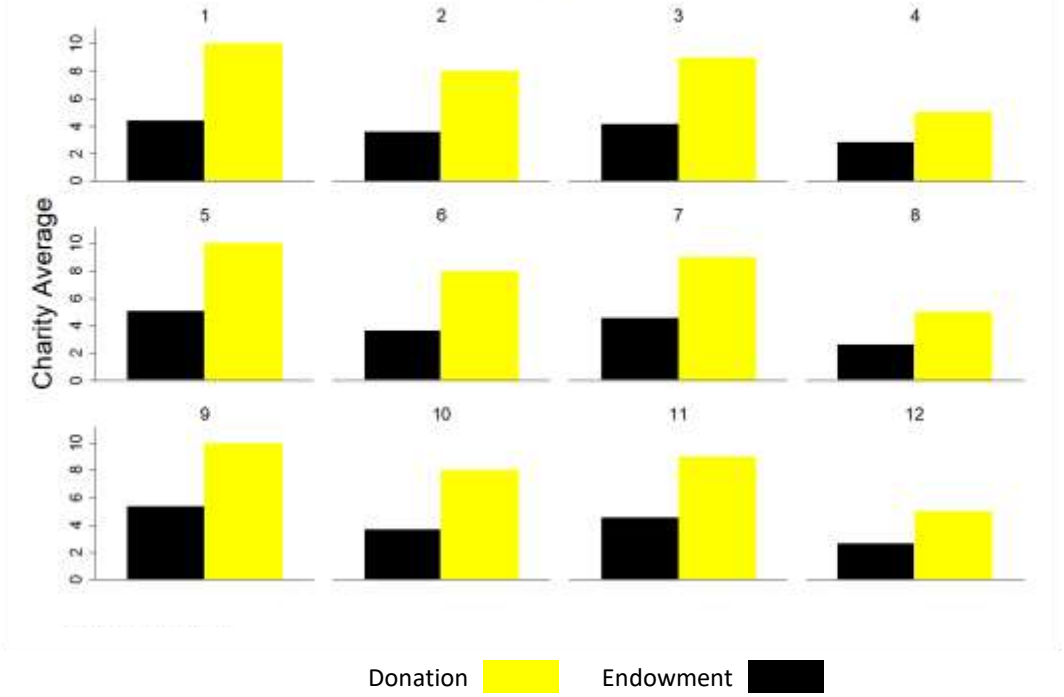


Table 4.2 details the distribution of choices aggregating across all rounds with and without the restriction. When giving is restricted there is a substantial increase in the proportion who give zero. This is consistent with what we saw in experiment #1. Unlike experiment #1, however, we also see a large increase in the proportion of subjects giving the minimum amount of £5. It would seem clear that a large part of this change is driven by subjects who would have given less than £5 without the restriction increasing the size of giving to £5. For instance, 42% of choices without a restriction were less than £5 and only 22% of choices with the restriction are £0.

Table 4.3 looks at giving during restricted treatment in each of the two sessions across all rounds. Recall that for sessions 1 & 3 the restricted treatment was introduced in rounds 1 to 4 and for sessions 2 & 4 in rounds 9 to 12. There seems to be more giving in sessions 1 & 3 with respect to extreme values as compared to session 2 & 4. This might

imply that the restricted treatment phase has a greater effect on sessions 2 & 4 as compared to sessions 1 & 3. This in turn would mean that if choice is succeeded by restriction it might not dampen giving as much. Therefore, order of treatment seems to have an effect on the giving behaviour, but whether it is significant needs to be seen.

Table 4.2: Percentage of giving across treatment across periods and sessions

Rounds											
Overall (%)	0	1	2	3	4	5	6	7	8	9	10
Unrestricted	10.8	6.9	6.6	10.7	6.6	26.7	10.0	1.7	9.9	7.9	2.1
Restricted	21.9	-	-	-	-	54.2	1.8	3.9	2.1	1.8	14.3
Sessions 1 & 3 (%)											
Unrestricted	6.0	5.2	4.7	4.7	3.9	35.2	15.1	1.6	13.0	10.7	0
Restricted	14.1	-	-	-	-	53.7	2.1	7.3	0.5	0	22.4
Sessions 2 & 4 (%)											
Unrestricted	15.6	8.6	8.6	16.7	9.4	18.2	5.0	1.8	6.8	5.2	4.2
Restricted	29.7	-	-	-	-	54.7	1.6	0.5	3.7	3.7	6.3

Table 4.3: Percentage of giving in restricted treatment phase across sessions

Rounds											
	0	1	2	3	4	5	6	7	8	9	10
Sessions 1 & 3 (%)	14.6	-	-	-	-	53.7	2.1	7.3	0.5	0	22.4
Sessions 2 & 4 (%)	29.7	-	-	-	-	54.7	1.6	0.5	3.7	3.7	6.3

Figure 4.6 plots the average giving against each round and is divided per session. Significant variation in giving is evident across restricted treatment and unrestricted treatment phases in the beginning rounds and towards the end rounds. One possible reason for the divergence in the first sets of rounds can be due to the variation in the endowment. According to Table 4.1, it is cheaper to give in round 4 for those in sessions 1 & 3 as compared to those in sessions 2 & 4 as they have more endowment. In round 5, subjects in sessions 2 & 4 have more endowment as compared to subjects in sessions 1 & 3. Similar pattern can be observed throughout till the last set of rounds. Sessions 1 & 3 follows the predicted path of giving according to endowment. However, sessions 2 & 4 gives less even when the endowment is high in the last rounds. Sessions 1 & 3 on average give more to charity as compared to the sessions 2 & 4. Therefore, the variation might not be solely due to differences in endowment but could be due to the dynamic nature of giving. We will be looking at all these possibilities subsequently.

Figure 4.6: Average giving across rounds and sessions

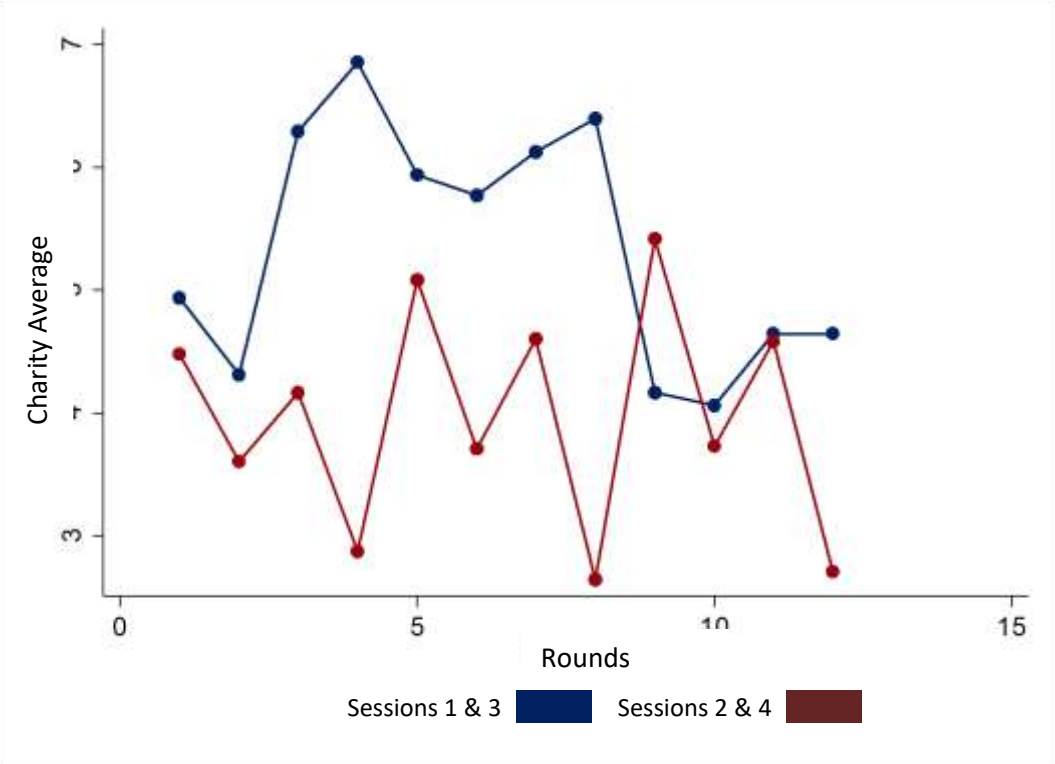


Figure 4.7 plots the average amount denoted to charity in each round, as a proportion of the endowment, distinguishing sessions 1 & 3 and sessions 2 & 4 treatments. We can clearly see that average giving in the sessions 1 & 3 treatment is significantly higher than in the sessions 2 & 4 treatment (two-sided p=0.01, Mann Whitney).

Figure 4.7: Giving as a portion of endowment

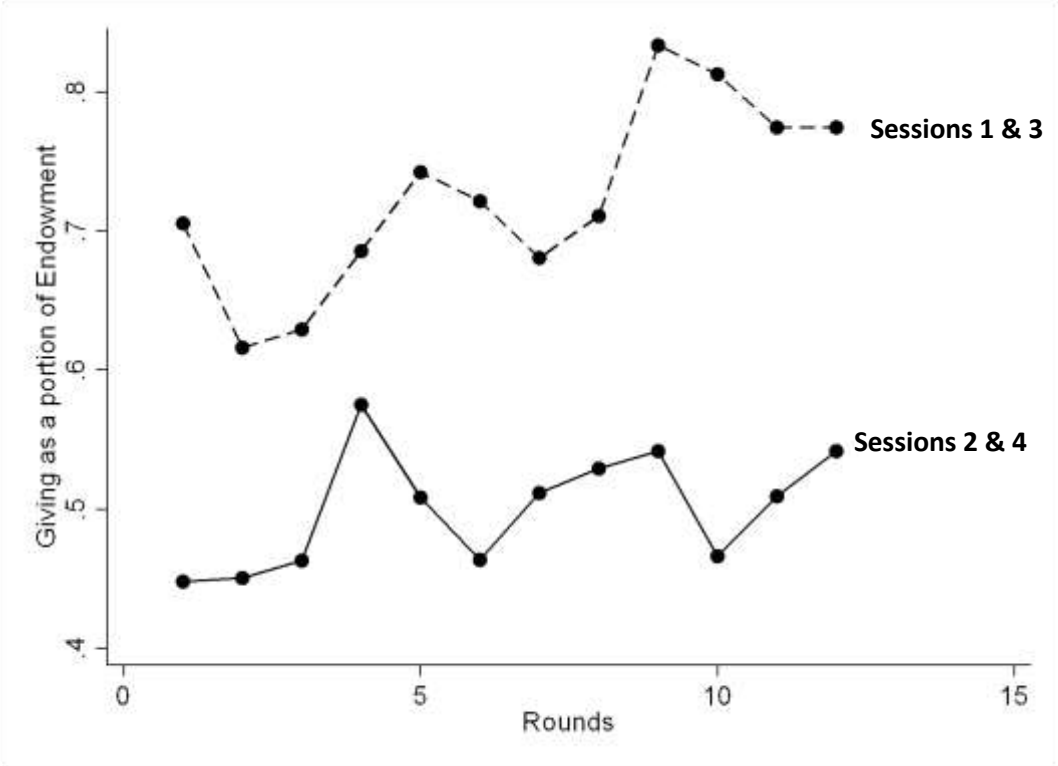


Table 4.4 gives the number of times each subject gave to charity. During the restricted treatment phase the subjects could only give twice. The restricted treatment phase resulted in greater number of zero contributions. Furthermore, during the restricted treatment phase, 66% gave only once. In the unrestricted treatment rounds subjects tended to give to a large number of charities. The constraint basically forced them to give to one charity.

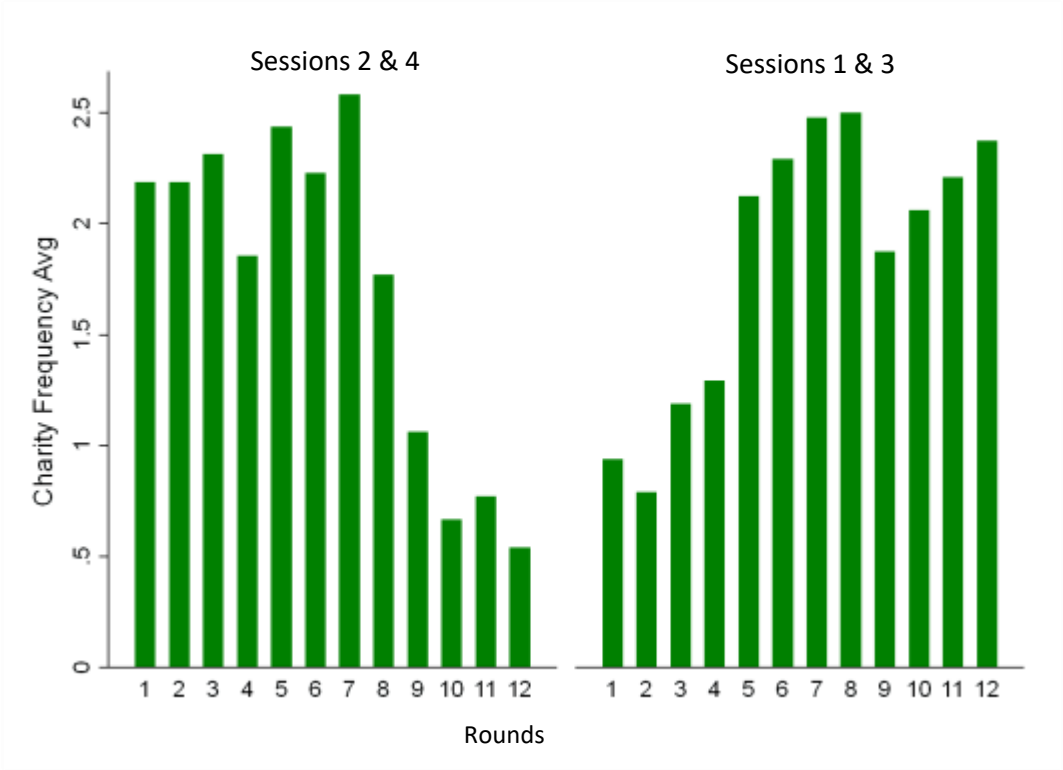
Table 4.4: Frequency of giving across treatment

	Charity Count					
	0	1	2	3	4	5
Unrestricted (%)	10.8	30.1	18.2	18.6	12.0	10.3
Restricted (%)	21.9	65.6	12.5	-	-	-

Figure 4.8 plots a bar chart by restricted treatment and unrestricted treatment phase which shows the average times the subject give in each round. As can be seen during the restricted treatment phase in sessions 1 & 3 in rounds 1 to 4 the frequency of giving is

low. Similarly in sessions 2 & 4 the giving was less in the restricted treatment rounds 9 to 12. The frequency of giving is also seen to be influenced by the explicit cost as those rounds in which the endowment was low, frequency of giving was also less. For instance in sessions 1 & 3, rounds 9 to 10 had the lowest endowment whereas in rounds 5 to 8 the endowment was highest resulting in greater frequency of giving. Once again a visual comparison reveals that the frequency of giving on average was higher in sessions 1 & 3.

Figure 4.8: Frequency of giving across sessions and rounds



4.5.1 Empirical strategy

To study whether constrained choice has an impact on giving behaviour, we first look at the probability of giving by subjects under restricted treatment. Next, we study whether subjects in the restricted treatment give less frequently over the rounds and finally whether they give less in total in each round.

For the first part of the analysis we use the following equation:

$$Pr[Y_{it}] = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \quad (1)$$

where Y_{it} is a binary variable that takes on the value of 1 if the subjects decided to give to charity and 0 otherwise. $\boldsymbol{X_i}$ is a vector of subject characteristics – age, gender, marital status, degree, subject specialization, nationality, work status and whether they prefer to give items as opposed to cash to charity. $\boldsymbol{W_i}$ is a vector of additional control variables of session, charity information, information on ranking, previous donation, noncash donation, ease of experiment, risk aversion, social value orientation and time preference. $\boldsymbol{Treatment_i}$ is dummy variable taking on the value 1 if restricted treatment and 0 otherwise. The summary statistics of these variables are given in Table 4.5.

Table 4.5: Descriptive statistics

Variable	Description	Mean	Std. Dev.
Dependent Variable			
Charity Amount	Total amount given to charity per round	4.66	2.88
Charity Binary	Dummy=1 if give to charity	0.86	0.35
Charity Count	Total number of times participant gave to charity	1.78	1.42
Free-rider	Dummy=1 if give zero in a round	0.15	0.35
Independent Variable			
Treatment	Dummy=1 for rounds with minimum of £5 contribution	0.33	0.47
Session	Dummy=1 if sessions 1 & 3	0.50	0.50
Groups	Categorical variable for the 6 groups per session	3.50	1.71
Income	Discrete variable, varying income per round	7.75	1.81
Age	Dummy=1 for those born in the 1990s	0.83	0.37
Gender	Dummy=1 for female	0.56	0.50
Nationality	Dummy=1 for European	0.62	0.49
Marital Status	Dummy=1 if single	0.04	0.20
Degree	Dummy=1 for undergrad	0.98	0.14
Subject	Dummy=1 for Social Sciences	0.43	0.50
Work	Dummy=1 for employed	0.30	0.46
Group Rank	Dummy=1 for round immediately following information on rank of group	0.25	0.43
Information on Charity	Dummy=1 if information in form of screening	0.33	0.47
Donation to charity	Dummy=1 if previously donated to charity	0.93	0.26
Noncash Donation	Dummy=1 if preferred to donate items than money	0.48	0.50
Experiment	Dummy=1 if found the experiment easy	0.88	0.33
Risk averse	Dummy=1 if risk averse	0.75	0.43
Social value orientation	Dummy=1 if competitive	0.25	0.43
Time preference	Dummy=1 if discounting high	0.85	0.35
Lag Charity Binary	t-1 for charity binary	0.87	0.34
Lag Charity Count	t-1 for charity count	1.81	1.40
Lag Charity Amount	t-1 for charity amount	4.75	2.90
Items	Dummy=1 for two of the most expensive items	0.50	0.50
Lag Free-rider	t-1 for free-rider	0.14	0.34

4.5.1.1 Empirical specification

The dependent variable is not fully observed but we do observe the discrete choice. This allows us to model the probability whether given the restricted treatment (and other covariates) the subjects would give to charity or otherwise. As charity is a binary variable it is estimated using Logit with random effects.

Along with random effects, the population average estimator with different working correlations has also been estimated. Three correlation structures have been specified: independent, exchangeable and autocorrelation.

The Logit model will take the following form:

$$Pr\ (Y_{it}|\boldsymbol{Treatment_i}, \boldsymbol{X_i}, \boldsymbol{W_i}\ ) = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (2)$$

All the variables are defined as in equation (1).

The results for logit model and population averages are presented in Table 4.6. Column (1) has the pooled and column (2) has logit random effect results. The subjects are less likely to give during the restricted treatment phase as compared to when they are unrestricted to give any amount.

Similarly, column (3) gives the results with independent correlation which also shows that subjects are less inclined to give during the restricted treatment phase. Column (4) gives the results with exchangeable correlation which also shows a negative relation between giving and restricted treatment. Column (5) rounds it up with auto-correlated correlation matrix, the direction of giving behaviour remains negative due to the restricted treatment effect.

In context of the timing, the results show that subjects in sessions 1 & 3 gave more to charity as compared to subjects of sessions 2 & 4. Recall that the restricted treatment

in sessions 1 & 3 was introduced in rounds 1 to 4 and therefore the timing of the restriction seems to have impact on the subsequent giving.

Table 4.6 also gives the marginal effects which confirm that during the restricted treatment phase the subjects were less likely to give to charity. The results demonstrate that if subjects are restricted in terms of giving to a specific minimum amount their chance of contributing decreases. Subjects in sessions 1 & 3 are more likely to give a greater amount as compared to subjects in sessions 2 & 4.

Table 4.6: Odds ratios and marginal effects

	Pooled (1)	**Panel (2)**	**Ind (3)**	**Exc (4)**	**Ar (5)**
a. Restriction	0.27***	0.19***	0.27***	0.27***	0.28***
	(0.09)	(0.08)	(0.09)	(0.08)	(0.09)
b. Restriction	-0.11***	-0.13***	-0.11***	-0.13***	-0.09***
	(0.03)	(0.03)	(0.03)	(0.10)	(0.02)
c. Sessions 1 & 3	2.59***	3.23***	2.59***	2.65***	2.30***
	(0.74)	(1.48)	(0.69)	(0.83)	(0.56)
d. Sessions 1 & 3	0.08***	0.10***	0.08***	0.09***	0.06***
	(0.02)	(0.04)	(0.02)	(0.03)	(0.02)
No. of Observations	1,023	1,023	1,023	1,023	1,023

Note: Dependent variable is charity which is equal to one if given to charity and zero otherwise; a. Restriction treatment odds ratios are reported, b. Restriction treatment marginal effects are reported; c. Sessions 1 & 3 odds ratios are reported, d. Sessions 1 & 3 marginal effects are reported. Column (1) pooled average effects and column (2) panel logit include subject specific effects while column (3) independent, column (4) exchangeable and column (5) auto-correlated report population averages with correlation structures. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

4.5.2 Frequency of giving

Next, we look at whether the frequency of giving per round is affected by the restricted treatment. This is setup as:

$$Count_{it} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \quad (3)$$

where the dependent variable is Charity Count. This is a discrete variable which includes the total number of times each subject gave to charity across the twelve rounds. Each subject had the choice to contribute a maximum of £10 across five categories of charities; each contribution was taken as a single instance or count.

4.5.2.1 Empirical specification

Figure 4.9 is a histogram of number of times subjects gave to charity. As is evident from the shape and statistics on skewness (0.83) and kurtosis (2.77), *Charity Count* does not have a normal distribution. The data satisfies the basic assumptions of the Poisson model.

The Poisson model would take the following form:

$$Pr(Y_{it}|\upsilon_i) = \exp(\alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it}) \quad (4)$$

where $\upsilon_i = \exp(\alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it})$, all the variables are defined as per equation (1).

Figure 4.9: Histogram, frequency of giving

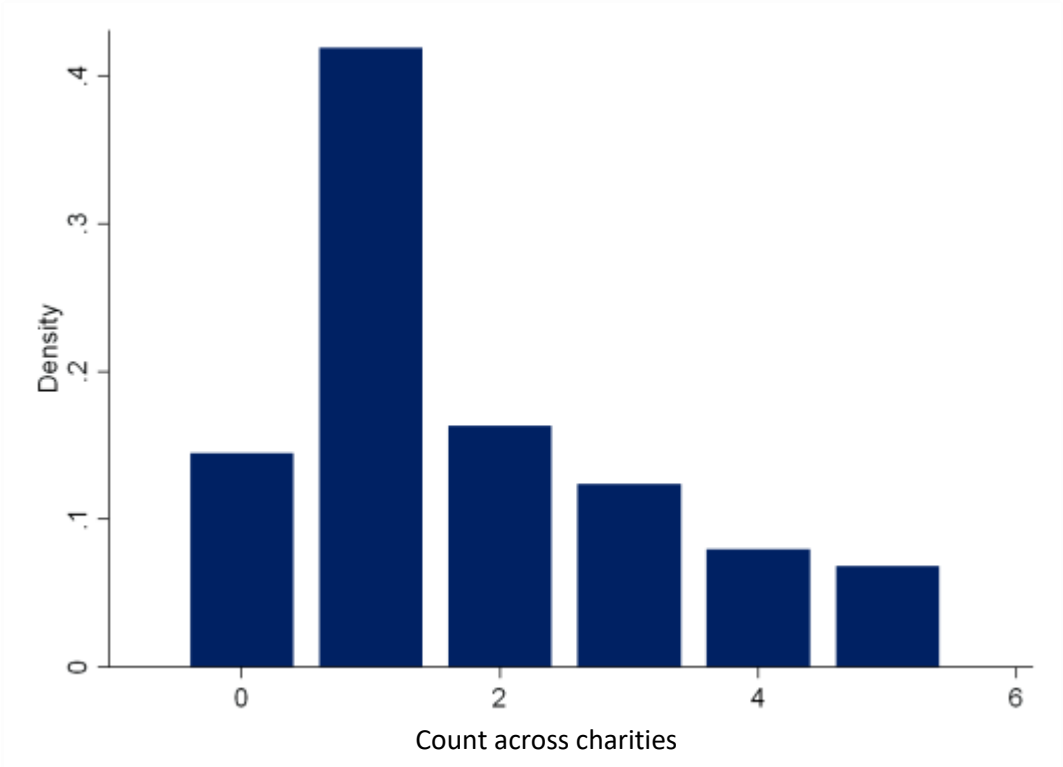


Table 4.7 contains the pooled (column 1), Poisson (column 2) [31] estimates as well as population averages: independent (3), exchangeable (4) and auto-correlated matrix. As expected, the restricted treatment effect has a negative impact on frequency of giving. Consistent with (Figure 4.5 on giving per round) subjects when exposed to restriction of £5 tend to give less often to charity as compared to when no restriction is placed. According to the results, those in sessions 1 & 3 were inclined to give more frequently as compared to the subjects in sessions 2 & 4. The time element of restriction is showing a positive impact on total giving if it is introduced in earlier period

[31] The variance (1.42) is lightly higher than the mean (1.78). Failure to adjust for over-dispersion would lead to underestimating the variability in our estimates – point estimates will not be as precise. Usually this small difference can be dealt with using a dispersion parameter. Moreover, we are using robust standard errors which according to Wooldridge (2010), Cameron and Trivedi (2005) should cater for over-dispersion.

Table 4.7: Incidence rate ratios and marginal effects

	Pooled (1)	Panel (2)	Ind (3)	Exc (4)	Ar (5)
a. Treatment	0.54***	0.54***	0.54***	0.45***	0.59***
	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)
b. Treatment	-1.12***	-0.62***	-1.12***	-1.42***	-0.97***
	(0.13)	(0.07)	(0.17)	(0.15)	(0.16)
c. Sessions 1 & 3	1.19***	1.19***	1.19***	1.18*	1.19***
	(0.07)	(0.07)	(0.07)	(0.11)	(0.06)
d. Sessions 1 & 3	0.31***	0.17***	0.31***	0.30*	0.32***
	(0.11)	(0.06)	(0.10)	(0.17)	(0.09)
No. of Observations	1,056	1,056	1,056	1,056	1,056

Note: Dependent variable is charity count which includes the frequency of giving per round; a. Restriction treatment incidence rate ratios are reported, b. Restriction treatment marginal effects are reported; c. Sessions 1 & 3 incidence rate ratios are reported, d. Sessions 1 & 3 marginal effects are reported. Column (1) Pooled average effects and column (2) panel logit include subject specific effects while column (3) independent, column (4) exchangeable and column (5) auto-correlated report population averages with correlation structures. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

The marginal effects and incidence rate are also given in Table 4.7. As before the coefficients on restricted treatment are significant and inversely related to the frequency of giving.

4.5.3 Giving in total

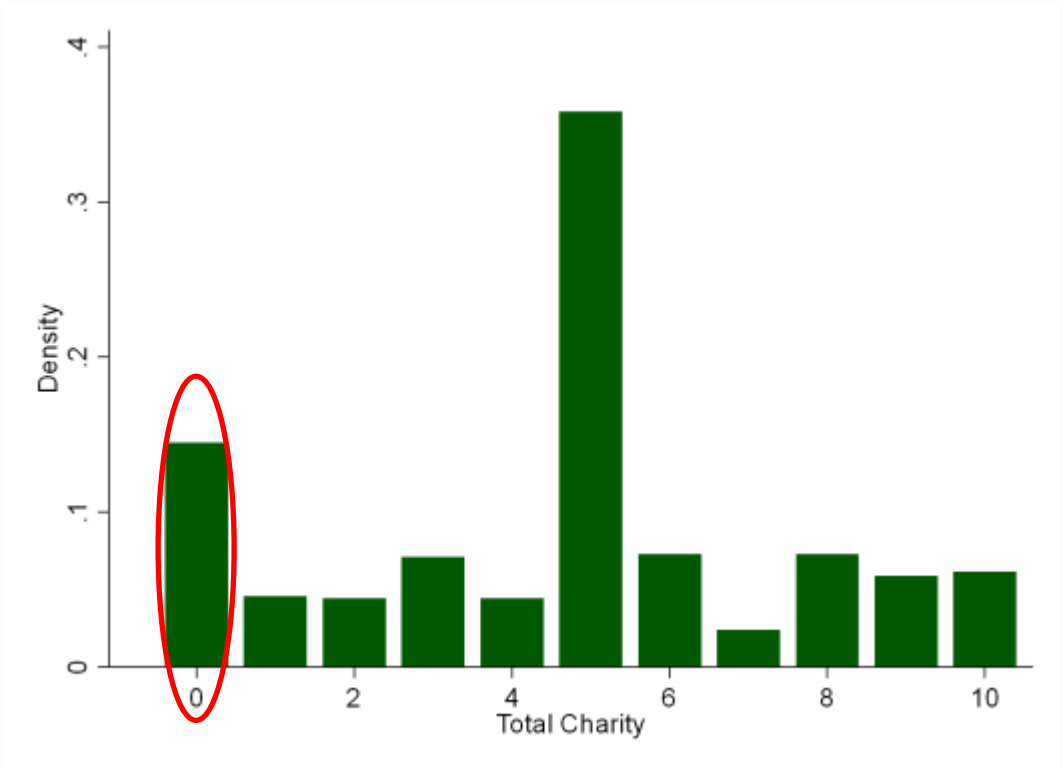
Next, we look at whether the restricted treatment also has an impact on the total giving when we take into consideration the censored nature of the data. This is setup as:

$$Charity_{it}^{*} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \quad (5)$$

$$Charity_{it} = (0, Charity_{it}^{*})$$

The nature of the dependent variable is such that it is censored at 0 and at 10 (see Figure 4.10). Our dependent variable cannot be considered as truncation because we do observe information (characteristics) of both restricted treatment and unrestricted treatment group. However, when $Charity_{it}$, the actual value of is below a threshold, $Charity_{it}$ gets recorded as 0 rather than the true value of $Charity_{it}$ making it a censored from below; for the censored from above the values collapse to 10. Tobit model uses all the information including that on censoring and provides consistent estimates.

Figure 4.10: Charity giving



4.5.3.1 Empirical specification

We use the random effects model to estimate equation (5). Random effects model adopts a subject specific approach, it can distinguish observations belonging to the same or different subjects. The model specification is as follows:

$$Y_{it} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (6)$$

The results are given in Table 4.8. Column (1) gives the OLS estimates while columns (2) to (4) contain the left, right and left & right censored pooled average effects. Columns (5) to (7) contain the panel tobit estimates censored from the left, right and left & right respectively

According to Table 4.8, when the subjects were exposed to restricted treatment phase the overall giving decreased by £0.41 on average as compared when the subjects were free to give any amount. When the censored nature of the data is taken into

consideration the total amount decreased by £0.51 when subjects are exposed to restriction on giving compared to when they are free to give any amount. Therefore, restriction has negative impact on giving behaviour.

Table 4.9 shows that total amount given is higher for sessions 1 & 3 as compared to sessions 2 & 4. On average those in sessions 1 & 3 gave £0.99 more as compared to those in sessions 2 & 4. When he censored nature of the data is considered those in sessions 1 & 3 give £0.51 more as compared to subjects in sessions 2 & 4.

Table 4.8: OLS and tobit estimates, restriction

	OLS (1)	Pooled Left Censored (2)	Pooled Right Censored (3)	Pooled Right & Left Censored (4)	Panel Left Censored (5)	Panel Right Censored (6)	Panel Right & Left Censored (7)
a. Treatment	-0.41**	-0.71***	-0.31	-0.61**	-0.51**	-0.15	-0.42
	(0.21)	(0.25)	(0.21)	(0.26)	(0.22)	(0.26)	(0.31)
b. Treatment	-	-0.62***	-0.29	-0.47**	-0.43**	-0.13	-0.30
		(0.21)	(0.20)	(0.20)	(0.18)	(0.24)	(0.22)
No. of Observations	1,056	1,056	1,056	1,056	1,056	1,056	1,056

Note: Dependent variable is charity which includes the total amount given per round; a. Treatment OLS and tobit (left censored at £0, right censored at £10) estimates; b. Treatment marginal effects at expected means are reported. Column (1) gives the baseline OLS estimates. Columns (2) to (4) report the pooled estimates censored from left, right and both respectively. Columns (5) to (7) report the panel estimates censored from left, right and both respectively. Left Censored columns (2) & (5): 159 left-censored observations, 897 uncensored observations, 0 right-censored observations; Right Censored columns (3) & (6): 0 left-censored observations, 992 uncensored observations, 64 right-censored observations; Right & Left Censored columns (4) & (7): 159 left-censored observations, 833 uncensored observations, 64 right-censored observations. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis.. $***p < 0.01, **p < 0.05, *p < 0.1$

Table 4.9: OLS and tobit estimates, sessions

	OLS (1)	Pooled Left Censored (2)	Pooled Right Censored (3)	Pooled Right & Left Censored (4)	Panel Left Censored (5)	Panel Right Censored (6)	Panel Right & Left Censored (7)
a. Sessions 1 & 3	0.99***	1.14***	1.06***	1.23***	1.54***	1.32***	1.62***
	(0.15)	(0.18)	(0.16)	(0.19)	(0.46)	(0.42)	(0.55)
b. Sessions 1 & 3		0.99***	1.00***	0.94***	1.28***	1.24***	1.16***
		(0.15)	(0.15)	(0.15)	(0.38)	(0.40)	(0.38)
No. of Observations	1,056	1,056	1,056	1,056	1,056	1,056	1,056

Note: Dependent variable is charity which includes the total amount given per round; a. Sessions 1 & 3 OLS and tobit (left censored at £0, right censored at £10) estimates; b. Sessions 1 & 3 marginal effects at expected means are reported. Column (1) gives the baseline OLS estimates. Columns (2) to (4) report the pooled estimates censored from left, right and both respectively. Columns (5) to (7) report the panel estimates censored from left, right and both respectively. Left Censored columns (2) & (5): 159 left-censored observations, 897 uncensored observations, 0 right-censored observations; Right Censored columns (3) & (6): 0 left-censored observations, 992 uncensored observations, 64 right-censored observations; Right & Left Censored columns (4) & (7): 159 left-censored observations, 833 uncensored observations, 64 right-censored observations. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis.. $***p < 0.01, **p < 0.05, *p < 0.1$

4.5.4 A closer look at the preponderance of zeros

So far we have observed and estimated treatment phase having a separate effect depending on the timing of the restriction within the session. It could be argued that the restricted treatment effect forced those on the boundary to give nothing. If our assertion is correct about restricted treatment effect then it should result in a significant and positive change in the number of zero-givers; in other words, whether free-riders increase due to the restricted treatment effect. This is setup as:

$$\Pr(\boldsymbol{free-riders}_{it}) = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \quad (7)$$

where $\boldsymbol{free-riders}$ is a binary variable that takes on the value 1 if the subject gives nothing to charity. Other covariates are the same as in equation (1).

4.5.4.1 Empirical specification

The Logit model will take the following form:

$$Pr\ (Y_{it}|\boldsymbol{Treatment_i}, \boldsymbol{X_i}, \boldsymbol{W_i}\ ) = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \quad (8)$$

All the variables same as in equation (1).

Results are presented in Table 4.10, column (1) gives the pooled estimate, column (2) contains the panel logit, column (3) population average with independent correlation, column (4) population average with exchangeable correlation and column (5) with auto-correlated correlation.

Table 4.10: Odds ratios and marginal effects

	Pooled (1)	Panel (2)	Ind (3)	Exc (4)	Ar (5)
a. Restriction	1.13***	1.44***	1.13***	1.15***	1.04***
	(0.30)	(0.41)	(0.31)	(0.29)	(0.30)
b. Restriction	0.10***	0.12***	0.10***	0.11***	0.08***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)
c. Sessions 1 & 3	-0.88***	-1.08**	-0.88***	-0.90***	-0.76***
	(0.29)	(0.46)	(0.27)	(0.32)	(0.25)
d. Sessions 1 & 3	-0.06***	-0.09**	-0.08***	-0.09***	-0.06***
	(0.03)	(0.04)	(0.02)	(0.03)	(0.02)
No. of Observations	1,023	1,023	1,023	1,023	1,023

Note: Dependent variable is charity which is equal to one if zero given to charity and positive giving otherwise; a. Restriction treatment odds ratios are reported, b. Restriction treatment marginal effects are reported; c. Sessions 1 & 3 odds ratios are reported, d. Sessions 1 & 3 marginal effects are reported. Column (1) pooled average effects and column (2) panel logit include subject specific effects while column (3) independent, column (4) exchangeable and column (5) auto-correlated report population averages with correlation structures. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis.. $***p < 0.01, **p < 0.05, *p < 0.1$

It is evident from the results that the probability of giving zero to charity increases when restriction on the amount of giving is imposed. In other words, the subjects were more likely to free-ride due to the restricted treatment effect. Marginal effects also confirm that restriction tend to decrease the tendency to contribute to charity by increasing free-riding.

In terms of the sessions, Table 4.10 shows that subjects in sessions 2 & 4 were more inclined to give zeros as compared to subjects in sessions 1 & 3. This is consistent with the previous results as subjects in sessions 1 & 3 comparatively give more along both the intensive and extensive margins. The marginal effects in Table 4.10 confirm that sessions 1 & 3 select zero per round less often than subjects in sessions 2 & 4.

4.5.5 Summary of main results

Table 4.11 provides summary of our main findings. Recall our hypothesis from section 4.3, our results confirm that restriction significantly lowers the probability of giving and lowers the number of charities given to. The most striking aspect of our results is the strong evidence of an effect between treatments. This points to an important dynamic effect of the constraint. In particular, it seems that in the restriction first treatment the initial £5 minimum created a long lasting high reference amount, as compared to the restriction last treatment. This led to significantly higher contributions even once the restriction was relaxed. It would appear, particularly given our results in the experiment #1, that this effect is driven by the extrinsic motive to give and be in a winning group. Even so, it points to interesting implications for charitable solicitation.

Table 4.11: Summary of main results

	Logit (1)	Poisson (2)	OLS (3)	Tobit (4)
a. Restriction	0.19***	0.54***	-0.41**	-0.51**
	(0.08)	(0.04)	(0.21)	(0.22)
b. Restriction	-0.13***	-0.62***	-	-0.43**
	(0.03)	(0.07)		(0.18)
c. Sessions 1 & 3	3.23***	1.19***	0.99***	1.54***
	(1.48)	(0.07)	(0.15)	(0.46)
d. Sessions 1 & 3	0.10***	0.17***	-	1.28***
	(0.04)	(0.06)		(0.38)
No. of Observations	1,023	1,056	1,056	1,056

Note: a. Restriction treatment odds ratios (Column 1), incidence rate ratio (Column 2), OLS and tobit estimates (Column 3 & 4) are reported, b. Restriction treatment marginal effects are reported; c. Sessions 1 & 3 odds ratios (Column 1), incidence rate ratio (Column 2), OLS and tobit estimates (Column 3 & 4) are reported, d. Sessions 1 & 3 marginal effects are reported. Column (1): Dependent variable is charity which is equal to one if given to charity and zero otherwise. Column (2): Dependent variable is charity count which includes the frequency of giving per round. Column (3) & (4): Dependent variable is charity which includes the total amount given per round; dependent variable is censored at £0; 159 left-censored observations, 897 uncensored observations, 0 right-censored observations. All regressions include control for employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis.. $^{***}p < 0.01, ^{**}p < 0.05, ^{*}p < 0.1$

4.6 Discussion and conclusion

Our results provide evidence that if choice is constrained it affects the giving behaviour even in a group setting, when the number of rounds are increased, in presence of competition and other behavioural covariates. The constraint amount affects the frequency of giving and has an impact on total giving as well. However, the reduction in overall amount depends on when the restricted treatment is introduced. In the case when the restricted treatment is administered in the beginning of the session there is relatively higher average giving throughout the subsequent rounds as compared to when the restricted treatment is introduced later in the session. It would appear that warm glow givers tend to be affected by the order of the intervention (refer to Figure 4.4). When they are offered a choice after restriction (sessions 1 & 3) giving remained higher as compared to when choice was followed by restriction (sessions 2 & 4).These results are interesting as they show that the perception of restriction could be influenced by its timing; making timing an important component of giving behaviour and by extension an important component of the 'ask' strategy.

All sessions exhibit charitable giving responding to the economic environment. Assuming that charitable giving was a normal good, an increase in the endowment meant an income effect towards charity, whereas a decrease in the giving meant a negative income effect. However, because of the self-interest and restricted treatment effect the relationship between endowment and charitable giving was not strictly linear. There was some noise in the decision making process. Nevertheless, even under the increased complexity of decision making the subjects' giving patterns were influenced by the minimum amount. This then substantiates the results from experiment #1 where giving

was influenced by the explicit cost. In experiment #2 the explicit cost of giving resulted in an increase in number of free-riders.

With reference to the timing effect of restriction on giving it could be argued that it might be due to pure order effects. However we used counter-balancing to control for pure order effects, for sessions 1 & 3 the restricted treatment rounds were 1 to 4 while for sessions 2 & 4 the restricted treatment rounds were 9 to 12. In addition the design of experiment helped to limit pure order effects due to three specific reasons. One, the subjects did not know whether a restriction would be placed on the amount they could give to charity. As such they could not pre-plan a response as the game developed. Second, the subjects did not know when the restriction was to be imposed. This limited the learning effect as the parameters of the rounds changed when restriction was imposed. Third, exposing the subjects to ranking of groups at specific intervals kept the interaction competitive. We feel confident that counter-balancing along with the design of the experiment helped to minimize pure order effects and helped in isolating the timing effect of giving.

The higher giving in sessions 1 & 3 as compared to sessions 2 & 4 (refer to Figure 4.4) can be explained by a combination of restriction deceleration effect and habit effect. Recall in sessions 1 & 3 in rounds 1 to 4 a restriction was placed on the amount (minimum £5) that could be given to charity. As the subjects were unaware whether the restriction would continue or was limited to the first four rounds, the giving was higher than sessions 2 & 4. In the next four rounds the restriction was removed but the giving remained relatively high as compared to sessions 2 & 4. It can be argued that the relatively high giving in the subsequent rounds was possibly due to restriction deceleration effect: after the

initial higher contribution there is a gradual reduction in the total giving, similar to a car decelerating.

The basis of gradual deceleration is the impact of the restriction on the subsequent rounds. In the subsequent rounds subjects in sessions 1 & 3 had a quantifiable reference for their warm glow, a threshold. In other words, the restricted amount became the reference/anchor for the remaining rounds. The effect worked in the opposite directions for subjects in sessions 2 & 4. The initial rounds in the sessions 2 & 4 did not have any restriction as a result they formed their own acceptable threshold of giving. This average giving continued till the last four rounds when restriction was imposed. There was a spike in giving but quickly went down to the average that had been established in the previous rounds.

In rounds 9 to 12 the overall giving in sessions 1 & 3 was lower as compared to the previous rounds. As the subjects were aware that there were 12 rounds, giving in the last rounds can be attributed to habit effect. In the last rounds the deceleration effect is complete and the warm glow giver falls back to the lower levels of giving, a threshold which is strongly influenced by the habit of a warm glow giver, the habit effect. The habit effect is also evident in sessions 2 & 4. In rounds 1 to 8 there is less giving as compared to sessions 1 & 3 which can be explained by the habit of warm glow givers. The habit effect continues till round 9 when restriction is introduced. The round witnesses an initial spike but then the average amount of giving falls to its previous level due to the habit effect. The habit effect seems to be stronger for sessions 2 & 4 as it persisted for a longer period as compared to sessions 1 & 3. The habit effect in sessions 1 & 3 provide an interesting insight, the habit effect could possibly be reset if restriction was reintroduced which would start the deceleration effect once again. This would be interesting to look at as this would

imply that timing of restriction could help dampen its initial negative effects by relatively higher average giving subsequently.

Table 4.12 provides a comparison of the main results of experiment #1 (chapter 3) and experiment #2. As can be observed from Table 4.12 the negative effect of the restriction is consistent both in terms of frequency of giving and total amount of giving. However, as per column (3) and (4) the magnitude of restriction in between-subject setting is larger than the within-subject environment. Recall in the first experiment the only incentive to give to charity was warm glow, altruism or similar. In particular, donating to charity had an opportunity cost in terms of cash and the ability to buy a lottery ticket. In experiment #2 we considered the opposite extreme in which 'non-altruistic' incentives to donate to charity are provided. Specifically, the more an individual donates to charity the more likely he is to win an electronic item. Results remain robust across both the settings.

Table 4.12: Summary comparison of experiment #1 & #2

	Logit (1)	Poisson (2)	OLS (3)	Tobit (4)
a. Treatment	0.02***	0.57***	-0.66**	-4.68***
	(0.03)	(0.10)	(0.31)	(0.63)
b. Treatment	-0.37***	-0.57***	-	-1.87***
	(0.09)	(0.18)		(0.21)
c. Restriction	0.19***	0.54***	-0.41**	-0.51**
	(0.08)	(0.04)	(0.21)	(0.22)
d. Restriction	-0.13***	-0.62***	-	-0.43**
	(0.03)	(0.07)		(0.18)

Note: Experiment #1: a. Treatment odds ratios (Column 1), incidence rate ratio (Column 2), OLS and tobit estimates (Column 3 & 4) are reported, b. Treatment marginal effects are reported. Experiment #2: c. Restriction odds ratios (Column 1), incidence rate ratio (Column 2), OLS and tobit estimates (Column 3 & 4) are reported, d. Restriction marginal effects are reported. Column (1): Dependent variable is charity which is equal to one if given to charity and zero otherwise. Column (2): Dependent variable is charity count which includes the frequency of giving per round. Column (3) & (4): Dependent variable is charity which includes the total amount given per round; dependent variable is censored at £0. Experiment #1: 128 left-censored observations, 182 uncensored observations, 0 right-censored observations. Experiment #2: 159 left-censored observations, 897 uncensored observations, 0 right-censored observations. Experiment #1: All regressions include control for sessions (where applicable), employment, gender, marital status, age, nationality, degree, subject, choice of donation, items, round dummies, charity dummies and lagged charity. Experiment #2:All regressions include control for employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups (where applicable), group ranking, round dummies and lagged charity. Experiment #1: Robust standard errors clustered by the subject in parenthesis. Experiment #2: Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

Our findings provide broad qualitative implications for practice. If charities need to ask a specific amount then the timing of when to ask is crucial if charitable donation is expected to be consistent across warm glow donors. It might be worthwhile for charities to reassess when specifically to ask for an amount in order to cultivate a habit formation based on the reference/anchor effect of the restriction. It is clear that restriction affects giving, however its negative impact can be managed in the follow up donations, provided of course the restriction is duly lifted. By allowing for choice after restriction it would

initiate the deceleration effect followed by habit effect. The charities would need to shock the giving behaviour (run a campaign with specific appeal for instance) before the habit effect further decreases giving. By repeating the cycle of deceleration and shock, the giving on average should remain relatively high. It is however important that when charities are determining the shock amount (the restriction) they must also keep the self-interest of the donor in perspective. Furthermore, to facilitate greater giving during restricted phase the charities would be best served to offer something in exchange. This would facilitate avoiding the negative feeling the donors might feel for violating the norm of self-interest. Framing the donation as a commercial exchange would keep the warm glowers interested and keep them coming back; the act of giving results in a greater satisfaction when private benefit is combined with collective benefit.

Chapters 3 & 4 have established that there is an explicit cost to giving. This cost affects giving behaviour and in case of warm glow donors has a considerable impact. We now seek to complete the argument on opportunity cost by looking at the implicit cost of giving. Recall from chapter 2 we identified implicit cost with imperfect information on charities or recipients. Therefore, it would be worthwhile to measure how provision of different types of information affects the implicit cost of giving. In experiment #2 an additional treatment was included in terms of information on charities. In the subsequent chapter we will modify experiment #2 and closely analyse whether signalling or screening has an impact on the implicit cost of giving.

APPENDIX B

B.1 Instructions provided to the subjects

Thank you for participating in the experiment.

Please read the instructions carefully.

This is a simple computer based experiment with all the relevant information provided as hard copies. You can refer to the instructions and all other information as many times as you like during the course of the experiment.

Please note that on the desk in front of you there is a folder and three marked & sealed envelopes.

- The folder contains the one page consent form, list of items randomly selected for the draw and five page questionnaire. Please sign the consent form and place it back in the folder.
- The envelope contains specific information about the rounds. The envelopes are to be opened at specific instances during the experiment; the conductor will inform you when to open the envelopes.

The experiment has twelve rounds and would take about 90 minutes.

All the participants will be divided into 6 groups. You will be randomly assigned to one of the six groups and the six groups would be divided into sets of 3. Your group id would appear on the computer screen once the first round begins.

In each round you will have a notional amount of £5 and an additional amount which will vary from £0 to £5 for different rounds

For rounds 1-4 you will need to open envelope marked option 1, for rounds to 5-8 envelope marked option 2 and for rounds 9-12 envelope marked option 3. Before beginning of the relevant round you will be prompted by the conductor.

In each round you will have the choice of donating to charity/charities. Please note that all the specified charities are real and are registered in the UK.

If you do decided to make a donation please enter the amount against the column of the relevant charity/charities. Please note that you can only donate in whole numbers for instance donation of £5 is acceptable not £5.50.

The amount that is remaining in each round would appear in the endowment & income box. Please make sure that you do not exceed the total limit for each round.

Your donations in each round would be added to group total and at the end of preselected rounds you will be given information about the top and bottom groups.

At the end of the 12 rounds the top two groups would not only receive a payoff (if any) but also will enter into a draw to win the 5 items including the randomly selected mega prize (all the items in their original packings are displayed at the front of the room).

The last two groups would only receive the payoff if any and would be asked to leave before the draw for the prizes is conducted.

In case of a tie the winning and runner up group will be randomly selected by a coin toss.

The payoff round will be randomly selected by the computer. The payoff round will also determine the donation to be made to charity/charities specified by you in that round.

The participants of the two winning groups will be entered in the draw and would have a chance of winning 3 out of the 5 items. The winning participants would have a choice of item (first winner will have first pick, second winner second pick and so on).

The participants of the runner up groups will have a chance to win 2 out of 5 items. The winning participants would have a choice of item (first winner will have first pick and the second winner will get whichever item is remaining).

At the end of the experiment and before the payoff, you will be asked by the conductor to fill in the questionnaire.

If you have any questions or seek clarifications please raise your hand now, you will not be allowed to ask any question or communicate during the experiment.

Please wait for the signal from the conductor to begin the round.

Thank you.

Chapter 5
Impact of Imperfect Information on Warm Glow Giving: A Lab Experiment

5.1 Introduction

The previous chapters have shown that explicit cost is an important consideration for warm glow giving. The fact that warm glow givers drive utility from the act of giving rather than the efficacy of their donations makes the cost consideration pivotal. We now explore implicit cost side of charitable giving.

As per microeconomic theory, imperfect information adds to the cost of the transaction and affects the utility level. By the same token imperfect information adds to the implicit cost of charitable giving and therefore it is worth exploring what type of information lowers the cost for warm glow donors.

There is imperfect information when one party to a transaction knows more than the other party. This then causes the markets to become inefficient as the parties do not have all the necessary information to make an informed decision. In the case of donors this entails an increase in both internal and external cost of giving as they are missing important information about the characteristics and efficiency of charities. In other words, the problems of adverse selection and moral hazard (principle agent dilemma) increase the implicit cost of giving.

Literature discusses the importance of information with reference to giving. Hibbert & Horne (1996) stipulate that small donors are not too interested in detailed information. Others argue that donors tend to be strategic in their giving and therefore use specific information (Frumkin, 2008). O'Neill (2009) argues that people implicitly trust

non-profit organizations and therefore rely less on information; of course the build-up of trust is also explicitly tied in with some form of information. With reference to warm glow, Eckel & Grossman (1996b) argue that donors must deem the organisation deserving for their donations, this entails need for some type of information not necessarily detailed information.

Charities try to provide specific information in the form of annual reports, advertising achievements, highlighting funds used for charitable activities and by providing information on the Web (Frumkin & Kim, 2001). Most charities go as far as disclosing fundraising techniques, cost structures and human resource equity (Silvergleid, 2003). However, from the donor's perceptive access to such information requires time, effort and a minimum level of expertise. This makes the donors more receptive to a specific type of information based on the amount of time they have, the effort they want to expend and the level of technical understanding they possess. However, the literature doesn't discuss specifically the type of information that facilitates warm glow giving.

It could be argued that if the dominant motivation is warm glow then obtaining information of charitable organization may seem tedious and unnecessary. If the act of giving brings satisfaction then what is the purpose of gathering information about the characteristics and efficiency of charitable organization (Harbaugh et al., 2007). This line of thinking considers warm glow giving as a blind leap of faith where the donor selection of the charity is purely random. However, as shown in the previous chapters charitable giving is not without cost and therefore there is an inherent level of consideration to giving. Gordon & Khumawala (1999) have shown that donors prefer to donate only when they have enough information about the charity. The warm glow giver might not be interested

in all the details but would certainly be seeking easily accessible information that would help in maximizing the act of giving, in other words reducing the implicit cost of giving.

It would be of interest to charities to find out what type of information would be considered important by the warm glow donors. By identifying the right mix of information the charities could trigger an increase in donations along both intensive and extensive margins. This chapter attempts to look at whether screening is preferred as an effective implicit cost minimizing tool for charitable giving.

In this chapter, we use a modified version of data from chapter 4. We compare the impact of signalling and screening on charitable donations. We test whether specific type of information significantly affects the average and frequency of donation. We find interesting results about the effectiveness of signalling in increasing charitable giving.

The remainder of this chapter is organized as follows: we will briefly discuss the findings from literature about the impact of signalling and screening on charitable giving. Next we review the experiment design and the modified data, followed by our empirical results. We conclude with discussion of the results and their implications for charitable giving.

5.2 Literature review

A number of studies have shown the link between reputation and charitable giving. The main studies have been summarized in this section. Whereas these studies provide evidence about importance of information in giving behaviour they neither compare signalling with screening nor specifically focus on its relationship with warm glow giving in a lab setting. This chapter intends to fill this gap and complete the link between explicit

cost of giving (Chapters 3 & 4), its timing (Chapter 4) and the relevant information (specifically the type) necessary to minimize the implicit cost of donations.

Li & McDougle (2017) analysed the data of 1,002 participants of a charity survey conducted by San Diego University. They used the responses to measure how subjects gave their time and their money across five different sources of information: information by accredited organizations, media, online resources, word-of-mouth or past experiences. Their results showed that relying on one of the sources of information did increase charitable giving. Whereas participants relied on information to give to charity, different sources had varying effects on volunteering time. Specifically they found that past experience and third party accreditation had a greater positive effect on giving time to charity as compared to the other sources. With respect to money donation they found that word-of-mouth and past experiences played a positive role in increasing total contributions. They also found that the word-of-mouth increased the tendency to give in the future as well.

Karlen & Wood (2017) looked at how donors responded to information about charity's effectiveness. The study was carried out in conjunction with Freedom from Hunger (FFH) a non-profit organization that provides microfinance advice in developing countries. They conducted two experimental waves in June and October 2008. In the first wave, mails were sent to 16,889 potential donors. The control and treatment group received an emotional appeal for donation with the treatment group receiving additional information about scientific research on the FFH's impact. The second wave (17,784 donors) also received similar information with the exception that the treatment group received further information about the research. They found that charitable contribution increased for large donors as they were driven by the actual impact of their donations.

Budak & Rao (2016) looked at efficiency in charitable marketplace. They used data of 7,869 charities from the Charity Navigator, an independent non-profit that assess over 8000 charities on basis of efficiency and capacity, converting the information into a four star rating scale. They further collected online data on charitable contributions between November 2013 and May 2015. By cross referencing the information they found that on average donors wasted 15% of their contributions by donating to inefficient charities. Their hypothesis was that due to lack of information about "good" and "bad" charities people made uninformed decisions. To test this they ran a lab experiment with 232 subjects. They found that subjects switched to more efficient charities when they were provided with information about their working. They concluded that there was less 'wastage' of charitable contributions when donors relied on credible information.

Karlan & List (2014) tested whether quality of signalling increased donations. Teaming up with a medium sized charity TechnoServe they selected a sample of 61,483 prospective donors and conducted two experiments. In the first experiment they used the sample of individuals who had not previously donated and divided them into two groups. One group was provided with the identity of the matching donor (Bill and Malinda Gates Foundation) while the other group was not provided with any such information. They found that providing information increased the probability of giving by 26% and the increased the average revenue per solicitation by 51%. In the second experiment the treatment received a specific ratio of matching grant $2:$1 versus control group which received no such offer. They found that on average revenue per solicitation increased by 81%. They concluded that signalling and its quality were important in increasing both the frequency and amount of giving.

Yoruk (2013) looked at whether providing information on charity ratings had any impact on charitable behaviour. The study used a sample of 5,400 charities which were assigned a quality rating by Charity Navigator between 2007 & 2012. The organization rated charities that received more than $500,000 in donations and evaluated them against set criteria which included: ratios of operating & administrative costs, fundraising and other program expenses. The rating was based on a 70 point system with the highest charity receiving 4 stars and the worst performing charity receiving 0 stars. Using regression discontinuity framework the study found that the rating on average increased charity donations by 19.5% for relatively smaller unknown charities. Moreover, donations increased by 28.2% when ratings (number of stars) increased from 2 to 3 & 3 to 4.

Bekkers (2010) studied the impact of accreditation on charity in the Netherlands. The study looked closely at an accountability scheme in the Netherlands under the Central Bureau of Fundraising (CBF). CBF is a non-governmental organization which develops standards for excellence, evaluates charities and gives them certification of approval. Using the data from the Netherlands Panel Study she looked at three waves, in wave 1 a total of 1,246 respondents completed the survey, in wave 2 all the respondents from wave 1 completed the survey and in wave 3 only 703 respondents from wave 1 completed the survey. She found that accreditation increased fundraising income of the charities by 6.7%. She also found that as subjects learnt about the accountability through accreditation they increased their donations. Thus, provision of credible information (screening in this case) was found to be an important component of giving behaviour.

Gordon et al. (2009) investigated whether a change in ratings of charitable organizations affected the amount of donations; the study used data from Charity Navigator. They selected a sample of 405 organizations based on three years of rankings.

They found that the mean giving increased for organization which had ratings of four stars over the three years. On the other hand, the mean and median donation for organization with zero star ratings decreased as compared to those whose rating did not change. They conducted the experiment in two phases, in phase one they found that provision of information improved the perception about the charities and increased the number of donors. In the second phase they found that once donors decided to support a charitable cause, information increased the total donations.

Parsons & Trussel (2008) studied the factors in the in non-profit financial reports that affected giving behaviour. The study used sample of 4,727 organizations downloaded from the Internal Revenue Service database. They specifically investigated whether efficiency, stability, information and reputation had direct impact on giving behaviour. They defined efficiency as the amount of resources made available for the core mission of the organization. Stability was defined as the organizations ability to pursue its mission even when there was a decrease in resources. Information was defined as letting the donors know about the mission and beneficiaries of the charity. Reputation was based on whether the organization provided the best service. They found that the charitable giving was affected by all four factors.

Jacobsson et al. (2007) looked at whether donations increased when the donors were able to observe the effect on the recipient. Using a sample of 360 undergraduates from Linkoping University (Sweden) they conducted a series of lab experiments. The subjects had to divide SRK 100 (Swedish Kronor) between themselves and anonymous recipient. The subjects were divided into two groups. One group could use their money to donate nicotine patches while the other group could donate in cash. Donations of both types went to real smoking diabetic patients. In another set of experiment they gave the

subjects the choice to either donate in cash or kind. They found that on average the subjects preferred to donate nicotine patches. In the first experiment the average donation in the patch group was found to be 40% higher than the cash group. In the second set of experiment where all the subjects were offered a choice, 91% of the donations were given in kind. They concluded that charitable behaviour increased when the subjects were able to observe what happened to their donations.

Parsons (2007) studied whether provision of positive information increased the frequency and amount of donations. The studies used a sample of 8,022 donors complied by People with AIDS Coalition-Houston (PWACH). The donors were divided into groups. One group was asked for donation only, the second group was asked for donation and was provided charts depicting the charity's performance, the third group was asked for donations and was provided with detailed information including effectiveness measures and the fourth group received the request inclusive of all the information. The study found that provision of positive information increased the frequency and amount donated; for repeat donors the impact was three times as much.

Fong (2007) looked into whether the size of donation was affected if the donors received information about the recipients. Using 144 subjects a dictator game (with three treatments) was setup. Subjects in each treatment were given $10 to give to a single African-American mother; the recipient differed in each of the treatment group based on how much effort they put in finding a job. The three treatments differed with respect to the information provided to the donors about the recipient. In the first treatment no information was provided, in the second treatment the donors were informed that recipient was too lazy to look for work and in the third treatment the donors were told that the recipient was actively looking for work. The study found that the size of the

donation depended on whether the recipient was poor because of circumstances or because did not actively look for work. The donors gave maximum amount when the recipient was seen as actively looking for work.

Breman et al. (2006) looked at whether donation in cash or kind were significantly different. Double-blind experiment was conducted in which subjects were asked to donate to a household in Zambia. The subjects were given the choice of either donating in cash or getting their money converted into mosquito nets. In addition, the subjects were informed that on average the households in Zambia preferred to have cash. The study found that subjects were more inclined to donate mosquito nets than cash. Donors were more inclined to give when they knew how exactly their donations were being utilized.

Buchheit & Parsons (2006) investigated in a lab experiment whether providing performance information on charity increased donations. They specifically looked at whether information improved the perception of donors about the organization, whether that would result in increased donations and whether the information would motivate the donor to solicit further information about the organization. They recruited 156 students from an undergraduate managerial accounting course and divided them into two groups. One group was exposed to information about the financial aspects of the charity while the other group was only exposed to donation appeal. They found that providing information increased the number of donors however they found no effect on total donations.

Bekkers (2003) investigated how accreditation (seal given by the government to top performing charities) signalled trustworthiness of charities to donors. The study carried out two surveys on whether trust was important and whether the accreditation system helped in increasing donations. The first survey had 1,017 respondents and the second had 1,707 respondents. The survey was carried out in November and December of

2002. The respondents were asked a series of questions focusing on whether they understood what specific accreditation system was, how satisfied they were with fundraising of different charities, whether they had trust in their fellow citizens and charities. They found that donors considered trust to be an important component in charitable giving. Furthermore, those who had knowledge about the accreditation system contributed more as compared to those who had little or no understanding of the process. They concluded that the charitable giving increased because of the accreditation.

To summarize, research in the area is in agreement that charitable giving is (among other things) a function of information. Information helps to reduce uncertainty and in many cases increases charitable giving. However, whereas the studies have highlighted the efficacy of information, there is no comparison of impact of signalling or screening on warm glow givers. In this study we attempt to fill this gap by extending experiment #2 to analyse whether signalling or screening is conducive in reducing the implicit cost of giving.

5.3 Experimental setup

Recall from section 4.3 in chapter 4 subjects were not only exposed to the restricted treatment but also to a second treatment where they were provided with different types of information across specific sets of rounds. The nature of the information will be discussed shortly. However, it is pertinent to mention that in literature two distinct treatment within the same experiment are possible provided certain conditions are met, we discuss this subsequently.

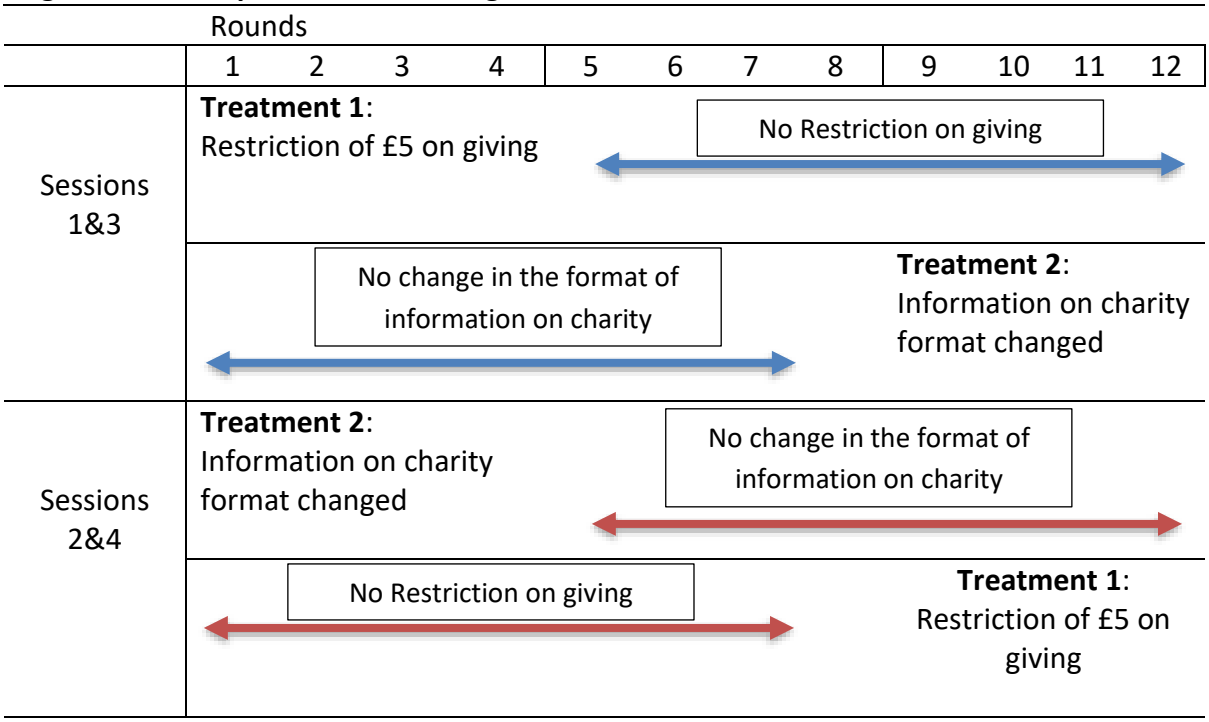
In literature the comparing effects of two or more treatments in a single experiment is referred to by different names: multiple schedule (Barlow & Hersen, 1987), randomization design (Edgington, 1967), simultaneous treatment design (Kazdin &

Hartmann, 1978), alternating treatment design (Barlow & Hayes, 1979) and 'multi-element design' (Sidman, 1960). Basic premise is the introduction of concurrent or simultaneous application of two or more treatments in a single experiment. These designs are either applied to between-subject or within-subject setup. We have preferred the latter setup because of the increased power (subject acting as her own control).

In experiment #2 we mainly introduced two treatments. The first treatment was of restriction which has been dealt with in detail in chapter 4. The second treatment, which is the subject matter of this chapter, was in the form of two different types of information on charities provided to the subjects. Depending on the sets of rounds, the subjects were either shown specific pictures of the charities or were given a list of top 100 charities in the UK ranked according to their incomes. Essentially the format of information was varied across the specific rounds.

Figure 5.1 highlights the multiple treatment design of experiment #2. Each session was effectively divided into groups of four rounds in which 'Treatment 1' and 'Treatment 2' were introduced. In sessions 1 & 3 in the first four rounds (1 to 4) the subjects were exposed to 'Treatment 1' where they could only give £5 to charity, while in sessions 2 & 4 'Treatment 1' was imposed in the last four rounds (9 to 12). In all the remaining rounds of both the sessions the subjects were free to give any amount not exceeding their endowment. In terms of 'Treatment 2' (the focus of this chapter) it was introduced in the last four rounds (9 to 12) of sessions 1 & 3 and in the first four rounds (1 to 4) of sessions 2 & 4. There might be confounding issues with this kind of multi-treatment approach, we now turn to the discussion of the possible issues and what were the techniques used to address them.

Figure 5.1: Multiple-treatment design



One of the issues with multiple-treatment design is the possibility of sequential confounding (Ulman & Sulzer-Azaroff, 1975). Sequential confounding refers to a situation in which if treatment B follows treatment A its effects might be confounded by the prior administration of treatment A. The effects of sequence confounding can be controlled by counterbalancing, e.g. AB and BA (Hersen & Barlow, 1976). In our case 'Treatment 1' was administered in rounds 1 to 4 in sessions 1 & 3 and rounds 9 to 12 in sessions 2 & 4. 'Treatment 2' on the other hand was administered in rounds 9 to 12 in sessions 1 & 3 and in rounds 1 to 4 in sessions 2 & 4. Incidentally, by placing 'Treatment 2' in the specific rounds across the sessions we further counterbalanced the information treatment, we will look at this later in the section.

Another possible issue with the design is the presence of carryover effects (Reynolds, 1968). This refers to the influence of one treatment on an adjacent treatment regardless of the overall sequencing. Counterbalancing helps in minimizing carryover

effects as well (Sidman, 1960). Additional technique for controlling carryover effects is to utilize relatively short periods of treatment (O'Brien, 1968). In our case each treatment was restricted to four out of possible twelve rounds. Lastly, the speed of alternation of the treatment effects the impact of the carryover effects (Waite & Osborne, 1972). In our case the alternation between treatments were neither to short nor too long given the total duration of the experiment.

Recall that our overall design is single subject (within-subject) research design (Sidman, 1960) helping us bypass the baseline non-information control. Each subject serves as her own control as decision prior to treatment is compared to decision after the treatment is administered. Moreover, the information before the treatment acts as baseline condition for comparison (in our case this was possible for sessions 1 & 3) with the treatment condition provided there is no substantive trend and even if there is then it should be at least in the direction opposite to that predicted by the treatment (Horner et al., 2005), as it was with our case.

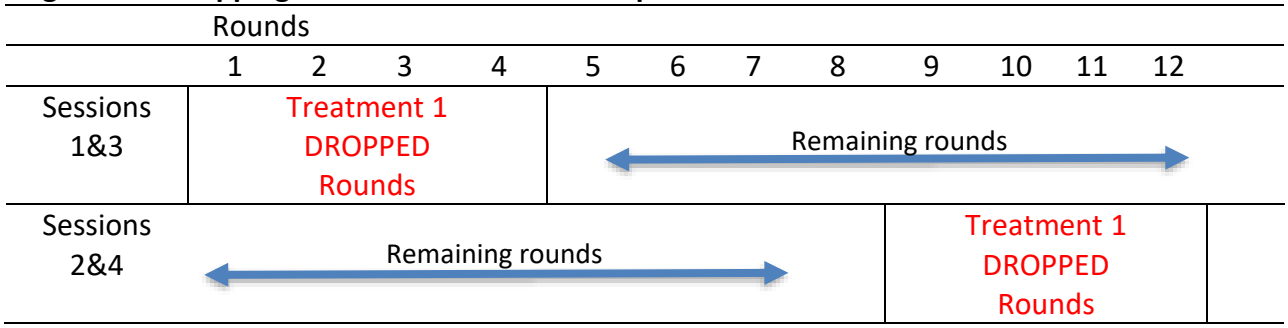
However, even with due care and diligence in designing and implementing experiment #2 we acknowledge that there could be presence of certain confounds. Had we not faced financial constraints (£1,400 for experiment #1 & £1,760 for experiment #2) we would have conducted a stand-alone experiment for all the treatments. Therefore, in absence of such a systematic investigation we acknowledge that any generalization based on this design should be qualified accordingly.

5.3.1 Design amendments to experiment #2

Recall from Figure 5.1 'Treatment 1' which was restriction on giving was placed in rounds 1 to 4 of sessions 1 & 3 and rounds 9 to 12 in sessions 2 & 4. In order to isolate 'Treatment

2' we drop 'Treatment 1' rounds across both the sessions making *lack* of restriction constant across all the sessions. This means that we observe 96 subjects (the total number of subjects for experiment #2) across eight rounds (5 to 12 for sessions 1 & 3 and 1 to 8 for sessions 2 & 4) as compared to twelve rounds per session (the number of sessions are the same as experiment #2). The modification is illustrated in Figure 5.2. All other elements of the experiment #2 remained intact and no further modification was done to the design.

Figure 5.2: Dropping restricted rounds from experiment #2



5.3.2 Treatment 2

We will now provide details about the 'Treatment 2'. One set of information included pictures of charities in action (Appendix C.1) and the other was a ranking of 100 UK charities (Appendix C.2). The ranking of charities was our 'Treatment 2' while the picture information was our baseline. We have further classified the picture information as signalling and ranking as screening. We subsequently provide justification for the classification.

It is evident from section 5.2 that information plays an important role in charitable decisions. It could be argued that charities exhibits a principal agent dilemma. Donor, the principal, donates to charities, the agents, with the expectation that the charities will use the funds to pursue their mission. Donors would like to know whether their donated

resources are being utilized properly. Therefore, in theory the donors would seek to reward charities that utilize resources in an efficient manner and punish those which do not (Tinkelman & Mankaney, 2007). In absence of information the donor is unable to distinguish between 'good' and 'bad' charity, this inability might be viewed by some as depicting Akelrof's (1970) "lemon problem".

In order to distinguish between different types of charities and selectively support the 'good' charity, the donor needs access to the internal information about the charities. Sorting through technical information tends to be difficult. Under these circumstances third party agency can help resolve the issue by providing information on charities in easy-to-use and understandable format. Therefore, in order to decipher charities according to their performance the uninformed party, the donor, takes the lead to solicit information about charities, this comes close to the classic references of Rothschild & Stiglitz (1976) and Wilson (1977) in the context of insurance markets. Studies have shown that at times donors seek detailed financial information about charities to judge their performance (Thornton, 2008; Forbes, 1998).

Therefore, we term solicitation of information on charities through a 'watchdog' as screening. The Treatment included ranking of 100 UK charities by Charities Aid Foundation (CAF). The subjects were provided with a printed handout of eight pages which contained the ranking, name, amount of voluntary income, legacy income, total income and total expenditure. The information was downloaded from the website of CAF. CAF is a UK registered charity (Registration Number 268369). The ranking is based on the information received from the Charity Commission UK. The Charity Commission UK is a government organization responsible for registration and regulation of charities in England and Wales. Their responsibilities include taking enforcement actions, to monitor whether charities are

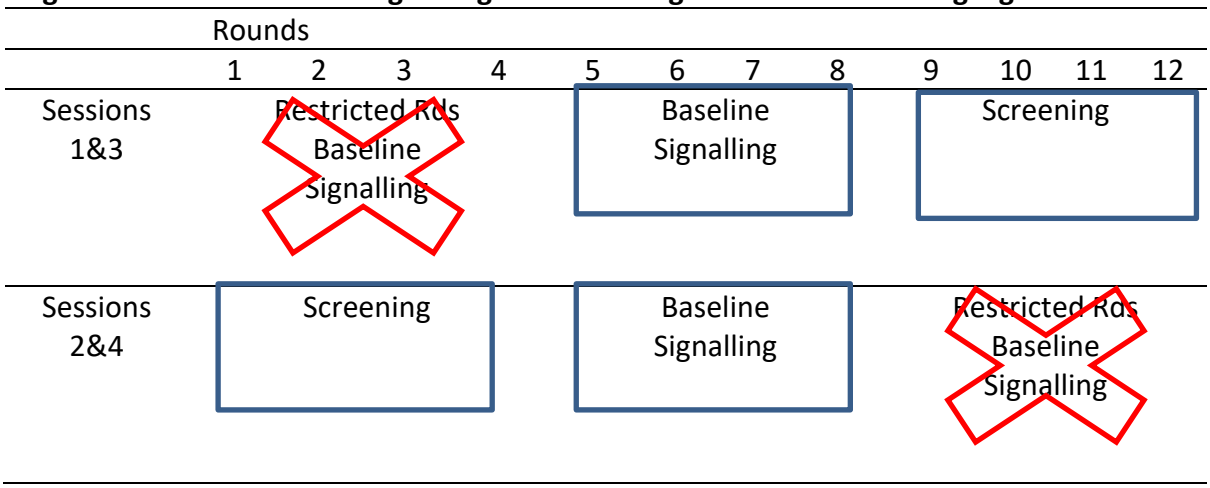
meeting their legal requirements, making information on charities available and providing online help to charities. Charities registered in the UK are legally required to send their annual returns to the Charity Commission UK if their income exceeds £10,000[32]. The Charity Commission UK gathers information from annual returns of the registered charities and provides a monthly updated version to CAF.

The baseline included information on charities in the form of pictures (we acknowledge that description baseline might only hold for sessions 1 & 3). The information included the depiction of the core function/value of the charities. These depictions are readily available on the charities websites. The explicit purpose is to signal their mission in order to influence the perception and actions of the donors. This signal is by definition private information held by one party (charities) and is presented to the other party (donors) to the transaction who otherwise do not possess the information (Spence 1973, 1974). It could be argued that pictures might not provide complete information and therefore might not be enough for signalling but as Crawford & Sobel (1982) have shown that it is not necessary to provide detailed information unless donors' interest perfectly coincides with that of the charity. Our use of the pictures as mechanism for signalling is justified on the grounds that charities use them for their fundraising campaigns (O'Dell, 2008; Hibbert et al., 2007; Rosenthal, 2000; Holland, 1992; Burman, 1994). In fact picture has a greater impact on donors than a carefully constructed message (Small & Verrochi, 2009), it evokes sympathy (among other emotions) and stimulates giving (Hung & Wyer Jr., 2009; Diamond & Gooding-Williams, 2002; Barnett & Hammond, 1999; Schlegelmilch

[32]https://www.gov.uk/guidance/prepare-a-charity-annual-return#what-a-charity-annual-return-includes [Accessed on 19th August 2016]

et al., 1997; Doddington et al., 1994). Figure 5.3 details the distribution of screening and signalling across the eight rounds.

Figure 5.3: Distribution of signalling and screening across the remaining eight rounds



5.3.3 Unaltered experiment #2 design and hypothesis

As mentioned before that apart from what has been described in the previous sections all other elements of the experiment #2 remain intact. We revisit the main features of the design that remains unchanged.

The experiment was held in a computer lab at the University of Kent using Z-Tree (Fischbacher, 2007). The time and date was advertised to the entire University via department email. The interested individuals were asked to register for the session of choice (it was open to everyone). A total of 96 participants took part in the experiment across 4 sessions. The experiment took around 90 minutes to complete.

In the beginning of each round each subject was given an endowment of money. The amount varied across the rounds. The subject had to decide how much to give to charity and how much to keep as cash. Five charities were given as options. At the end of the all the rounds one of the rounds was randomly selected for each subject to determine

their payoff. Subjects received any cash that was due, and money was donated to charity. As with the previous experiment there was no show up fee and so a subject who decided to give everything to charity got no cash.

We also provide a direct incentive for giving to charity. Specifically, in each session there were 24 subjects. The subjects were randomly split into 2 matching groups of size 12. Subjects were then further divided into groups of size four. The three groups within a matching group were labelled A, B & C. At the end of all the rounds the three groups in a matching group were ranked according to the total amount of giving from winning group, who gave the most, to runners-up and losing group, who gave least. (There were no ties.)

The eight subjects in the two losing groups were asked to leave the lab (having received any cash payment). That left 16 subjects in the lab including eight subjects from winning groups and eight from runner-up groups. A random draw was made to choose one subject belonging to a winning group. This subject could have his or her pick of five electronic items that were displayed at the front of the room. The items varied by session but included an X-box 500 GB (£242.99), Sony HDR Camcorder (£119.99), Kindle Wifi Touch (£59.99), Tomtom Sat Nav (£89.99).[33] A second and third draw was then made to choose two more subjects belonging to a winning group and each had their pick of the remaining items. Finally, a fourth and fifth draw was made to choose two subjects belonging to a runner-up group and they had their pick of the remaining items.

A subject in a winning group had a 3 in 8 chance winning an item and had most choice of what item to pick. A subject in a runner-up group only had a 2 in 8 chance of

[33] Other prizes were: HP ENVY 4507 All-in-One Wireless Inkjet Printer £59.99, PNY T2600 Portable USB Battery Charger £9.99, SONY ICDBX140 Digital Voice Recorder- Silver £28.99, SONY MDR-XB450APL.CE7 Headphones, £34.99 and Polaroid 18MP Camera £39.99

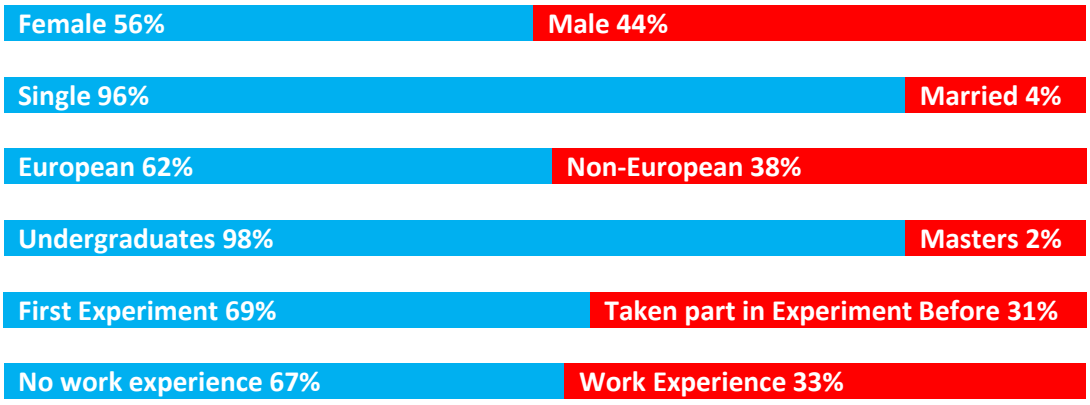
winning an item and they had little choice of item. This created a direct incentive to be in a winning group and, therefore, give to charity, particularly as the some of the items were highly desirable. There was also an element of shame in being in a losing group and publicly having to exit the lab before the draw for items was made.

We hypothesize that due to the technical nature of information presented under screening, it increases subjects' cost of evaluation and therefore lowers giving as compared to signalling which largely generates an emotional response. We further hypothesize that women and older people are more generous and screening will negatively affect their giving.

5.4 Data

96 subjects observed over eight rounds; a total of 768 observations (unit of independent observation was the subject till round 3 when no feedback was provided, round 4 onwards the unit of observation was the group). For contextual purposes selected information on data is once again provided in Figure 5.4.

Figure 5.4: Distribution across selected categories



Moreover, 93% had given to charity at least once in their life, 45% had given to charity in the last one year, 53% preferred to give charity in cash, 86% gave to charity when solicited, 51% preferred to give to charitable organizations while 19% preferred to give to specific individuals, 54% preferred local (home based) charities while 33% preferred international charities. Out of the total sample, 87% preferred to give to a cause and 96% preferred choice in charity. With reference to the experiment, 78% found it interesting, 72% were in a happy mood while 13% were physically not feeling well.

Even though we controlled for possible order effects through the use of counter-balancing, we also compared the screening rounds across the four sessions, we did the same for the baseline signalling rounds as well. We found no order effects for the screening treatment (two-sided p=0.99, t-test) or for baseline signalling (two-sided p=0.55, t-test).

5.5 Results

Now we turn towards determining whether signalling or screening have significantly different impact on the intensive and extensive margins of charitable giving. Table 5.1 highlights the percentage of giving across the treatment screening and baseline signalling. It appears from Table 5.1 that under the treatment of screening subjects preferred to give relatively lower amount (£6 or less). Under signalling, by contrast, giving was more evenly distributed across different amounts. Overall giving on average was higher when compared to the treatment screening. There is a possibility that subjects were revealing their preference for the type of information however, whether the difference is significant needs to be seen.

Table 5.1: Percentage of giving across type of information

	Charity Amount												
	0	1	2	3	4	5	6	7	8	9	10	Mean	SD
Signalling (%)	46	47	61	45	47	34	30	85	84	87	56	5.03	3.03
Screening (%)	54	53	39	55	53	60	70	15	16	13	44	4.08	2.35

Note: The percentage was worked out by dividing each row with the total of the column for that row.

Figure 5.5 plots the average charitable giving across both the sessions. Treatment screening is represented by the solid green line while baseline signalling by the sold yellow line. Recall that during sessions 1 & 3 signalling was introduced in rounds 5 to 8 followed by screening in rounds 9 to 12. In sessions 2 & 4 screening was introduced in rounds 1 to 4 followed by signalling in rounds 5 to 8. As we found no order effects we have merged the two sessions. As can be observed that on average there was greater charitable giving in the signalling rounds as compared to the screening rounds.

Figure 5.5: Signalling and screening across sessions

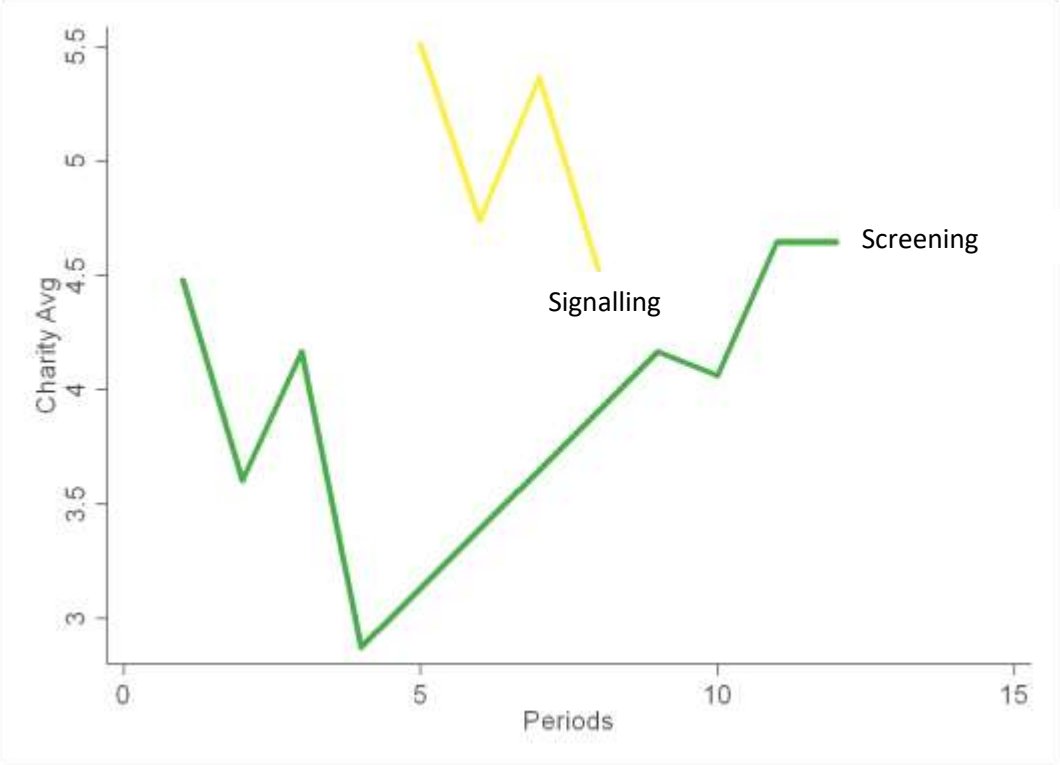


Table 5.2 presents the data in terms of how many times a subject gave to charity. As is evident, under screening, a larger percentage either made no contribution or gave relatively less frequently. The mean giving suggests that signalling leads to a larger number of donations. However, the difference is not as significant as was with the total amount,

we would need to see if the parametric estimates point to significant difference in the frequency of giving or otherwise.

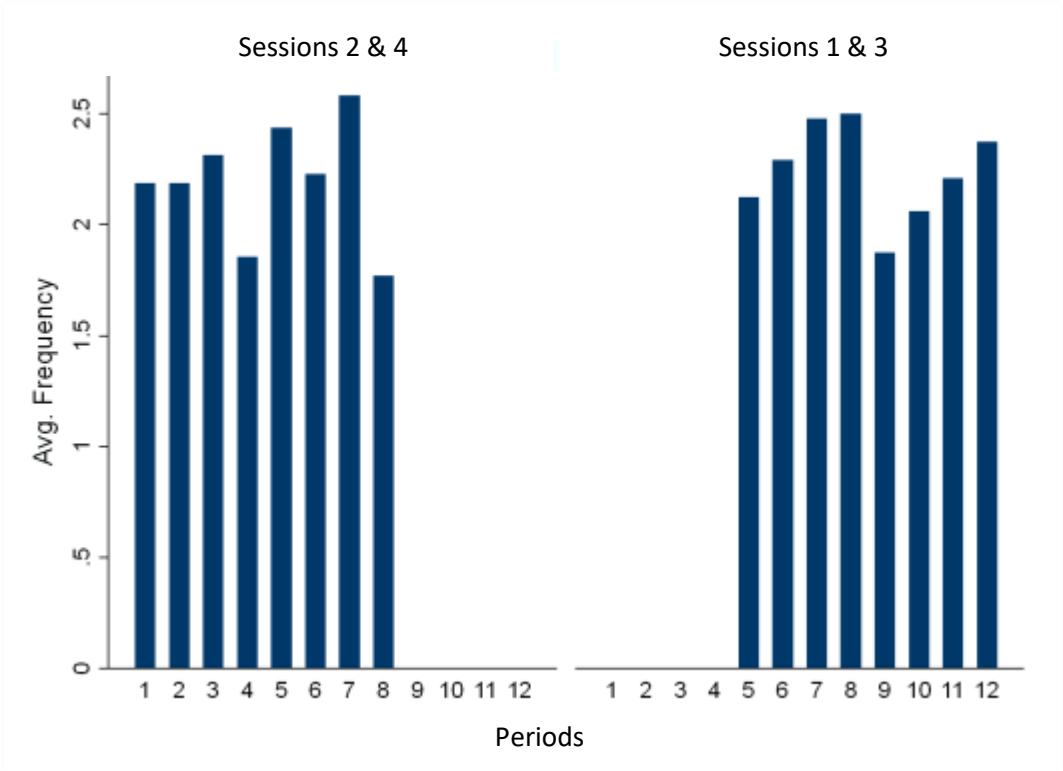
Table 5.2: Frequency of giving

	0	1	2	3	4	5	Mean	SD
Signalling (%)	46	50	48	48	51	61	2.30	1.55
Screening (%)	54	50	52	52	49	39	2.13	1.47

Note: The percentage was worked out by dividing each row with the total of the column for that row.

Figure 5.6 presents the number of times the subjects gave across the two types of information. As it can be observed that in sessions 1 & 3 subjects gave more during the signalling phase (rounds 5 to 8) as compared to the screening phase (rounds 9 to 12). Similarly, in rounds 5 to 8 of sessions 2 & 4 there is more giving (signalling phase) as compared to rounds 1 to 4 (which is the screening phase). Therefore, it can be hypothesised that signalling has a greater positive effect on giving as compared to screening, the next step is to see if the difference is significant.

Figure 5.6: Frequency of giving across sessions and rounds



5.5.1 Empirical strategy

To study whether a type of information has an impact on giving behaviour, we first look at whether subjects varied the frequency of giving across the type of information and secondly whether there was any impact on the total amount.

5.5.2 Frequency of giving

We look at whether the frequency of giving per round is affected by the type of information. This is setup as:

$$Count_{it} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it} \qquad (1)$$

where the dependent variable is Charity Count. This is a discrete variable which includes the total number of times each subject gave to charity across the eight rounds. Each

subject had the choice to contribute a maximum of £10 across five categories of charities; each contribution was taken as a single instance or count. $\boldsymbol{X_i}$ is a vector of subject characteristics – age, gender, marital status, degree, subject specialization, nationality, work status and whether they prefer to give items as opposed to cash to charity. $\boldsymbol{W_i}$ is a vector of additional control variables of session, ranking[34], previous donation[35], noncash donation, easy of experiment, risk aversion, social value orientation and time preference. In order to cater to any possible effect of restricted treatment group a dummy has been created which controls for any such effect in sessions 1 & 3. $\boldsymbol{Information_i}$ is a dummy variable taking on the value 1 for screening and 0 for signalling. Therefore the treatment in the experiment is providing screening information on charity to the subjects. The summary statistics of these variables are given in Table 5.3.

[34] As mentioned the groups were given information periodically throughout the eight rounds. This variable highlights the rounds in which the information was provided: in sessions 1 & 3, before round 8 and before round 12; in sessions 2 & 4, before round 4 and before round 8.

[35] Subjects were asked in the questionnaire whether they had donated in real life.

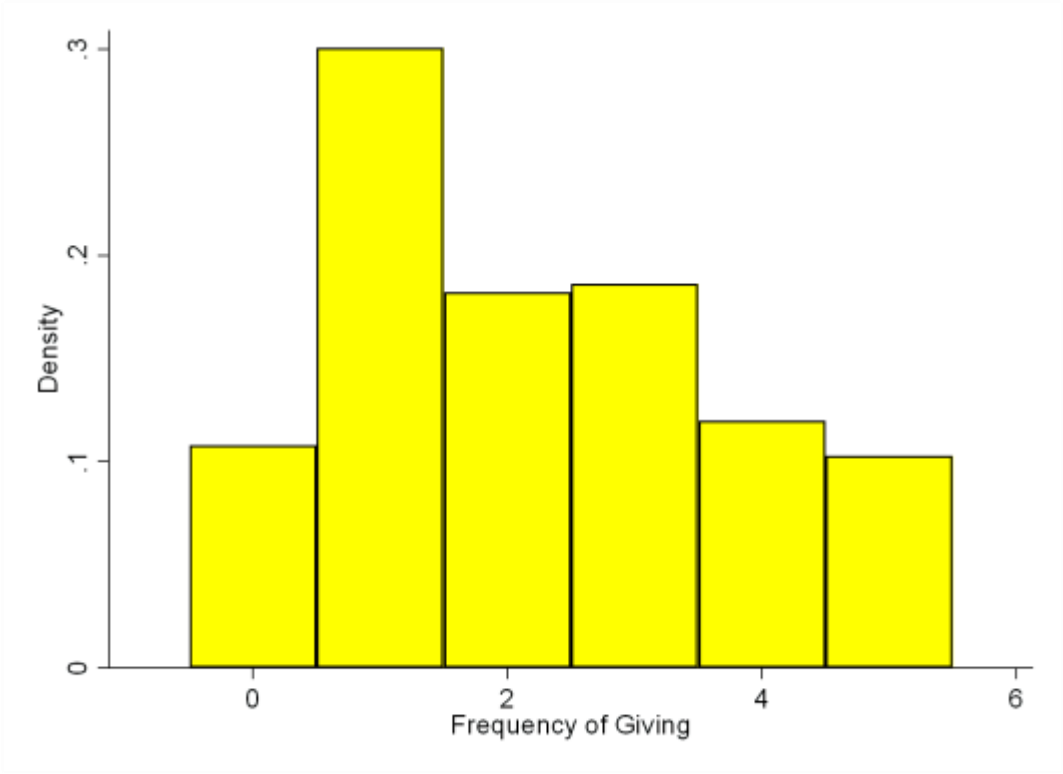
Table 5.3: Descriptive statistics

Variable	Description	Mean	Std. Dev.
Dependent Variables			
Charity Count	Total number of times subject gave to charity	2.22	1.51
Charity Amount	Total amount given to charity per round	4.56	2.75
Independent Variables			
Information	Dummy=1 if screening	0.50	0.50
Session	Dummy=1 if sessions 1&3	0.50	0.50
Group Ranking	Dummy=1 for rounds after ranking was displayed	0.25	0.43
Income	Discrete variable, varying income per round	7.50	1.80
Age	Dummy=1 for those born in the 1990s	0.83	0.37
Gender	Dummy=1 for female	0.56	0.50
Nationality	Dummy=1 for European	0.62	0.49
Marital Status	Dummy=1 if single	0.04	0.20
Degree	Dummy=1 for undergrad	0.98	0.14
Subject	Dummy=1 for Social Sciences	0.43	0.50
Work	Dummy=1 for employed	0.30	0.46
Donation to charity	Dummy=1 if previously donated to charity	0.93	0.26
Noncash Donation	Dummy=1 if preferred to donate items than money	0.48	0.50
Experiment	Dummy=1 if found the experiment easy	0.88	0.33
Risk averse	Dummy=1 if risk averse	0.75	0.43
Social value orientation	Dummy=1 if competitive	0.25	0.43
Time preference	Dummy=1 if discounting high	0.85	0.35
Restriction effect	Dummy=1 for restricted treatment for sessions 1 & 3	0.06	0.24
Charity Amount lag	1-t charity amount	4.69	2.79
Charity Count lag	1-t charity count	2.24	1.50
Items	Dummy=1 if expensive items	0.25	0.43
Groups	Categorical variable for the 6 groups per session	3.50	1.71

5.5.2.1 Empirical specification

Figure 5.7 is a histogram of number of times subjects gave to charity. As is evident from the shape and statistics on skewness (0.37) and kurtosis (2.07), *Count* does not have a normal distribution. The data satisfies the basic assumptions of the Poisson model.

Figure 5.7: Histogram of frequency of giving across charities



The Poisson model would take the following form:

$$Pr(Y_{it}|\upsilon_i) = \exp(\alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it}) \qquad (2)$$

where $\upsilon_i = \exp(\alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it})$, all the variables are defined as per equation (1).

Table 5.4 contains the pooled results in column (1), Poisson regression output column (2), population averages with independent correlation column (3), exchangeable

correlation column (4) and autocorrelation matrix is given in column (5). As can be observed screening tends to decrease the frequency of giving as compared to baseline signalling however the effect is not as large or significant.

One of the assumptions of the Poisson Model is that the mean is equal to the variance, which is seldom the case. Similarly, the variance (2.28) is lightly higher than the mean (2.22). Failure to adjust for over-dispersion would lead to underestimating the variability in our estimates – point estimates will not be as precise. This small difference is dealt with using a dispersion parameter.

Table 5.4 also gives the marginal effects. The inverse relationship between frequency of giving and screening remains significant.

Table 5.4: Incidence rate ratios and marginal effects

	Pooled (1)	Panel (2)	Ind (3)	Exc (4)	Ar (5)
a. Information	0.92**	0.92**	0.92	0.90***	0.93
	(0.04)	(0.03)	(0.05)	(0.04)	(0.05)
b. Information	-0.19**	-0.08**	-0.19	-0.23***	-0.16
	(0.10)	(0.04)	(0.12)	(0.09)	(0.11)
No. of Observations	672	672	672	672	672

Note: Dependent variable is charity count which includes the frequency of giving per round; a. Information incidence rate ratios are reported, b. Information marginal effects are reported. Column (1) pooled average effects and column (2) panel poison include subject specific effects while column (3) independent, column (4) exchangeable, and column (5) auto-correlated report population averages with correlation structures. All regressions include control for session, employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, control for dropped restricted rounds, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

5.5.3 Giving in total

Next, we look at the impact of type of information on total giving. This is setup as:

$$Charity_{it} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it} \qquad (3)$$

where $Charity_{it}$ is the amount given in each round. Recall from Table 5.3, Figure 5.3 and Figure 5.4 that giving varied by type of information. Therefore, it would be interesting to see if the observed differences are statistically significant. The covariates are exactly the same as in in equation (1).

5.5.3.1 Empirical specification

We use the random effects model to estimate equation (3). Random effects model adopts a subject specific approach; it can distinguish observations belonging to the same or different subjects. Since we are not only interested in the behaviour of specific subject but also in the 'average' behaviour we once again use population averages. The model specification is as follows:

$$Y_{it} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it} \qquad (4)$$

The results are given in Table 5.5. Column (1) gives the pooled results, column (2) random effects output while column (3) highlights population average with individual correlations, column (4) exchangeable details and column (5) autocorrelation matrix structure.

Table 5.5: OLS, panel and population averages

	OLS (1)	Panel (2)	Ind (3)	Exc (4)	Ar (5)
Information	-0.92***	-0.92***	-0.92***	-1.01***	-0.66***
	(0.16)	(0.15)	(0.15)	(0.14)	(0.12)
No. of Observations	672	672	672	672	672

Note: Dependent variable is charity which includes the total amount given per round; marginal effects are reported. Column (1) baseline OLS regression and column (2) panel regression include subject specific effects while column (3) independent, column (4) exchangeable and column (5) auto-correlated report population averages correlation structures. All regressions include control for session, employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, control for dropped restricted rounds, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

As is evident from Table 5.5, screening has lower impact on charitable giving than signalling. The magnitude of the effect remains constant across the different variations of estimators. In fact, both in the random and population averages results, charitable donation decrease if screening is the source of information. This is not surprising as screening in this case measures the efficiency of the charity based on how it spends on the cause. Warm glow givers are not concerned with the impact of their donations but rather the feeling that is derived from the act of giving. Therefore, signalling would be sufficient for donating to a charity as long as the aim is to maximize the feeling from the act of giving and as opposed to gauging the impact of the donation.

5.5.4 Tobit model

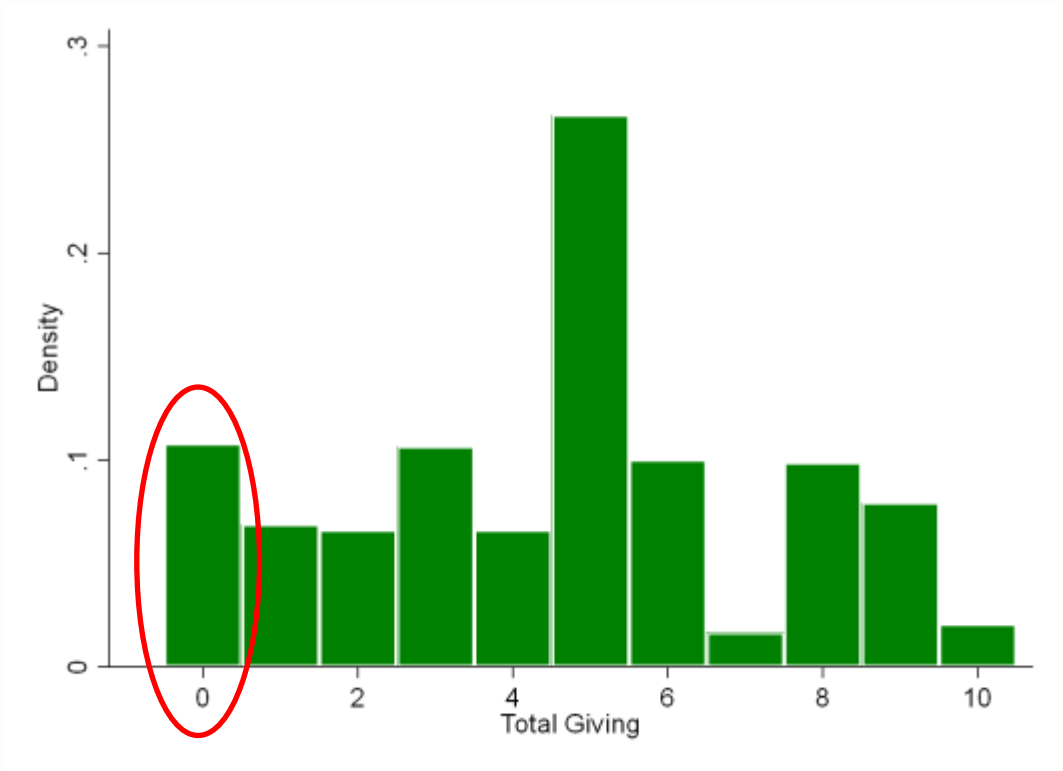
Next, we look at whether the type of information also has an impact on the total giving when we take into consideration the censored nature of the data. This is setup as:

$$Charity_{it}^{*} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it} \quad (5)$$

$$Charity_{it} = (0, Charity_{it}^{*})$$

The nature of the dependent variable is such that it is censored at 0, clustering at 0 (see Figure 5.8). As mentioned earlier the dependant variable cannot be strictly considered as truncated but rather can best be classified as censored as we do observe information (characteristics) of the subjects. Tobit model uses all the information including that on censoring and provides consistent estimates.

Figure 5.8: Censored data



5.5.4.1 Empirical specification

The model specification is as follows:

$$Y_{it}^{*} = \alpha_{re} + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it} \qquad (6)$$

Table 5.6 reports the Tobit estimates. Column (1) gives the left censored results while column (2) gives right censoring and column (2) & (3) both upper and lower censoring

for pooled data. Column (4), (5) and (6) do the same for panel data specifications. The results show that charity giving conditional on being uncensored is greater when subjects are provided information in the form signalling as opposed to screening.

It would appear from the results that the type of information does have an impact on charitable giving. There seems to be a preference for information provided voluntarily by the charities (signalling) over information which is solicited and then presented to the donors (as ranking). Next step is to see if the results remain robust across male, female, young and older subjects.

Table 5.6: Tobit estimates

	Pooled Left Censored (1)	Pooled Right Censored (2)	Pooled Right & Left Censored (3)	Panel Left Censored (4)	Panel Right Censored (5)	Panel Right & Left Censored (6)
a. Information	-0.97***	-0.95***	-1.00***	-1.09***	-1.04***	-1.13***
	(0.18)	(0.16)	(0.18)	(0.18)	(0.16)	(0.18)
b. Information	-0.87***	-0.93***	-0.86***	-0.95***	-1.01***	-0.93***
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
No. of Observations	672	672	672	672	672	672

Note: Dependent variable is charity which includes the total amount given per round; a. Information tobit (left censored at £0, right censored at £10) estimates and b. Information marginal effects at expected means are reported. Columns (1) to (3) report the baseline pooled estimates censored from left, right and both respectively. Columns (4) to (6) report the panel estimates censored from left, right and both respectively. Left Censored columns (1) & (4): 76 left-censored observations, 596 uncensored observations, 0 right-censored observations; Right Censored columns (2) & (5): 0 left-censored observations, 663 uncensored observations, 9 right-censored observations; Right & Left Censored columns (3) & (6): 76 left-censored observations, 587 uncensored observations, 9 right-censored observations. All regressions include control for session, employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, control for dropped restricted rounds, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis.$***p < 0.01, **p < 0.05, *p < 0.1$

5.5.5 Heterogeneity of giving with reference to characteristics

So far we have observed and estimated that the type of information has an effect on charitable giving. Even though these have given us important insights, it is also important to see if the impact across specific demographic characteristics[36].

5.5.5.1 Gender

There is considerable literature highlighting gender differences in giving behaviour (Wiepking & Bekkers, 2012; Mesch et al., 2011; Croson et. al., 2010; Rooney et. al, 2007). Studies have found women to be more generous than men (Eagly, 2009; Cox, 2006), more pro-social (Einolf, 2010), more egalitarian (Croson & Gneezy, 2009) and having greater bend towards religious values (Van Slyke & Brooks, 2005). Whereas Bolton et al. (1994) find no gender differences in generosity, Ben-Ner et al. (2003) find women to be less generous and Croson & Uri (2009) report mixed results on generosity between men and women. Nevertheless, there is a gap[37] in literature with reference to the effect of type of information on gender based charitable giving.

We look at whether gender reacts differently to type of information with reference to charitable giving. This is setup as:

$$Charity_{it} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it} \qquad (7)$$

where $Charity_{it}$ is the amount given in each round. The covariates are exactly the same as in in equation (1).

[36] Only the total amount given to charity has been compared.
[37] Specifically comparing signalling and screening in a warm glow setting.

We use the random effects and Tobit model to estimate equation (7). Since we are not only interested in the behaviour of specific subject but also in the average behaviour we once again use population averages. The model specification is as follows:

$$Y_{it} = \alpha_{fe,ra} + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it} \qquad (8)$$

The results for female subjects are given in Table 5.7. Column (1) gives OLS results column (2) highlights the Poisson output while column (3) gives the Tobit coefficients with censoring from below.

Table 5.7 provides very interesting results in terms of generosity of women and men. Our results show that women tend to more generous as compared to men when it comes to the frequency of giving. In other words, we find that women would give more times as compared to men. However, we find no difference in generosity when it comes to the total amount given to charity. In this respect our findings differ from the literature that declares women to be more generous than men in terms of how much they give to charity.

We also find no impact of type of information on female generosity either in terms of frequency of giving or total giving. It would appear from our results that framing of information (screening or signalling) is not an important consideration for increasing or decreasing charitable giving or/and its frequency for female donors.

Table 5.7: Giving across gender

	OLS (1)	Poisson (2)	Tobit (3)
a. Gender	0.07	0.12**	0.16
	(0.25)	(0.06)	(0.35)
b. Screening x Gender	0.31	0.05	0.35
	(0.31)	(0.07)	(0.32)
No. of Observations	672	672	672

Note: Columns (1) & (3) dependent variable is charity which includes the total amount given per round; Column (2) dependent variable is charity count which includes the frequency of giving per round; a. Gender is dummy variable which takes on 1 for female and 0 for male; b. is interaction term between screen dummy and gender dummy. In columns (1) to (3) marginal effects are reported. Column (3) tobit reports censored marginal effects at £0 (left censoring): 76 left-censored observations, 596 uncensored observations, 0 right-censored All regressions include control for sessions, employment, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, control for dropped restricted rounds, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

5.5.5.2 Age

Literature suggests that older individuals tend to be more charitable than younger people (Bekkers & Wiepking, 2011; Rooney et. al., 2007). It also suggests that the positive relationship between charity and age decreases at higher age or after a certain age level (Lyons & Nivison-Smith, 2006; Chang, 2005; Belfield & Beney, 2000). We proceed to look at whether generosity varies across age and whether information has an impact.

The specification remains the same as equation (7), recall the dummy for age equals one for those born on or after 1990 and 0 otherwise. We report OLS, Poisson and Tobit estimates in Table 5.8. We find interesting results. It would appear that young are less generous when it comes to total giving as compared to older subjects. In terms of the frequency of giving the results are inconclusive. However, when the information is framed as signalling the young are more generous than the older subjects.

It can be argued that charitable giving carries a higher opportunity cost for the younger individuals and therefore the amount given will be relatively low which might explain the lower giving in the results. Furthermore, because overall giving tends to be at the lower end (on account of lower income for instance), younger donor would prefer to do more research before giving and therefore detailed information decreases their cost since more information is available to facilitate their decision.

Even though we come across interesting results we need to take caution in reading too much into them as 98% of the sample was composed of younger subjects. It could be that the observed differences are due to sample size rather than age differences.

Table 5.8: Age differences

	OLS (1)	Poisson (2)	Tobit (3)
a. Age	-1.38***	-0.23	-1.72***
	(0.33)	(0.18)	(0.46)
b. Screening x Age	0.64**	0.09	0.48
	(0.37)	(0.21)	(0.33)
No. of Observations	672	672	672

Note: Columns (1) & (3) dependent variable is charity which includes the total amount given per round; Column (2) dependent variable is charity count which includes the frequency of giving per round; a. Age is dummy variable which takes on 1 for those born on or after 1990 and 0 otherwise; b. is interaction term between screen dummy and age dummy. In columns (1) to (3) marginal effects are reported. Column (3) tobit reports censored marginal effects at £0 (left censoring): 76 left-censored observations, 596 uncensored observations, 0 right-censored All regressions include control for sessions, employment, gender, marital status, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, control for dropped restricted rounds, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

5.5.6 Summary of main results

Table 5.9 provides summary of our main findings. Recall our hypothesis from section 5.3.2, our results show that screening lowers the total giving and frequency of giving. This points to an information framing effect on giving behaviour. In particular, it seems that on average screening increases the cost of evaluation and therefore lowers giving. One of the more striking aspect of our findings is the mix results on gender and age. We find that females might give more often but may not be different from males when it comes to the total amount of giving. In case of the young, screening decrease the cost since more information is available and increases giving behaviour as compared to the older donors. All these aspects point to interesting implications for framing of charitable solicitation.

Table 5.9: Summary of main results

	Poisson (1)	OLS (2)	Tobit (3)
a. Information	-0.08**	-0.92***	-0.95***
	(0.04)	(0.16)	(0.16)
b. Gender	0.12**	0.07	0.16
	(0.06)	(0.25)	(0.35)
c. Screening x Gender	0.05	0.31	0.35
	(0.07)	(0.31)	(0.32)
d. Age	-0.23	-1.38***	-1.72***
	(0.18)	(0.33)	(0.46)
e. Screening x Age	0.09	0.64**	0.48
	(0.21)	(0.37)	(0.33)
No. of Observations	672	672	672

Note: Column (1) dependent variable is charity count which includes the frequency of giving per round, columns (2) & (3) dependent variable is charity which includes the total amount given per round; a. Information is dummy variable which takes value of 1 for screening and 0 for baseline signalling; b. Gender is dummy variable which takes on 1 for female and 0 for male; c. is interaction term between screen dummy and gender dummy; d. Age is dummy variable which takes on 1 for those born on or after 1990 and 0 otherwise; b. is interaction term between screen dummy and age dummy. In columns (1) to (3) marginal effects are reported. Column (3) tobit reports censored marginal effects at £0 (left censoring): 76 left-censored observations, 596 uncensored observations, 0 right-censored All regressions include control for session, employment, gender (where applicable), marital status, age (where applicable), nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, control for dropped restricted rounds, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

5.6 Discussion and conclusion

We find that individuals generally respond less positively to giving when information is framed in the form of screening. However, screening had no effect on the female giving and rather increased giving for the younger subjects. It is important to note that the findings and the subsequent conclusions have to be qualified because of the unique design of the experiment. Even with due care and diligence in designing and implementing experiment #2 we acknowledge that there could be presence of certain confounding

effects. Our results might not be strong enough for policy recommendation for charities but they are significant enough to add to the framing debate, specifically how behaviour can be influenced by the way information is labelled or framed (Chang & Lee, 2009: Chang, 2007a; Chang, 2007b; see Levin et al., 1998 for a review). We do however, provide possible reasons why screening might be less preferred in charitable decision making. We hope that it would motivate further experiments in this area.

Individuals driven by warm glow might not be particularly concerned with the utilities of others but rather are more focused on the quality of their own utility which is dependent on whom they give to. In this context the warm glow givers would search for the 'most deserving' charity as opposed to a 'bad' charity. This does not stem from ensuring efficiency of giving but rather depends on the satisfaction derived from the act of giving to a 'good' charity, at least which appears to be doing well. Therefore, it is reasonable to assert that visualization of information on charity triggers a positive responsive towards giving for warm glow givers.

Charitable organizations address the issue of imperfect information by providing information on the web, through mail and brochures. Donors can access information on finances, ratio of resources used in achieving goals, quality of human resource, methods and cost of fundraising etc. However, there is an inherent implicit cost for assessing all this information, in terms of time as well as expertise. The donors would need to spend considerable time sifting through information to assess that which is relevant and even then would require set of expertise to make some sense from it. This increases implicit cost for warm glow givers.

As mentioned, imperfect information can also result in a principal agent problem; charitable organization as the agent and the donor as the principal. The agent can claim

efficiency of giving by providing over inflated information or could indulge in fudging the figures. This might be more relevant to profit maximization however a parallel can be drawn to a situation where the agent is wasting the limited resources of the charitable organization. This problem is relatable to warm glow givers for two reasons. First warm glow contributors realize that if contribution is made to an otherwise 'bad' charity the cost of giving would increase next time around and therefore will invest in finding a 'not bad' agent. Secondly, the size of the amount might not be sufficient to solicit detailed information about the charity but does require a level of integrity and honesty from the agent as warm glow giver derives part utility from the amount itself. Therefore, the warm glow giver might prefer to rely on signalling to access the quality and trustworthiness of the agent.

Screening is based on multifarious information, where misreporting is easier. The criteria for quality measure is open ended and therefore any information could be presented portraying the good side of things. In signalling generally the criterion is narrower and therefore more difficult to misreport however, there is still the possibility for misrepresentation. Nevertheless, the cost and effort required to verify information from signalling is relatively lower than that associated with screening which requires a fair degree of specialized skill set (for instance going through audit reports or balance sheets). Under such circumstances warm glow would be more inclined towards readily available information with lower implicit cost.

The findings of the chapter are important to the extent that they provide a comparison between two popular information tools for soliciting charitable donations. During fundraising, charities spend considerable amount on reducing information costs for the donors which invariably cut into their receipts. As charities are unsure about which

information is most effective they tend to rely on both signalling and screening. Our findings suggest that screening as a tool for soliciting charity might be counterproductive however, its impact might vary across gender and age. Nevertheless our findings clearly suggest a cost associated with information and charities should look into framing from this perspective.

APPENDIX C

C.1 Signalling prompt provided to subjects during specific rounds across both the sessions


actionaid
Child Sponsorship
Be part of the picture -
help Sia's dreams come to life.
Credit: Liba Taylor/ActionAid


Every two minutes someone is diagnosed with cancer. Help us ensure more people beat it

C.2 Screening prompt provided to subjects during specific rounds across both the sessions

Ranking	Charity	Voluntary income	Legacy income	Total income	Total expenditure
1.	THE GAVI FUND AFFILIATE	519,741,476	0	520,252,270	557,409,341
2.	THE ARTS COUNCIL OF ENGLAND	452,964,000	0	604,204,000	621,112,000
3.	CANCER RESEARCH UK	362,756,000	157,399,000	514,946,000	466,968,000
4.	THE SAVE THE CHILDREN FUND	280,109,000	14,737,000	291,472,000	266,552,000
5.	INTERNATIONAL FINANCE FACILITY FOR IMMUNISATION COMPANY	260,501,473	0	264,171,650	352,240,952
6.	ROYAL COMMONWEALTH SOCIETY FOR THE BLIND	169,357,000	7,318,000	173,471,000	173,002,000
7.	THE ROYAL NATIONAL LIFEBOAT INSTITUTION	140,050,194	90,600,323	163,569,163	155,276,387
8.	MACMILLAN CANCER SUPPORT	127,393,000	48,084,000	133,605,000	132,949,000
9.	OXFAM	125,600,000	13,300,000	318,000,000	294,800,000
10.	THE BRITISH RED CROSS SOCIETY	119,900,000	22,100,000	205,700,000	199,200,000
11.	THE NATIONAL SOCIETY FOR THE PREVENTION OF CRUELTY TO CHILDREN	116,499,000	20,338,000	152,210,000	157,404,000
12.	ROYAL SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS	101,045,000	59,196,000	115,288,000	122,564,000
13.	CHRISTIAN AID	99,397,000	9,585,000	104,621,000	95,859,000
14.	THE CUP TRUST	97,590,164	0	97,590,164	97,451,195

Ranking	Charity	Voluntary income	Legacy income	Total income	Total expenditure
15.	ROYAL SOCIETY FOR THE PROTECTION OF BIRDS	96,674,000	27,922,000	121,928,000	104,285,000
16.	THE SALVATION ARMY	96,375,000	40,720,000	144,717,000	150,147,000
17.	BHP BILLITON SUSTAINABLE COMMUNITIES	92,992,200	0	92,995,521	1,331,781
18.	GENOME RESEARCH LIMITED	92,412,000	0	93,920,000	97,126,000
19.	BRITISH HEART FOUNDATION	91,036,000	52,375,000	213,762,000	203,104,000
20.	BRITISH EDUCATIONAL COMMUNICATIONS AND TECHNOLOGY AGENCY	80,390,000	0	80,418,000	115,304,000
21.	THE UNITED KINGDOM COMMITTEE FOR UNICEF	78,523,000	4,269,000	81,312,000	81,246,000
22.	THE BECHT FAMILY CHARITABLE TRUST	77,596,500	0	79,898,303	281,561
23.	INTERNATIONAL PLANNED PARENTHOOD FEDERATION	77,570,463	601,245	80,296,206	81,951,361
24.	MARIE CURIE CANCER CARE	77,372,000	24,876,000	131,475,000	127,629,000
25.	DISASTERS EMERGENCY COMMITTEE	73,585,000	0	73,687,000	25,452,000
26.	THE MARCELA TRUST	70,045,373	0	70,045,373	801,763
27.	THE NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST OR NATURAL BEAUTY	69,986,000	50,316,000	405,634,000	406,145,000
28.	THE ROYAL NATIONAL INSTITUTE OF BLIND PEOPLE	68,302,000	38,069,000	135,145,000	130,150,000
29.	THE ROYAL BRITISH LEGION	66,450,000	9,444,000	115,235,000	114,486,000
30.	TEARFUND	63,041,000	3,288,000	64,848,000	59,652,000

Ranking	Charity	Voluntary income	Legacy income	Total income	Total expenditure
31.	THE PEOPLE'S DISPENSARY FOR SICK ANIMALS	61,813,000	39,281,000	84,477,848	85,592,743
32.	STONYHURST	61,619,525	0	73,880,899	13,921,245
33.	WORLD VISION UK	60,867,000	1,099,000	60,987,000	59,921,000
34.	CHARITY PROJECTS	58,964,336	0	72,189,857	79,237,419
35.	THE ROYAL SOCIETY OF LONDON FOR IMPROVING NATURAL KNOWLEDGE (COMMONLY KNOWN AS THE ROYAL SOCIETY)	58,744,000	25,000	70,748,000	65,726,000
36.	GOLDMAN SACHS GIVES (UK)	57,453,890	0	57,565,697	6,764,578
37.	DOGS TRUST	56,177,000	18,506,000	61,695,000	54,870,000
38.	ACTIONAID	53,355,000	1,777,000	65,745,000	63,783,000
39.	THE GUIDE DOGS FOR THE BLIND ASSOCIATION	52,828,000	28,125,000	57,366,000	73,028,000
40.	ROYAL OPERA HOUSE COVENT GARDEN LIMITED	52,326,000	320,000	111,447,000	107,154,000
41.	VOLUNTARY SERVICE OVERSEAS	51,696,000	0	53,009,000	49,376,000
42.	STEWARDSHIP SERVICES (UKET) LIMITED	51,232,000	0	54,031,000	54,208,000
43.	ISLAMIC RELIEF WORLDWIDE	50,136,719	0	64,349,022	60,216,641
44.	PLAN INTERNATIONAL UK	49,437,000	613,570	49,683,000	49,316,000
45.	AGE UK	48,294,000	22,258,000	160,665,000	159,896,000
46.	THE FOOTBALL FOUNDATION	46,140,890	0	46,140,890	41,235,423
47.	WWF - UK	45,614,000	10,247,000	56,714,000	50,512,000

Ranking	Charity	Voluntary income	Legacy income	Total income	Total expenditure
48.	LEARNING AND SKILLS IMPROVEMENT SERVICE	44,960,000	0	147,128,000	147,103,000
49.	BARNARDO'S	44,475,000	20,925,000	234,323,000	232,762,000
50.	THE GREAT ORMOND STREET HOSPITAL CHILDREN'S CHARITY	43,456,000	8,346,000	55,456,000	44,137,000
51.	IMPERIAL CANCER RESEARCH FUND	43,427,000	43,427,000	43,427,000	43,427,000
52.	ELIM FOURSQUARE GOSPEL ALLIANCE	42,614,307	431,399	57,507,073	55,641,697
53.	THE MUSEUMS, LIBRARIES AND ARCHIVES COUNCIL	42,264,821	0	45,354,805	59,232,328
54.	CATHOLIC AGENCY FOR OVERSEAS DEVELOPMENT	41,343,000	5,003,000	49,055,000	46,836,000
55.	THE BBC CHILDREN IN NEED APPEAL	39,917,000	1,470,000	44,204,000	46,974,000
56.	HELP FOR HEROES	36,439,000	851,000	45,723,000	49,613,000
57.	BLACKBURN DIOCESAN BOARD OF EDUCATION	36,119,000	0	37,169,000	36,724,000
58.	WATERAID	34,441,000	2,537,000	45,611,000	45,232,000
59.	THE ALICE TRUST	33,726,363	0	40,388,407	9,515,837
60.	THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS (GREAT BRITAIN)	33,309,000	0	35,673,000	35,998,000
61.	THE CANCER RESEARCH CAMPAIGN	32,487,000	32,487,000	32,487,000	32,487,000
62.	CYNGOR CELFYDDYDAU CYMRU	32,365,000	0	46,476,000	47,028,000

Ranking	Charity	Voluntary income	Legacy income	Total income	Total expenditure
63.	THE TERESA ROSENBAUM GOLDEN CHARITABLE TRUST	32,343,127	28,911,939	32,370,336	690,480
64.	YOUTH SPORT TRUST	32,211,476	0	33,404,246	32,646,321
65.	ALZHEIMER'S SOCIETY	31,950,000	10,465,000	58,907,000	57,299,000
66.	THE ROYAL SHAKESPEARE COMPANY, STRATFORD-UPON-AVON	30,453,017	154,555	57,427,067	33,505,043
67.	UNITED REFORMED CHURCH TRUST	28,949,000	816,000	33,726,000	27,646,000
68.	CATS PROTECTION	28,795,000	19,084,000	33,417,000	36,941,000
69.	SOUTHBANK CENTRE	27,638,000	0	44,474,000	49,791,000
70.	THE CHILDREN'S INVESTMENT FUND FOUNDATION (UK)	26,437,280	0	44,257,859	44,139,424
71.	THE ROYAL NATIONAL THEATRE	26,336,000	27,908	65,954,000	65,455,000
72.	SHELTER, NATIONAL CAMPAIGN FOR HOMELESS PEOPLE LIMITED	25,532,000	3,234,000	51,132,000	45,900,000
73.	THE LONDON DIOCESAN FUND	25,300,000	5,800	31,400,000	35,700,000
74.	LLOYDS TSB FOUNDATION FOR ENGLAND AND WALES	25,242,000	0	26,063,000	27,013,000
75.	MUSLIM AID	25,098,503	0	25,162,479	21,310,522
76.	COMPTON VERNEY FUND	25,000,100	0	25,278,450	1,202,563
77.	THE BRITISH FILM INSTITUTE	24,599,000	0	43,263,000	42,443,000
78.	THE DONKEY SANCTUARY	24,293,000	18,479,000	26,933,000	27,509,000
79.	JEWISH CARE	24,191,000	4,609,000	52,967,000	45,590,000

Ranking	Charity	Voluntary income	Legacy income	Total income	Total expenditure
80.	COMPASSION UK CHRISTIAN CHILD DEVELOPMENT	23,837,371	0	23,864,367	23,224,820
81.	WESTMINSTER ROMAN CATHOLIC DIOCESAN TRUST AND OTHER TRUST FUNDS ADMINISTERED BY THE WESTMINSTER ROMAN CATHOLIC DIOCESAN TRUSTEE	23,830,000	1,011,000	36,955,000	31,533,000
82.	THE THAILAND BURMA BORDER CONSORTIUM	23,679,517	0	23,710,859	23,806,393
83.	MEDECINS SANS FRONTIERES (UK)	23,514,000	2,693,000	26,577,000	26,082,000
84.	THE METHODIST CHURCH IN GREAT BRITAIN	23,416,000	2,809,000	42,900,000	55,494,000
85.	CHURCH OF ENGLAND CHILDREN'S SOCIETY	23,147,000	6,627,000	42,365,000	42,548,000
86.	LIVERPOOL HOPE UNIVERSITY	22,991,672	0	52,492,266	48,117,180
87.	ARTHRITIS RESEARCH UK	22,860,000	19,525,000	39,265,000	37,554,000
88.	THE BRITISH DIABETIC ASSOCIATION	22,541,000	10,824,000	29,334,000	26,332,000
89.	THE WORLD SOCIETY FOR THE PROTECTION OF ANIMALS	22,473,000	2,592,000	22,583,000	20,671,000
90.	SAMARITAN'S PURSE INTERNATIONAL LIMITED	22,371,309	0	22,483,466	22,558,841
91.	THE MULTIPLE SCLEROSIS SOCIETY OF GREAT BRITAIN AND NORTHERN IRELAND	22,247,000	8,711,000	29,060,000	35,324,000
92.	THE BLUE CROSS (INCORPORATING OUR DUMB FRIENDS LEAGUE)	22,169,000	15,074,000	26,878,000	25,149,000

Ranking	Charity	Voluntary income	Legacy income	Total income	Total expenditure
93.	SHEFFIELD CITY TRUST	21,652,000	0	55,094,000	55,944,000
94.	THE BENENDEN HOSPITAL TRUST	21,594,000	330,329	26,156,000	25,823,000
95.	INTERNATIONAL BIBLE STUDENTS ASSOCIATION	21,408,565	1,069,488	25,767,565	17,968,609
96.	THE BABRAHAM INSTITUTE	21,345,000	0	35,800,000	30,964,000
97.	THE GRAND CHARITY	21,338,300	1,431,000	22,265,600	24,014,700
98.	THE SAID FOUNDATION	21,308,662	0	22,645,198	18,443,591
99.	AMNESTY INTERNATIONAL CHARITY LIMITED	21,297,000	0	21,306,000	21,901,000
100.	ROMAN CATHOLIC DIOCESE OF SOUTHWARK DIOCESAN TRUST	21,226,682	2,146,552	32,181,430	29,629,360

C.3 Restricted treatment across signalling

Recall that in this chapter the restricted treatment rounds were dropped in order to compare signalling and screening. The results have shown that signalling is preferred over screening. These results could contradict chapter 4 results where restriction was considered to be the limiting factor in giving as the information provided on charities during the specific rounds was in the form of signalling. Recall, that in chapter 4 the type of information was controlled for in the regressions (dummy variable= 1 if screening) however, in order ensure that restriction was the main reason for lower giving, the main regressions of chapter 4 have been redone by dropping the screening rounds. If restriction is still significant then this would provide a robustness check that it is not signalling but restricted treatment that negatively effects giving behaviour in chapter 4.

5.1C Probability of giving

The Logit model will take the following form:

$$Pr\ (Y_{it}|\boldsymbol{Treatment_i}, \boldsymbol{X_i}, \boldsymbol{W_i}\ ) = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it} \qquad (9)$$

The results for logit model and population average are presented in Table 5.10. Column (1) has the pooled and column (2) has logit random effect results. The subjects are less likely to give during the restricted treatment phase as compared to when they are free to give any amount.

Similarly, column (3) gives the results with independent correlation which also shows that subjects are less inclined to give during the restricted treatment phase. Column (4) gives the results with exchangeable correlation which also shows a negative relation

between giving and restricted treatment. Column (5) rounds it up with autocorrelation matrix, the direction of giving behaviour remains negative due to the restricted treatment effect.

Table 5.10: Odds ratio and marginal effects, signalling vs signalling

	Pooled (1)	Panel (2)	Ind (3)	Exc (4)	Ar (5)
a. Restriction	0.31**	0.22***	0.31**	0.30**	0.30**
	(0.16)	(0.13)	(0.17)	(0.16)	(0.17)
b. Restriction	-0.11**	-0.13***	-0.11**	-0.12**	-0.09**
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
No. of Observations	651	651	651	651	651

Note: Dependent variable is charity which is equal to one if given to charity and zero otherwise; a. Restriction treatment (give minimum of £5) odds ratios are reported, b. Restriction treatment marginal effects are reported. Column (1) baseline pooled and column (2) panel logit include subject specific effects while column (3) independent, column (4) exchangeable and column (5) auto-correlated report population averages with correlation structures. All regressions include control for sessions, employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

Table 5.10 also gives the marginal effects which confirm that during the restricted treatment phase the subjects were less likely to give to charity. The results demonstrate that if subjects are constrained in terms of giving to a specific minimum amount their chance of contributing decreases.

5.2C Frequency of giving

The Poisson model would take the following form:

$$Pr(Y_{it}|\upsilon_i) = \exp(\alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Treatment_i}\delta_i + \varepsilon_{it}) \qquad (10)$$

where, $\boldsymbol{Treatment_i}, \boldsymbol{X_i}, \boldsymbol{W_i}$ all the same as equation (1) in chapter 4.

Table 5.11 contains the pooled (column 1), Poisson (column 2) estimates as well as population averages: independent (column 3), exchangeable (column 4) and autocorrelation correlation matrix. As expected the restricted treatment effect has a negative impact on frequency of giving.

The marginal effects are also given in Table 5.11. As before the coefficients on treatment are significant and inversely related to the frequency of giving.

Table 5.11: Incidence rate ratios and marginal effects, signalling vs signalling

	Pooled (1)	Panel (2)	Ind (3)	Exc (4)	Ar (5)
a. Restriction	0.55***	0.55***	0.55***	0.47***	0.59**
	(0.08)	(0.08)	(0.13)	(0.10)	(0.14)
b. Restriction	-0.96***	-0.60***	-0.96***	-1.20***	-0.86**
	(0.25)	(0.15)	(0.37)	(0.34)	(0.37)
No. of Observations	672	672	672	672	672

Note: Dependent variable is charity count which includes the frequency of giving per round; a. Restriction treatment (give minimum of £5) incidence-rate ratios are reported, b. Restriction treatment marginal effects are reported. Column (1) baseline pooled poisson and column (2) panel poisson include subject specific effects while column (3) independent, column (4) exchangeable and column (5) auto-correlated report population averages with correlation structures. All regressions include control for sessions, employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

5.3C Giving in total

Next, we look at whether the treatment also has an impact on total giving. This is setup as:

$$Charity_{it}^{*} = \alpha_i + \boldsymbol{X_i}\beta_i + \boldsymbol{W_i}\delta_i + \boldsymbol{Information_i}\delta_i + \varepsilon_{it} \quad (11)$$

$$Charity_{it} = (0, Charity_{it}^{*})$$

The results are given in Table 5.12. Column (1) provide left censored estimates and column (2) provide right censored estimates and column (3) gives right and left censored estimates. Table 5.12 also give the marginal effects. Accordingly when the subjects were exposed to restricted treatment the overall giving decreased. Even when signalling only rounds are considered the restriction continues to have a negative impact on giving behaviour.

Table 5.12: Tobit estimates, signalling vs signalling

	Panel Left Censored (1)	Panel Right Censored (2)	Panel Right & Left Censored (3)
a. Restriction	-0.33**	0.09	-0.09
	(0.19)	(0.17)	(0.21)
b. Restriction	-0.27**	0.08	-0.06
	(0.15)	(0.15)	(0.13)
No. of Observations	672	672	672

Note: Dependent variable is charity which includes the total amount given per round; a. Restriction treatment tobit (left censored at £0, right censored at £10) estimates and b. Restriction treatment marginal effects at expected means are reported. Columns (1) report the panel tobit estimates censored from left : 114 left-censored observations, 558 uncensored observations, 0 right-censored observations; Column (2) report the panel tobit estimates censored from right : 0 left-censored observations, 617 uncensored observations, 55 right-censored observations Column (3) report the panel tobit estimates censored from right & left: 114 left-censored observations, 503 uncensored observations, 55 right-censored observations. All regressions include control for sessions, employment, gender, marital status, age, nationality, degree, subject, ease of experiment, choice of donation, preference for donation, risk averseness, time preference, social orientation, charity information, items, endowment, groups, group ranking, round dummies and lagged charity. Robust standard errors clustered by the subject and the group in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

Chapter 6
Summary and Conclusion

The thesis uses both theoretical modelling and lab experiments to demonstrate that restriction and screening increases the opportunity cost of giving. Warm glow donors would be motivated to give when both explicit and implicit cost are low. The results showed that choice on how much to give reduces explicit cost whereas signalling helps to reduce the implicit cost of giving. Therefore, the thesis was able to establish and demonstrate the cardinal role of opportunity cost in giving behaviour which has been missing in literature.

Moving away from literature which attributes changes to giving due to variation in motives, this study has shown that the explicit and implicit cost of giving seems to be of fundamental importance in charitable decision making. Using a variety of estimators the study was able to significantly find that restriction had a consistently negative effect for both between-subject and within-subject/group variations. The research demonstrated the importance of explicit cost in the charitable decision making process. The study was also able to find that whereas restriction has a negative impact on giving, restriction followed by choice resulted on average in higher overall giving. Therefore, the timing of the restriction merits consideration.

On the implicit side, the research looked at the costs associated with signalling and screening. Once again different classes of estimators were used: Poisson, Logit, and Tobit. The results showed a preference for signalling as opposed to screening. The direct and

specific nature of information seemed to lower the implicit cost of giving whereas ranked information was found to increase information cost.

6.1 Summary

In chapter 2 we presented a theoretical model depicting the opportunity cost of giving which was derived from the religiosity motivation. We discussed religious giving within the Islamic context of zakat (compulsory) and sadaqa (voluntary). We treated the compulsory component of zakat as restrictive and analysed its impact on warm glow decision making process. We observed that there was a downward effect on the giving behaviour conditional on the parameters.

We made use of a generalized version of the religious motivation for two reasons: first, for external validity (zakat is practised by 1.8 billion people) and second for inherent warm glow specification. As the final reward is not of this world the act of giving becomes the primary source of satisfaction and therefore the act of giving rather than the efficiency of giving becomes the fundamental goal. We utilized the Cobb-Douglas specification that incorporated the restricted and choice components of giving. We used a single period model setup.

In order to see the changes in the giving behaviour we varied the parameters of the model to observe changes in giving behaviour. We found that charitable giving was lower when the parameters were varied; warm glow giver gave less when restricted to a specific amount (conditional on the value of the parameters). We concluded that charitable giving had an opportunity cost which needed to be empirically tested.

In Chapter 3 we used a modified dictator game (a paper based experiment) to test the prediction of the model. We focused on between-subject variation by randomly

dividing the subjects into restricted treatment and unrestricted treatment groups. The restricted treatment group was restricted to a minimum donation of £3 while the unrestricted treatment group was free to give any amount out of the total endowment (£10). In order to ensure that the subjects did not make a simple linear decision, they were asked to select from three options: either to donate or buy a high end item or claim payoff or a combination of all three.

We considered the self-interest tendency of the subjects and offered different items and payoff incentives. Making a donation no longer was a simple choice but involved an explicit cost in terms of reduced payoff or losing out at the chance of winning an expensive item. Randomization of the groups ensured that the demographic characteristics did not play a role in contribution differences.

We estimated the model using the Probability, Count and Tobit type-I estimators. Our parameter estimates indicated that subjects in the restricted group gave less frequently and gave lower amounts. This was consistent with the prediction of the model in Chapter 2. The predicted distributions of giving across restricted treatment and unrestricted treatment groups closely followed the pattern of the model. From the donors perspective if the explicit cost of giving increased charitable contribution decreased. However, we wanted to see whether the results remained robust when the decision process was made more complexed and by considering the within-subject variation.

In Chapter 4 we designed and implemented a modified public goods game on Z-Tree to measure the within-subject variation. This time around the subjects were exposed to both restricted treatment as well as unrestricted treatment rounds. The decision process was made more complex as group cooperation/competition increased chances of winning a high end item while free-riding increased the chances of a higher payoff. The

restrictive amount was increased to £5 and the income was varied between £5-10 in every other round. These variations not only affected the explicit cost of giving but also made the charitable giving decision more realistic (and in line with the model.

The number of subjects increased to 96 and the experiment was open to students and administration of the University of Kent. The experiment had twelve rounds (each round had six groups of four subjects each), in each round the subjects were given three options: give to charity or keep amount as payoff or combination of the two. The total contribution by the subjects counted towards the total contribution by the group. The winning groups had a chance at claiming expensive items along with payoff.

We used Count, Probability and Tobit type-I estimators to measure the effect of the restriction on giving behaviour. Our results indicated that restriction impacted giving behaviour both in terms of frequency of giving and the amount of giving. As we were able to control for pure order effects, our results picked up timing of restriction as affecting overall giving. We were able to show that when restriction was followed by choice overall giving was higher as compared to when choice was followed by restriction.

In Chapter 5 we extend our study of opportunity cost by considering what type of information was more conducive to solicit a positive giving response; a case of lower implicit cost. The experiment tested and compared charitable giving under screening and signalling. With respect to signalling pictures were used as bases of information while screening included ranking of top 100 charities in the UK. The restricted rounds were dropped and the endowment varied across the eight rounds.

In two of the four sessions screening was introduced in the first four rounds while in the other two sessions screening was introduced in the last four rounds. The variation in treatment over the sessions was to ensure counter-balance. The items, group dynamics

and payoff incentives remained the same as in experiment #2. Before the beginning of rounds the subjects were given printed information which was presented either in the form of signalling or screening. Specific time was given to the subjects to absorb the information before proceeding to play each round. The results showed that frequency and amount of giving was greater during signalling as compared to screening. We concluded that as the cost of interpreting information increases donation decreases.

6.2 Policy implications

Clearly there are limits to how much we should infer from two lab experiments. Future work would be needed to further explore the consequences of imposing a minimum. Even so, our findings point to the complex interplay of factors that need to be explored in looking at the merits of a minimum. Our work suggests than in a setting where warm glow, or other intrinsic motives are foremost, a minimum amount could backfire. If there are fixed costs the charity needs to cover then this may be seen as an unfortunate but inevitable trade-off. If, however, the minimum is imposed as a device to try and increase giving then a charity would need to carefully question whether this is the best approach. That would seem particularly pertinent in those instances where charities or charity collectors heavily frame things in a way that suggests there is a minimum. For instance, if we compare the 'every pound counts' frame with an 'if you give £5 we can do this' frame, the results of our first experiment point to the benefits of the 'every pound counts' frame.

Charities can choose to provide extrinsic motives for giving. Publicizing donations, giving gifts (e.g. a sticker), or randomly giving away prizes are examples of things that can be done. The results of our second experiment suggest that a constraint on giving can increase giving in combination with such incentives. And in this regard our results suggest

the need to be bold and not rely on the foot-in-the-door effect. Clearly a relatively large minimum might deter some. This, however, may be a cost worth paying if it means that a significant proportion of those who give will donate a larger amount over a sustained period of time. Again, though, this would seem to involve a carefully balancing act. A constraint on mining giving is certainly no panacea to increase giving.

It is standard practice in charity fundraising to use a 'foot-in-the-door' approach of getting people to give something first and then subsequently to give more. Evidence on the benefits of this approach is mixed (e.g. Burger & Guadagno, 2003) and our results also point to potential drawbacks. Specifically, our finding that an initial constraint works better than subsequently imposing a constraint would point to the benefits of initially asking for a relatively high amount. While this may deter some it may ultimately increase average giving. We note that this finding adds to the general literature looking at the advantages (and disadvantages) of different dynamic solicitation methods such as reminders (Daamgard & Gravert, 2017; Van Diepen et al., 2009) or delayed giving (Andreoni & Serra-Garcia, 2016).

6.3 Conclusions

In the succeeding paragraphs we discuss our main conclusions, implications for charities and further research suggestions.

In terms of scientific analysis we aimed at filling the gap in literature: the impact of restriction and by extension opportunity cost of giving on warm glow givers. The response to charitable giving depends on the implicit and explicit cost of giving. If the opportunity cost is perceived to be high it decreases giving along the intensive and extensive margins. However, we found that timing of restriction was important and could affect subsequent

giving. Furthermore, we were able to compare two types of popularly used information and showed that signalling was relatively more effective in increasing donations.

These results open numerous avenues for further research for charitable giving in general and charities in particular. Existing knowledge of charitable giving in terms of asking a specific amount should be re-evaluated in the light of these insights. For instance, the charities can run a field experiment or even a direct mail experiment to ascertain whether specific amount can be perceived as restrictive. They can then see if the effect could be different if restriction is imposed earlier in the solicitation stage; incurring some loses initially to get steady contributions later on. The charities can use different type of information to see if the donors are more response to screening or signalling.

Also, findings of the thesis might facilitate further understanding of choice dynamics in other fields. For example, although our research focused on charitable giving, we suspect that choice element is equally important in other types of giving behaviour such as taxation. It would be interesting to investigate what role choice and type of information have on highly restrictive giving behaviour. To this effect further studies can apply several methods presented in the thesis to measure the significance of asking/demanding specific amount, its timing and the type of information that facilitates or deters giving behaviour.

From the methodological point of view, our findings are based on experiments which used students of a single University in the South East of England therefore one should take great care in generalizing the findings. However, the fact that young donors tend to be influenced by the opportunity cost of giving merits consideration by the charitable organizations. An interesting extension could be to run the experiment across multiple universities and across different types of charities. The experiment could be split

into students and administrative staff to see if the effect of the restricted treatment would vary.

There is considerable scope for theoretical, academic and practical implications for studying the impact of restriction, its dynamic nature and type of information on charitable giving behaviour. It is hoped that this research will facilitate in opening up avenues for further discussions and analysis in the popular field of charitable giving.

Bibliography

Abo Baker, N.B. and AbdulRahman, A., 2007. A comparative study of zakah and modern taxation. *Islamic Economics*, *20*(1).

Adena, M., Huck, S. and Rasul, I., 2014. Charitable giving and nonbinding contribution-level suggestions: Evidence from a field experiment. *Review of Behavioral Economics*, 1(3), pp. 275-293

Ahmad, S., Nor, N.G.M. and Daud, Z., 2011. Tax-based modeling of zakat compliance. *Jurnal Ekonomi Malaysia*, 45(1), pp.101-108.

Ahmad, S., Wahid, H. and Mohamad, A., 2006. Penswastaan institusi zakat dan kesannya terhadap pembayaran secara formal di Malaysia. *International Journal of Management Studies (IJMS)*, *13*(2), pp.175-196.

Aizen, I., 1985. From intentions to actions: A theory of planned behavior. *Action-control: From cognition to behavior*, pp.11-39.

Akerlof, G., 1970. The market for lemons. *Quarterly journal of Economics*, *84*(3), pp.488-500.

Al Jaffri Saad, R. and Haniffa, R., 2014. Determinants of zakah (Islamic tax) compliance behavior. *Journal of Islamic Accounting and Business Research*, *5*(2), pp.182-193.

'Ala Maudoodi, S.A., 1974. *Towards Understanding Islam*. Idara Tarjuman-ul-Quran.

Al-Qaradawi, Y., 1981. Al-Kha ā'is al-'āmmah lil Islāmi [The Universal Characteristics of Islam]. *Cairo: Maktabah Wahbah*.

Al-Qaradawi, Y., 1999. Zakah and Donations. In: *Contemporary Fatawa: Current Issues in Islamic Fiqh*. New York, Islamic Book Service, pp. 263-300.

Alexander, R.D. and Bargia, G., 1978. Group selection, altruism, and the levels of organization of life. *Annual Review of Ecology and Systematics*, *9*(1), pp.449-474.

Allcott, H. and Mullainathan, S., 2010. Behavior and energy policy. *Science*, *327*(5970), pp.1204-1205.

Ali, S.R., Liu, W.M. and Humedian, M., 2004. Islam 101: Understanding the religion and therapy implications. *Professional Psychology: Research and Practice*, *35*(6), p.635.

Allingham, M.G. and Sandmo, A., 1972. Income tax evasion: A theoretical analysis. *Journal of public economics*, *1*(3-4), pp.323-338.

Alpizar, F., Carlsson, F. and Johansson-Stenman, O., 2008. Anonymity, reciprocity, and conformity: Evidence from voluntary contributions to a national park in Costa Rica. *Journal of Public Economics*, *92*(5), pp.1047-1060.

Ann, K.S., 1981. *State and Government in Medieval Islam: An Introduction to the Study of Islamic Political Theory: the Jurists*. Oxford University Press.

Anderson, S.P., Goeree, J.K. and Holt, C.A., 1998. A theoretical analysis of altruism and decision error in public goods games. *Journal of Public Economics*, *70*(2), pp.297-323.

Anderson, L.R. and Mellor, J.M., 2009. Are risk preferences stable? Comparing an experimental measure with a validated survey-based measure. *Journal of Risk and Uncertainty*, *39*(2), pp.137-160.

Anderson, C.M. and Putterman, L., 2006. Do non-strategic sanctions obey the law of demand? The demand for punishment in the voluntary contribution mechanism. *Games and Economic Behavior*, *54*(1), pp.1-24.

Andreoni, J., 1989. Giving with impure altruism: Applications to charity and Ricardian equivalence. *Journal of political Economy*, *97*(6), pp.1447-1458.

Andreoni, J., 1990. Impure altruism and donations to public goods: A theory of warm-glow giving. *The economic journal*, *100*(401), pp.464-477.

Andreoni, J., 2006a. Leadership giving in charitable fund-raising. *Journal of Public Economic Theory*, *8*(1), pp.1-22.

Andreoni, J., 2006b. Philanthropy. *Handbook of the economics of giving, altruism and reciprocity*, *2*, pp.1201-1269.

Andreoni, J., Brown, E. and Rischall, I., 2003. Charitable giving by married couples who decides and why does it matter?. *Journal of human Resources*, *38*(1), pp.111-133.

Andreoni, J. and Petrie, R., 2004. Public goods experiments without confidentiality: a glimpse into fund-raising. *Journal of public Economics*, *88*(7), pp.1605-1623.

Andreoni, J. and Miller, J., 2002. Giving according to GARP: An experimental test of the consistency of preferences for altruism. *Econometrica*, *70*(2), pp.737-753.

Andreoni, J. and Rao, J.M., 2011. The power of asking: How communication affects selfishness, empathy, and altruism. *Journal of public economics*, *95*(7), pp.513-520.

Andreoni, J., Rao, J.M. and Trachtman, H., 2017. Avoiding the ask: A field experiment on altruism, empathy, and charitable giving. *Journal of Political Economy*, 125(3), pp.625-653.

Andreoni, J. and Scholz, J.K., 1998. An econometric analysis of charitable giving with interdependent preferences. *Economic inquiry*, *36*(3), pp.410-428.

Andreoni, J. and Serra-Garcia, M., 2016. *Time-Inconsistent Charitable Giving* (No. w22824). National Bureau of Economic Research.

Andrews, K.R., Carpenter, C.J., Shaw, A.S. and Boster, F.J., 2008. The legitimization of paltry favors effect: A review and meta-analysis. *Communication Reports*, *21*(2), pp.59-69.

Ariely, D., Bracha, A. and Meier, S., 2009. Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *The American economic review*, *99*(1), pp.544-555.

Ataina, H. and Achmad, T., 2010. Management of zakah: Centralized Vs decentralized approach. In *7th International Conference–The Tawhidi Epistemology: Zakat and Waqf Economy. Bangi, Selangor*.

Auten, G.E., Sieg, H. and Clotfelter, C.T., 2002. Charitable giving, income, and taxes: An analysis of panel data. *The American Economic Review*, *92*(1), pp.371-382.

Ayob, A.M., 2001. Attitude towards zakah on employment income: Comparing outcomes between single score and multidimensional scores. *Malaysian Management Journal*, *5*(1&2), pp.47-63.

Bacharach, M., Guerra, G. and Zizzo, D.J., 2007. The self-fulfilling property of trust: An experimental study. *Theory and Decision*, 63(4), pp.349-388.

Bakar, M.H.A. and Abdghani, A.H., 2011. Towards achieving the quality of life in the management of zakat distribution to the rightful recipients (the poor and needy). *International Journal of Business and Social Science*, *2*(4).

Bakar, N.B.A. and Rashid, H.M.A., 2010. Motivations of paying Zakat on income: Evidence from Malaysia. *International Journal of Economics and Finance*, *2*(3), p.76.

Bakija, J. and Heim, B., 2008. *How does charitable giving respond to incentives and income? Dynamic panel estimates accounting for predictable changes in taxation* (No. w14237). National Bureau of Economic Research.

Balliet, D., Parks, C. and Joireman, J., 2009. Social value orientation and cooperation in social dilemmas: A meta-analysis. *Group Processes & Intergroup Relations*, *12*(4), pp.533-547.

Bardsley, N., 2005. Experimental economics and the artificiality of alteration. *Journal of Economic Methodology*, *12*(2), pp.239-251.

Bardsley, N., 2008. Dictator game giving: altruism or artefact?. *Experimental Economics*, 11(2), pp.122-133.

Bardsley, N., Cubitt, R., Loomes, G., Moffat, P., Starmer, C. and Sugden, R., 2010. *Experimental economics: Rethinking the rules*. Princeton University Press.

Barlow, D.H. and Hayes, S.C., 1979. Alternating treatments design: One strategy for comparing the effects of two treatments in a single subject. *Journal of applied behavior analysis*, *12*(2), pp.199-210.

Barlow, D.H.D.H. and Hersen, M., 1987. *Single case experimental designs; strategies for studying behavior change* (No. 04; BF76. 5, B3 1987.).

Barnett, J. and Hammond, S., 1999. Representing disability in charity promotions. *Journal of Community & Applied Social Psychology*, *9*(4), pp.309-314.

Baron, J., 2001. Confusion of group interest and self-interest in parochial cooperation on behalf of a group. *Journal of Conflict Resolution*, *45*(3), pp.283-296.

Baron, J., Altman, N.Y. and Kroll, S., 2005. Approval voting and parochialism. *Journal of Conflict Resolution*, *49*(6), pp.895-907.

Becker, G.S., 1976. Altruism, egoism, and genetic fitness: Economics and sociobiology. *Journal of economic Literature*, *14*(3), pp.817-826.

Becker, G.S., 2013. *The economic approach to human behavior*. University of Chicago press.

Beiske, B., 2002. Research methods. Uses and limitations of questionnaires, interviews, and case studies.

Bekkers, R., 2003. Trust, accreditation, and philanthropy in the Netherlands. *Nonprofit and Voluntary Sector Quarterly*, *32*(4), pp.596-615.

Bekkers, R., 2005. Participation in voluntary associations: Relations with resources, personality, and political values. *Political Psychology*, *26*(3), pp.439-454.

Bekkers, R., 2006. *Words and Deeds of Generosity: Are Decisions About Real and Hypothetical Money Really Different*. Working paper, Department of Sociology, Utrecht University.

Bekkers, R., 2007. Measuring Altruistic Behavior in Surveys: The All-or-Nothing Dictator Game. In *Survey Research Methods* (Vol. 1, No. 3, pp. 139-144).

Bekkers, R., 2010. The Benefits of Accreditation Clubs of Fundraising Nonprofits, in: Gugerty, M. K. & Prakash, A. (Eds), *Voluntary Regulation of NGOs and Nonprofits: An Accountability Club Framework*. Cambridge University Press, Cambridge, UK.

Bekkers, R. and Schuyt, T., 2008. And who is your neighbor? Explaining denominational differences in charitable giving and volunteering in the Netherlands. *Review of Religious Research*, pp.74-96.

Bekkers, R. and Wiepking, P., 2011. A literature review of empirical studies of philanthropy: Eight mechanisms that drive charitable giving. *Nonprofit and Voluntary Sector Quarterly*, *40*(5), pp.924-973

Bekkers, R. and Wiepking, P., 2011. Who gives? A literature review of predictors of charitable giving part one: religion, education, age and socialisation. *Voluntary Sector Review*, *2*(3), pp.337-365.

Bekkers, R. and Schuyt, T., 2008. And who is your neighbor? Explaining denominational differences in charitable giving and volunteering in the Netherlands. *Review of Religious Research*, pp.74-96.

Belfield, C.R. and Beney, A.P., 2000. What determines alumni generosity? Evidence for the UK. *Education Economics*, *8*(1), pp.65-80.

Bell, J., 2014. *Doing Your Research Project: A guide for first-time researchers*. McGraw-Hill Education (UK).

Ben-Ner, A., Kong, F. and Putterman, L., 2004. Share and share alike? Gender-pairing, personality, and cognitive ability as determinants of giving. *Journal of Economic Psychology*, *25*(5), pp.581-589.

Bennett, R. and Kottasz, R., 2000. Emergency fund-raising for disaster relief. *Disaster Prevention and Management: An International Journal*, *9*(5), pp.352-360.

Bensaid, B., Grine, F., Nor, M.R.M. and MohdYusoff, M.Y.Z., 2013. Ethico-spiritual dimensions of charity: an Islamic perspective. *Middle-East Journal of Scientific Research*, *13*(2), pp.171-182.

Benthall, J., 1999. Financial worship: the Quranic injunction to almsgiving. *Journal of the Royal Anthropological Institute*, pp.27-42.

Benz, M. and Meier, S., 2008. Do people behave in experiments as in the field?—evidence from donations. *Experimental economics*, 11(3), pp.268-281.

Bereczkei, T., Birkas, B. and Kerekes, Z., 2007. Public charity offer as a proximate factor of evolved reputation-building strategy: an experimental analysis of a real-life situation. *Evolution and Human Behavior*, *28*(4), pp.277-284.

Berg, J., Dickhaut, J. and McCabe, K., 2005. Risk preference instability across institutions: A dilemma. *Proceedings of the National Academy of Sciences of the United States of America*, *102*(11), pp.4209-4214.

Berger, P.L., 1967. The sacred canopy. *Garden City, NY: Anchor*.

Berger, P.L., 2011. *The sacred canopy: Elements of a sociological theory of religion*. Open Road Media.

Berkowitz, L. and Daniels, L.R., 1964. Affecting the salience of the social responsibility norm: effects of past help on the response to dependency relationships. *The Journal of Abnormal and Social Psychology*, *68*(3), p.275.

Bernheim, B.D., 1994. A theory of conformity. *Journal of political Economy*, 102(5), pp.841-877.

Bidin, Z., Idris, K.M. and Shamsudin, F.M., 2009. Predicting compliance intention on zakah on employment income in Malaysia: An application of reasoned action theory. *Jurnal Pengurusan*, *28*(1), pp.85-102.

Bielefeld, Wolfgang, Patrick Rooney, and Kathy Steinberg. "How do need, capacity, geography, and politics influence giving." *Gifts of money in Americas communities* (2005): 127-158.

Blinder, Alan S., and Rosen, Harvey S., 1985. Notches. *American Economic Review*, 75, pp.736-747.

Blomberg, C.L., 2013. *Christians in an Age of Wealth: A Biblical Theology of Stewardship*. Harper Collins.

Bloom, M., Fischer, J. and Orme, J.G., 1999. *Evaluating practice: Guidelines for the accountable professional*. Needham Heights, MA, US: Allyn & Bacon.

Boadway, R., Chamberlain, E. and Emmerson, C., 2010. Taxation of wealth and wealth transfers. *Dimensions of tax design: The Mirrlees review*, pp.737-814.

Bolton, G.E. and Katok, E., 1995. An experimental test for gender differences in beneficent behavior. *Economics Letters*, *48*(3), pp.287-292.

Bornstein, G. and Ben-Yossef, M., 1994. Cooperation in intergroup and single-group social dilemmas. *Journal of Experimental Social Psychology*, *30*(1), pp.52-67.

Borenstein, M., Hedges, L.V., Higgins, J. and Rothstein, H.R., 2009. Random-Effects Model. *Introduction to Meta-analysis*, pp.69-75.

Bosman, R. and Van Winden, F., 2002. Emotional hazard in a power-to-take experiment. *The Economic Journal*, 112(476), pp.147-169.

Bowen, K., 1999. Religion, participation, and charitable giving. *Executive summary*, *6*.

Boyd, R., Gintis, H., Bowles, S. and Richerson, P.J., 2003. The evolution of altruistic punishment. *Proceedings of the National Academy of Sciences*, *100*(6), pp.3531-3535.

Breman, A., Granstrom, O. and Masiye, F., 2006. Is foreign aid paternalistic?. *Anna Brernan*, p.69.

Briers, B., Pandelaere, M. and Warlop, L., 2006. Anchor or Fiction? The Role of Adding Exchange to Charity. *NA-Advances in Consumer Research Volume 33*.

Brister, J., Litton, J.D., Lynn, M.L. and Tippens, T.K., 2016. More Blessed to Give Than to Receive: A Model of Lifetime Charitable Giving. *Journal of Biblical Integration in Business*, 19(1), pp.38-56

Brooks, A.C., 2003. Religious faith and charitable giving. *Policy Review*, (121), p.39.

Brooks, A.C., 2004. What do “don’t know” responses really mean in giving surveys?. *Nonprofit and Voluntary Sector Quarterly*, *33*(3), pp.423-434.

Brown, E. and Ferris, J.M., 2007. Social capital and philanthropy: An analysis of the impact of social capital on individual giving and volunteering. *Nonprofit and Voluntary Sector Quarterly*, *36*(1), pp.85-99.

Brown, C.L. and Krishna, A., 2004. The skeptical shopper: A metacognitive account for the effects of default options on choice. *Journal of Consumer Research*, *31*(3), pp.529-539.

Brown, A.L., Meer, J. and Williams, J.F., 2017. Social distance and quality ratings in charity choice. *Journal of Behavioral and Experimental Economics*, *66*, pp.9-15.

Bryant, W.K., Jeon-Slaughter, H., Kang, H. and Tax, A., 2003. Participation in philanthropic activities: Donating money and time. *Journal of Consumer Policy*, *26*(1), pp.43-73.

Buchheit, S. and Parsons, L.M., 2006. An experimental investigation of accounting information's influence on the individual giving process. *Journal of Accounting and Public Policy*, *25*(6), pp.666-686.

Budak, C. and Rao, J.M., 2016, March. Measuring the Efficiency of Charitable Giving with Content Analysis and Crowdsourcing. In *ICWSM* (pp. 32-41).

Bukhari, I., 1987. Sahih al-Bukhari. *Kitab Bhavan, New Delhi, India*

Buraschi, A., and Cornelli, F. 2002. Donations. *CEPR Discussion Paper. (3488)*.

Burger, J. M., & Guadagno, R. E. (2003). Self-concept clarity and the foot-in-the-door procedure. *Basic and Applied Social Psychology*, *25*(1), 79-86.

Burman, E., 1994. Poor children: Charity appeals and ideologies of childhood. *CHANGES-SHEFFIELD-*, *12*, pp.29-29.

Camerer, C., 2010. *Behavioral game theory*. New Age International.

Cameron, A.C. and Trivedi, P.K., 2005. *Microeconometrics: methods and applications*. Cambridge university press.

Camerer, C., 2003. *Behavioral game theory: Experiments in strategic interaction*. Princeton University Press.

Camerer, C.F. and Fehr, E., 2004. Measuring social norms and preferences using experimental games: A guide for social scientists. *Foundations of human sociality: Economic experiments and ethnographic evidence from fifteen small-scale societies*, *97*, pp.55-95.

Camilleri, A.R. and Larrick, R.P., 2014. Metric and scale design as choice architecture tools. *Journal of Public Policy & Marketing*, *33*(1), pp.108-125.

Cappelen, A.W., Konow, J., Sørensen, E.Ø. and Tungodden, B., 2013. Just luck: An experimental study of risk-taking and fairness. *The American Economic Review*, *103*(4), pp.1398-1413.

Carlsson, F., He, H. and Martinsson, P., 2013. Easy come, easy go. *Experimental Economics*, 16(2), pp.190-207.

Carlsson, F., Johansson-Stenman, O. and Khanh Nam, P., 2015. Funding a new bridge in rural Vietnam: a field experiment on social influence and default contributions. *Oxford Economic Papers*, 67(4), pp.987-1014.

Cartwright, E. and Patel, A., 2013. How category reporting can improve fundraising. *Journal of Economic Behavior & Organization*, 87, pp.73-90.

Casale, D. and Baumann, A., 2015. Who gives to international causes? A sociodemographic analysis of US donors. *Nonprofit and Voluntary Sector Quarterly*, *44*(1), pp.98-122.

Chang, W.C., 2005. Religious giving, non-religious giving, and after-life consumption. *The BE Journal of Economic Analysis & Policy*, 5(1).

Chang, C.T., 2007a. Health-care product advertising: The influences of message framing and perceived product characteristics. *Psychology & Marketing*, *24*(2), pp.143-169.

Chang, C.T., 2007b. Interactive effects of message framing, product perceived risk, and mood—The case of travel healthcare product advertising. *Journal of Advertising Research*, *47*(1), pp.51-65.

Chang, C.T. and Lee, Y.K., 2009. Framing charity advertising: Influences of message framing, image valence, and temporal framing on a charitable appeal. *Journal of Applied Social Psychology*, *39*(12), pp.2910-2935.

Charness, G. and Cheung, T., 2013. A restaurant field experiment in charitable contributions. *Economics Letters*, *119*(1), pp.48-49.

Chaudhuri, A., 2011. Sustaining cooperation in laboratory public goods experiments: a selective survey of the literature. *Experimental Economics*, *14*(1), pp.47-83.

Cherry, T.L., Frykblom, P. and Shogren, J.F., 2002. Hardnose the dictator. *The American Economic Review*, 92(4), pp.1218-1221.

Choi, J.K. and Bowles, S., 2007. The coevolution of parochial altruism and war. *Science*, *318*(5850), pp.636-640.

Cialdini, R.B., Vincent, J.E., Lewis, S.K., Catalan, J., Wheeler, D. and Darby, B.L., 1975. Reciprocal concessions procedure for inducing compliance: The door-in-the-face technique. *Journal of personality and Social Psychology*, *31*(2), p.206.

Clark, J., 2002. Recognizing large donations to public goods: An experimental test. *Managerial and Decision Economics*, *23*(1), pp.33-44.

Clotfelter, C.T., 1997. The economics of giving. *Giving better, giving smarter: Working papers of the national commission on philanthropy and civic renewal*, pp.31-55.

Coulson, N.J., 2011. *A history of Islamic law*. Aldine Transaction.

Cox, J.C. and Deck, C.A., 2006. When are women more generous than men?. *Economic Inquiry*, 44(4), pp.587-598.

Crawford, V.P. and Sobel, J., 1982. Strategic information transmission. *Econometrica: Journal of the Econometric Society*, pp.1431-1451.

Cremer, H., 2010. Taxation of Wealth and Wealth Transfers: Commentary. *Dimensions of Tax Design: The Mirrlees Review*, pp.815-824.

Croson, R.T., 2007. Theories of commitment, altruism and reciprocity: Evidence from linear public goods games. *Economic Inquiry*, *45*(2), pp.199-216.

Croson, R. and Gneezy, U., 2009. Gender differences in preferences. *Journal of Economic Literature*, 47(2), pp.448– 474

Croson, R.T., Handy, F. and Shang, J., 2010. Gendered giving: the influence of social norms on the donation behavior of men and women. *International Journal of Nonprofit and Voluntary Sector Marketing*, 15(2), pp.199-213.

Croson, R. and Shang, J.Y., 2008. The impact of downward social information on contribution decisions. *Experimental Economics*, *11*(3), pp.221-233.

Croson, R. and Shang, J., 2013. Limits of the effect of social information on the voluntary provision of public goods: evidence from field experiments. *Economic Inquiry*, *51*(1), pp.473-477.

Croson, R. and Uri, G., 2009. Gender Differences in Preferences. *Journal of Economic Literature,* 47(2), pp.448-474

Crumpler, H. and Grossman, P.J., 2008. An experimental test of warm glow giving. *Journal of public Economics*, *92*(5), pp.1011-1021.

Dale, D.J., 2004. Charitable lottery structure and fund raising: Theory and evidence. *Experimental Economics*, *7*(3), pp.217-234.

Dale, D.J. and Morgan, J., 2010. Silence is golden. Suggested donations in voluntary contribution games. *University of California, Berkeley, USA*.

Damgaard, M.T. and Gravert, C., 2017. Now or never! The effect of deadlines on charitable giving: evidence from two natural field experiments. *Journal of Behavioral and Experimental Economics*, *66*, pp.78-87.

Dave, C., Eckel, C.C., Johnson, C.A. and Rojas, C., 2010. Eliciting risk preferences: When is simple better?. *Journal of Risk and Uncertainty*, *41*(3), pp.219-243.

De Cremer, D. and Van Lange, P.A., 2001. Why prosocials exhibit greater cooperation than proselfs: The roles of social responsibility and reciprocity. *European Journal of Personality*, *15*(S1).

Denant-Boemont, L., Masclet, D. and Noussair, C.N., 2007. Punishment, counter punishment and sanction enforcement in a social dilemma experiment. *Economic theory*, *33*(1), pp.145-167.

Desmet, P., 1998. The impact of mail order on subsequent donations: An experiment. *Financial Accountability & Management*, *14*(3), pp.203-214.

Dhar, R., 1997. Consumer preference for a no-choice option. *Journal of consumer research*, 24(2), pp.215-231.

Diabi, A., 2013. The Concept of Zakah Evasion: An Economic Interpretation.

Diamond, W.D. and Gooding-Williams, S., 2002. Using advertising constructs and methods to understand direct mail fundraising appeals. *Nonprofit Management and Leadership*, *12*(3), pp.225-242.

Doddington, K., Jones, R.S.P. and Miller, B.Y., 1994. Are attitudes to people with learning disabilities negatively influenced by charity advertising? An experimental analysis. *Disability & Society*, *9*(2), pp.207-222.

Dolinski, D., Grzyb, T., Olejnik, J., Prusakowski, S. and Urban, K., 2005. Let's dialogue about penny: Effectiveness of dialogue involvement and legitimizing paltry contribution techniques. *Journal of Applied Social Psychology*, *35*(6), pp.1150-1170.

Doob, A.N. and McLaughlin, D.S., 1989. Ask and you shall be given: Request size and donations to a good cause1. *Journal of Applied Social Psychology*, *19*(12), pp.1049-1056.

Duffy, J., Ochs, J. and Vesterlund, L., 2007. Giving little by little: Dynamic voluntary contribution games. *Journal of Public Economics*, *91*(9), pp.1708-1730.

Eagly, A.H., 2009. The his and hers of prosocial behavior: an examination of the social psychology of gender. *American Psychologist*, *64*(8), p.644.

Eaton, C.L.G., 2008. *The Book of Hadith: sayings of the Prophet Muhammad from the Mishkat Al Masabih*. Book Foundation.

Eckel, C. and Holt, C.A., 1989. Strategic voting in agenda-controlled committee experiments. *The American Economic Review*, pp.763-773.

Eckel, C.C. and Grossman, P.J., 1996a. The relative price of fairness: Gender differences in a punishment game. *Journal of Economic Behavior & Organization*, *30*(2), pp.143-158.

Eckel, C.C. and Grossman, P.J., 1996b. Altruism in anonymous dictator games. *Games and Economic Behavior*, 16(2), pp.181-191.

Eckel, C.C. and Grossman, P.J., 2004. Giving to secular causes by the religious and nonreligious: An experimental test of the responsiveness of giving to subsidies. *Nonprofit and Voluntary Sector Quarterly*, *33*(2), pp.271-289.

Eckel, C.C. and Grossman, P.J., 2008. Forecasting risk attitudes: An experimental study using actual and forecast gamble choices. *Journal of Economic Behavior & Organization*, *68*(1), pp.1-17.

Edgington, E.S., 1967. Statistical inference from N= 1 experiments. *The journal of psychology*, *65*(2), pp.195-199.

Edwards, J.T. and List, J.A., 2014. Toward an understanding of why suggestions work in charitable fundraising: Theory and evidence from a natural field experiment. *Journal of Public Economics*, *114*, pp.1-13.

Einolf, C.J., 2010. Does extensivity form part of the altruistic personality? An empirical test of Oliner and Oliner's theory. *Social Science Research*, 39(1), pp.142-151.

Engel, C., 2011. Dictator games: A meta study. *Experimental Economics*, *14*(4), pp.583-610.

Epley, N. and Gilovich, T., 2006. The anchoring-and-adjustment heuristic Why the adjustments are insufficient. *Psychological science*, *17*(4), pp.311-318.

Epstein, S. and O'brien, E.J., 1985. The person-situation debate in historical and current perspective. *Psychological bulletin*, 98(3), pp.513-537.

Esposito, J. L., 1998. *Islam: The straight Path*. New York: Oxford University Press.

Erick, S.F. and Fischhoff, B., 1998. Scope (in) sensitivity in elicited valuations. *Risk Decision and Policy*, *3*(2), pp.109-123.

Farooq, M.O., 2008. The challenge of poverty and the poverty of Islamic economics. *Journal of Islamic Economics, Banking and Finance*, 4(2), pp.35-58.

Feld, S., Frenzen, H., Krafft, M., Peters, K. and Verhoef, P.C., 2013. The effects of mailing design characteristics on direct mail campaign performance. *International Journal of Research in Marketing*, *30*(2), pp.143-159.

Fidiana, F., Triyuwono, I., Djamhuri, A. and Achsin, M., 2014. Non-Compliance Behaviour in the Frame of Ibn Khaldun. *International Journal of Business and Behavioral Sciences*, *4*(6), pp.30-48.

Fielding, D. and Knowles, S., 2015. Can you spare some change for charity? Experimental evidence on verbal cues and loose change effects in a Dictator Game. *Experimental Economics*, *18*(4), pp.718-730.

Filiz-Ozbay, E. and Ozbay, E.Y., 2014. Effect of an audience in public goods provision. *Experimental Economics*, *17*(2), pp.200-214.

Fischbacher, U., 2007. Z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental economics*, *10*(2), pp.171-178.

Fishbein, M. and Ajzen, I., 1977. Belief, attitude, intention, and behavior: An introduction to theory and research.

Fisman, R., Kariv, S. and Markovits, D., 2007. Individual preferences for giving. *The American Economic Review*, *97*(5), pp.1858-1876.

Fong, C.M., 2007. Evidence from an experiment on charity to welfare recipients: Reciprocity, altruism and the empathic responsiveness hypothesis. *The Economic Journal*, *117*(522), pp.1008-1024.

Fong, C.M. and Luttmer, E.F., 2011. Do fairness and race matter in generosity? Evidence from a nationally representative charity experiment. *Journal of Public Economics*, *95*(5), pp.372-394.

Forbes, D.P., 1998. Measuring the unmeasurable: Empirical studies of nonprofit organization effectiveness from 1977 to 1997. *Nonprofit and voluntary sector quarterly*, *27*(2), pp.183-202

Forbes, K.F. and Zampelli, E.M., 1997. Religious giving by individuals: A cross denominational study. *American Journal of Economics and Sociology*, *56*(1), pp.17-30.

Forbes, K.F. and Zampelli, E.M., 2013. The impacts of religion, political ideology, and social capital on religious and secular giving: evidence from the 2006 Social Capital Community Survey. *Applied Economics*, *45*(17), pp.2481-2490.

Forsythe, R., Horowitz, J.L., Savin, N.E. and Sefton, M., 1994. Fairness in simple bargaining experiments. *Games and Economic behavior*, *6*(3), pp.347-369.

Fraser, C.D., 2016, June. Faith, Hope and Christian Charity? How Religion Explains Giving that Impure Altruism and Warm Glow Do Not. In *PET 16-Rio*.

Fraser, C., Hite, R.E. and Sauer, P.L., 1988. Increasing contributions in solicitation campaigns: The use of large and small anchor points. *Journal of Consumer Research*, *15*(2), pp.284-287.

Freedman, J.L. and Fraser, S.C., 1966. Compliance without pressure: the foot-in-the-door technique. *Journal of personality and social psychology*, *4*(2), p.195.

Frumkin, P., 2008. *Strategic giving: The art and science of philanthropy*. University of Chicago Press.

Frumkin, P. and Kim, M.T., 2001. Strategic positioning and the financing of nonprofit organizations: Is efficiency rewarded in the contributions marketplace?. *Public administration review*, *61*(3), pp.266-275.

Garland, R., 1991. The mid-point on a rating scale: Is it desirable. *Marketing bulletin*, *2*(1), pp.66-70.

Glazer, A., 2015. The profit-maximizing non-profit. *Oxford Economic Papers*, *68*(2), pp.301-315.

Glazer, A. and Konrad, K.A., 1996. A signaling explanation for charity. *The American Economic Review*, *86*(4), pp.1019-1028.

Gneezy, U., Keenan, E.A. and Gneezy, A., 2014. Avoiding overhead aversion in charity. *Science*, *346*(6209), pp.632-635.

Goeree, J.K., Holt, C.A. and Laury, S.K., 2002. Private costs and public benefits: unravelling the effects of altruism and noisy behavior. *Journal of public Economics*, *83*(2), pp.255-276.

Goldstein, D.G. and Dinner, I.M., 2013. A fairly mechanical method for policy innovation. *Encouraging Sustainable Behavior*, pp.55-68.

Gordon, T.P. and Khumawala, S.B., 1999. The demand for not-for-profit financial statements: A model of individual giving. *Journal of Accounting Literature*, *18*, p.31.

Gordon, T.P., Knock, C.L. and Neely, D.G., 2009. The role of rating agencies in the market for charitable contributions: An empirical test. *Journal of accounting and public policy*, *28*(6), pp.469-484.

Goren, H., Rapoport, A. and Kurzban, R., 2004. Commitment in a real time step level public goods game with asymmetrical players and continuous contributions. *The Journal of Behavioral Decision Making*, *17*, pp.17-37.

Goswami, I. and Urminsky, O., 2016. When Should the Ask Be a Nudge? The Effect of Default Amounts on Charitable Donations. *Journal of Marketing Research*, *53*(5), pp.829-846.

Green, B.F. and Tukey, J.W., 1960. Complex analyses of variance: general problems. *Psychometrika*, *25*(2), pp.127-152.

Grossman, P.J. and Eckel, C.C., 2015. Giving versus taking for a cause. *Economics Letters*, *132*, pp.28-30.

Gruber, J., 2004. Pay or pray? The impact of charitable subsidies on religious attendance. *Journal of Public Economics*, *88*(12), pp.2635-2655.

Guala, F., 2002. On the scope of experiments in economics: comments on Siakantaris. *Cambridge Journal of economics*, *26*(2), pp.261-267.

Guermat, C., Al Utaibi, A. and Tucker, J., 2003. *The practice of Zakat: An Empirical Study for Gulf Countries*. Working paper ISSN 1473-3307, www. people. exeter. ac. uk/cc371/RePEc/dpapers/DP0302. pdf [Accessed September, 2014].

Guerra, G. and Zizzo, D.J., 2004. Trust responsiveness and beliefs. *Journal of Economic Behavior & Organization*, 55(1), pp.25-30.

Gunnthorsdottir, A. and Rapoport, A., 2006. Embedding social dilemmas in intergroup competition reduces free-riding. *Organizational Behavior and Human Decision Processes*, *101*(2), pp.184-199.

Hasan, N.M.N., 1987. Zakat in Malaysia: Present and Future Status. *IIUM Journal of Economics and Management*, *1*(1), pp.47-75.

Hasan, B. and Mohd-Shahnaz, S., 2005. Kajian terhadap faktor yang mempengaruhi pembayaran zakat perniagaan di kalangan usahawan: Kes kajian Terengganu. In *Seminar Ekonomi and Kewangan Islam Conference Proceedings*.

Harbaugh, W.T., 1998a. What do donations buy?: A model of philanthropy based on prestige and warm glow. *Journal of Public Economics*, 67(2), pp.269-284.

Harbaugh, W.T., 1998b. The prestige motive for making charitable transfers. *The American Economic Review*, *88*(2), pp.277-282.

Harbaugh, W.T., Mayr, U. and Burghart, D.R., 2007. Neural responses to taxation and voluntary giving reveal motives for charitable donations. *Science*, *316*(5831), pp.1622-1625.

Hartley, J.E. and Hartley, J.E., 2002. *The representative agent in macroeconomics*. Routledge.

Havens, J.J., O'Herlihy, M.A. and Schervish, P.G., 2006. Charitable giving: How much, by whom, to what, and how. *The nonprofit sector: A research handbook*, *2*, pp.542-567.

Heinemann, F., Nagel, R. and Ockenfels, P., 2004. The theory of global games on test: experimental analysis of coordination games with public and private information. *Econometrica*, *72*(5), pp.1583-1599.

Hibbert, S. and Horne, S., 1996. Giving to charity: questioning the donor decision process. *Journal of Consumer Marketing*, *13*(2), pp.4-13.

Hibbert, S., Smith, A., Davies, A. and Ireland, F., 2007. Guilt appeals: Persuasion knowledge and charitable giving. *Psychology & Marketing*, *24*(8), pp.723-742.

Hilbe, J.M., 2011. *Negative binomial regression*. Cambridge University Press.

Hoffman, E., McCabe, K., Shachat, K. and Smith, V., 1994. Preferences, property rights, and anonymity in bargaining games. *Games and Economic behavior*, *7*(3), pp.346-380.

Hoffman, E., McCabe, K. and Smith, V.L., 1996. Social distance and other-regarding behavior in dictator games. *The American Economic Review*, *86*(3), pp.653-660.

Holland, P., 1992. *What is a child? Popular images of childhood*. Virago.

Holländer, H., 1990. A social exchange approach to voluntary cooperation. *The American Economic Review*, pp.1157-1167.

Holt, C.A. and Laury, S.K., 2002. Risk aversion and incentive effects. The American Economic Review, 92(5), pp.1644-1655.

Horner, R.H., Carr, E.G., Halle, J., McGee, G., Odom, S. and Wolery, M., 2005. The use of single-subject research to identify evidence-based practice in special education. *Exceptional children*, *71*(2), pp.165-179.

Huda, N., Rini, N., Mardoni, Y. and Putra, P., 2012. The Analysis of Attitudes, Subjective Norms, and Behavioral Control on Muzakki's Intention to Pay Zakah. *International Journal of Business and Social Science*, *3*(22).

Hudayati, A. and Tohirin, A., 2010. Management of Zakah: Centralised vs Decentralised Approach. Abdul Ghafar Ismail Mohd Ezani Mat Hassan Norazman Ismail Shahida Shahimi, p.352.

Hung, I.W. and Wyer Jr, R.S., 2009. Differences in perspective and the influence of charitable appeals: When imagining oneself as the victim is not beneficial. *Journal of Marketing Research*, *46*(3), pp.421-434.

Ida Husna, H., 2009. *Intention to pay zakah on employment income among manufacturing employees in Penang* (Doctoral dissertation, Universiti Utara Malaysia).Iannaccone, L.R., 1988. A formal model of church and sect. *American journal of sociology*, *94*, pp.S241-S268.

ibn Al-Hajjaj, M. and al-Husayn, A., 2000. Sahih Muslim. *Kitab Bhavan, New Delhi. Translated by Abdul Hamid Siddiqui*.

Idris, K.M., 2009. *Gelagat kepatuhan zakat pendapatan penggajian*. Penerbit Universiti Utara Malaysia.

Iqbal, M., 1985. Zakah, moderation, and aggregate consumption in an Islamic economy. *Journal of Research in Islamic Economics*, *3*(1), pp.45-61.

Isaac, R.M. and James, D., 2000. Just who are you calling risk averse?. *Journal of Risk and Uncertainty*, *20*(2), pp.177-187.

Isaac, R.M., Walker, J.M. and Thomas, S.H., 1984. Divergent evidence on free riding: An experimental examination of possible explanations. *Public choice*, *43*(2), pp.113-149.

Isaac, R.M. and Walker, J.M., 1988. Group size effects in public goods provision: The voluntary contributions mechanism. *The Quarterly Journal of Economics*, *103*(1), pp.179-199.

Jacobsson, F., Johannesson, M. and Borgquist, L., 2007. Is altruism paternalistic?. *The Economic Journal*, *117*(520), pp.761-781.

Johnson, E.J. and Goldstein, D., 2003. Medicine. Do defaults save lives?. *Science (New York, NY)*, *302*(5649), pp.1338-1339.

Kahf, M., 1990. Applied Institutional Models for Zakah Collection and Distibution in Islamic Countries and Communities. *Proceedings of the the 3rd Zakah Conference*, Kuala Lumpur.

Kahf, M., 1995. Applied institutional models for Zakah collection and distribution in Islamic countries and communities. *Institutional Framework of Zakah: Dimensions and Implications*. Islamic Development Bank, Islamic Research and Training Institute.

Kahf, M., 1997. Economics of Zakat*, Book of Reading No.2*. Jeddah: Islamic Development Bank.

Kahneman, D., Knetsch, J.L. and Thaler, R.H., 1990. Experimental tests of the endowment effect and the Coase theorem. *Journal of political Economy*, *98*(6), pp.1325-1348.

Kamas, L., Preston, A. and Baum, S., 2008. Altruism in individual and joint-giving decisions: What's gender got to do with it?. *Feminist Economics*, *14*(3), pp.23-50.

Kamil, M.I. (2005). The Role of Intrinsic Motivational Factors on Compliance Behaviour of Zakat on Employment Income. In: (1st ed.) *Isu-isu Kontemporari Zakat di Malaysia*. Melaka: UiTM, pp. 137-170.

Karlan, D., List, J.A. and Shafir, E., 2011. Small matches and charitable giving: Evidence from a natural field experiment. *Journal of Public Economics*, *95*(5), pp.344-350.

Karlan, D. and List, J.A., 2014. How Can Bill and Melinda Gates Increase Other People's Donations to Fund Public Goods?.

Karlan, D. and Wood, D.H., 2017. The effect of effectiveness: Donor response to aid effectiveness in a direct mail fundraising experiment. *Journal of Behavioral and Experimental Economics*, *66*, pp.1-8.

Kazdin, A.E. and Hartmann, D.P., 1978. The simultaneous-treatment design. *Behavior Therapy*, *9*(5), pp.912-922.

Khamis, M.R., Mohd, R., Salleh, A.M. and Nawi, A.S., 2014. Do Religious Practices Influence Compliance Behaviour of Business Zakat among SMEs?. *Journal of Emerging Economies and Islamic Research (JEEIR)*, *2*(2).

Kim, M., 2013. Are charitable giving and religious attendance complements or substitutes? The role of measurement error. *Journal of Policy Analysis and Management*, *32*(2), pp.373-390.

Kirby, K.N. and Maraković, N.N., 1996. Delay-discounting probabilistic rewards: Rates decrease as amounts increase. *Psychonomic bulletin & review*, *3*(1), pp.100-104.

Kirby, K.N., 2000. Instructions for inferring discount rates from choices between immediate and delayed rewards. *Unpublished manuscript, Williams College*.

Korenok, O., Millner, E.L. and Razzolini, L., 2014. Taking, giving, and impure altruism in dictator games. *Experimental Economics*, *17*(3), pp.488-500.

Kőszegi, B. and Rabin, M., 2008. Choices, situations, and happiness. *Journal of Public Economics*, *92*(8), pp.1821-1832.

Kraft, P., Rise, J., Sutton, S. and Røysamb, E., 2005. Perceived difficulty in the theory of planned behaviour: Perceived behavioural control or affective attitude?. *British Journal of Social Psychology*, *44*(3), pp.479-496.

Kurzban, R., McCabe, K., Smith, V.L. and Wilson, B.J., 2001. Incremental commitment and reciprocity in a real-time public goods game. *Personality and Social Psychology Bulletin*, *27*(12), pp.1662-1673.

Kydland, F.E. and Prescott, E.C., 1982. Time to build and aggregate fluctuations. *Econometrica: Journal of the Econometric Society*, pp.1345-1370.

Landry, C.E., Lange, A., List, J.A., Price, M.K. and Rupp, N.G., 2014. Toward an understanding of the economics of charity: Evidence from a field experiment. *The Quarterly Journal of Economics*, *121*(2), pp.747-782.

Lang, P., 1996. *Islam and Politics*. New York.

Laury, S.K. and Taylor, L.O., 2008. Altruism spillovers: Are behaviors in context-free experiments predictive of altruism toward a naturally occurring public good?. *Journal of Economic Behavior & Organization*, *65*(1), pp.9-29.

Lei, V., Noussair, C.N. and Plott, C.R., 2001. Nonspeculative bubbles in experimental asset markets: Lack of common knowledge of rationality vs. actual irrationality. *Econometrica*, *69*(4), pp.831-859.

Ledyard, J., 1995. *Public goods: A survey of experimental research*. In J. Kagel and A.E. Roth (Eds.) Handbook of Experimental Economics, Princeton, NJ

Lee, J., Deck, C., Reyes, J. and Rosen, C., 2008. *Measuring Risk Attitudes Controlling for Personality Traits.* Working Papers 0801, Florida International University, Department of Economics.

Leonard, T.C., 2008. Richard H. Thaler, Cass R. Sunstein, Nudge: Improving decisions about health, wealth, and happiness. *Constitutional Political Economy*, *19*(4), pp.356-360.

Levin, I.P., Schneider, S.L. and Gaeth, G.J., 1998. All frames are not created equal: A typology and critical analysis of framing effects. *Organizational behavior and human decision processes*, *76*(2), pp.149-188.

Li, H. and McDougle, L., 2017. Information Source Reliance and Charitable Giving Decisions. *Nonprofit Management and Leadership*.

Li, W., McDowell, E. and Hu, M., 2012. Effects of financial efficiency and choice to restrict contributions on individual donations. *Accounting Horizons*, *26*(1), pp.111-123.

Li, J. and Riyanto, Y.E., 2017. Category Reporting in Charitable Giving: An Experimental Analysis. Economic Inquiry, 55(1), pp.397-408.

Likert, R., 1932. A technique for the measurement of attitudes. *Archives of psychology*.

Lindahl, W.E. and Conley, A.T., 2002. Literature review: Philanthropic fundraising. *Nonprofit Management and Leadership*, *13*(1), pp.91-112.

Lippman, T. W., 1995. *Understanding Islam: An introduction to the Muslim World*. Middlesex, England: Penguin Books.

List, J.A., 2007. On the interpretation of giving in dictator games. *Journal of Political economy*, 115(3), pp.482-493.

Luccasen, A. and Grossman, P.J., 2014. Warm-Glow Giving in Laboratory Experiments: The Effects of Earned Money, the Option to Take, and Need of Recipient. *Browser Download This Paper*.

Lyons, M. and Passey, A., 2005. Giving australia: Research on philanthropy in australia. *Sydney: University of Technology*.

Lyons, M. and Nivison-Smith, I., 2006. Religion and giving in Australia. *Australian Journal of Social Issues*, *41*(4), pp.419-436.

Majolo, B. and Maréchal, L., 2017. Between-group competition elicits within-group cooperation in children. *Scientific reports*, *7*.

Mannan, M.A., 1986. Islamic Economics: Theory and Practice. *Cambridge: Hodder and Stroughton*.

Manski, C.F., 1993. Identification of endogenous social effects: The reflection problem. *The review of economic studies*, *60*(3), pp.531-542.

Martin, J., 2016. *Spending someone else's money: The impact of inheritances on charitable giving* (Doctoral dissertation, University of South Carolina).

Marx, J.D., 2000. Women and human services giving. *Social Work*, *45*(1), pp.27-38.

Mas-Colell, A., Whinston, M.D. and Green, J.R., 1995. *Microeconomic theory* (Vol. 1). New York: Oxford university press.

Maudoodi, S.A.A., 1986. The meaning of the Quran. Islamic Publications.

Maududi, S.A.A., 1997. The Holy Quran, Translation and Brief Notes with Text.

McKenzie, C.R., Liersch, M.J. and Finkelstein, S.R., 2006. Recommendations implicit in policy defaults. *Psychological Science*, *17*(5), pp.414-420.

Meer, J., 2011. Brother, can you spare a dime? Peer pressure in charitable solicitation. *Journal of Public Economics*, *95*(7), pp.926-941.

Meer, J. and Rosen, H.S., 2011. The ABCs of charitable solicitation. *Journal of Public Economics*, *95*(5), pp.363-371.

Meijer, M.M., 2009. The effects of charity reputation on charitable giving. *Corporate Reputation Review*, *12*(1), pp.33-42.

Mesch, D.J., Brown, M.S., Moore, Z.I. and Hayat, A.D., 2011. Gender differences in charitable giving. International Journal of Nonprofit and Voluntary Sector Marketing, 16(4), pp.342-355.

Mischel, W., 1968. *Personality and Assessment*. New York: Wiley.

Mohsin, M.I.A. and Ismail, M., 2013. Potential of zakat in eliminating riba and eradicating poverty in Muslim countries. *EJBM-Special Issue: Islamic Management and Business*, *5*(11).

Montgomery, J.D., 1996. Contemplations on the economic approach to religious behavior. *The American Economic Review*, *86*(2), pp.443-447.

Morgan, J., 2000. Financing public goods by means of lotteries. *The Review of Economic Studies*, *67*(4), pp.761-784.

Muhammad, S.A. And Saad, R.J., 2016. Impact of Attitude toward Zakat Evasion and Moral Reasoning on Intention to Pay Zakat: A Pilot Study, *International Journal of Research in Business Management (IMPACT: IJRBM),* 4(2), pp. 59-64.

Muda, M., Marzuki, A. and Shaharuddin, A., 2009. Factors influencing individual participation in zakat contribution: exploratory investigation. *Seminar for Islamic Banking and Finance. Kuala Lumpur*: *Islamic University College* of Malaysia (KUIM).

Muñoz-García, F., 2011. Competition for status acquisition in public good games. *Oxford Economic Papers*, 63(3), pp.549-567.

Murphy, J.J., Batmunkh, N., Nilsson, B. and Ray, S., 2015. The impact of social information on the voluntary provision of public goods: A replication study. In *Replication in experimental economics* (pp. 41-50). Emerald Group Publishing Limited.

Nakamoto, Y., 2013. Identifying the warm glow giving in a laboratory experiment.

Nienhaus, V., 2006. Zakat, taxes, and public finance in Islam. *Islam and the Everyday World-Public Policy Dilemmas*, pp.165-192.

Norulazidah, P.H., Omar Ali, D.H. and Myles, G.D., 2010. The consequences of zakat for capital accumulation. *Journal of Public Economic Theory*, *12*(4), pp. 837-856.

Null, C., 2011. Warm glow, information, and inefficient charitable giving. *Journal of Public Economics*, *95*(5), pp.455-465.

Nur Azura, S., Norazlina, A.W. and Nor Fadzlin, M.B., 2005. Gelagat Kepatuhan Pembayaran Zakat Pendapatan: Kajian Kes UUM. Seminar Ekonomi dan Kewangan Islam, *Fakulti Ekonomi, Universiti Utara Malaysia*, 29-30 August, pp. 275-296.

Obaidullah, M. and Manap, T.A.A., 2017. *Behavioral Dimensions of Islamic Philanthropy: The Case of Zakat* (No. 2017-2).

O'Brien, F., 1968. Sequential contrast effects with human subjects. *Journal of the experimental analysis of behavior*, *11*(5), pp.537-542.

O'Dell, L., 2008. Representations of the 'damaged'child:'child saving'in a British children's charity ad campaign. *Children & Society*, *22*(5), pp.383-392.

O'Neill, M., 2009. Public confidence in charitable nonprofits. *Nonprofit and Voluntary Sector Quarterly*, *38*(2), pp.237-269.

Oladimeji Abioye Mustafa, M., Har Sani Mohamad, M. and Akhyar Adnan, M., 2013. Antecedents of zakat payers' trust in an emerging zakat sector: an exploratory study. *Journal of Islamic Accounting and Business Research*, *4*(1), pp.4-25.

Orne, M.T., 1962. On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. American psychologist, 17(11), p.776.

Orzen, H., 2008. *Fundraising through competition: Evidence from the lab* (No. 2008-11). CeDEx discussion paper series.

Ottoni-Wilhelm, M., Vesterlund, L. and Xie, H., 2017. Why do people give? Testing pure and impure altruism. *American Economic Review*, *107*(11), pp.3617-3633.

Oxoby, R.J. and Spraggon, J., 2008. Mine and yours: Property rights in dictator games. *Journal of Economic Behavior & Organization*, 65(3), pp.703-713.

Palfrey, T.R. and Prisbrey, J.E., 1997. Anomalous behavior in public goods experiments: How much and why?. *The American Economic Review*, pp.829-846.

Paloutzian, R.F., Richardson, J.T. and Rambo, L.R., 1999. Religious conversion and personality change. *Journal of personality*, *67*(6), pp.1047-1079.

Park, S., Nam, S. and Lee, J., 2017. Charitable giving, suggestion, and learning from others: Pay-What-You-Want experiments at a coffee shop. *Journal of Behavioral and Experimental Economics*, *66*, pp.16-22.

Parsons, L.M., 2007. The impact of financial information and voluntary disclosures on contributions to not-for-profit organizations. *Behavioral research in accounting*, *19*(1), pp.179-196.

Parsons, L.M. and Trussel, J.M., 2008. Fundamental analysis of not-for-profit financial statements: An examination of financial vulnerability measures. *Research in Government and Nonprofit Accounting*, 12.

Press, S., 2007. *Stata longitudinal/panel data reference manual release 10*. Stata Press.

Puurtinen, M. and Mappes, T., 2009. Between-group competition and human cooperation. *Proceedings of the Royal Society of London B: Biological Sciences*, *276*(1655), pp.355-360.

Qaradawi, Y.A., 1999. Fiqh az-Zakah. *Dar al-Taqwa LTD, London*.

Rahman, A.R.A., 2007. Pre-requisites for effective integration of zakah into mainstream Islamic financial system in Malaysia. *Islamic Economic Studies*, *14*(1/2), pp.91-107.

Rahman, S.M.H., 1980. Zakat: A case for equitable distribution of income and wealth. *Thoughts on Islamic Economics ed. Dacca: Islamic Economics Research Bureau*, pp.94-101.

Randolph, W.C., 1995. Dynamic income, progressive taxes, and the timing of charitable contributions. *Journal of Political Economy*, *103*(4), pp.709-738.

Ranganathan, S.K. and Henley, W.H., 2008. Determinants of charitable donation intentions: a structural equation model. *International Journal of Nonprofit and Voluntary Sector Marketing*, *13*(1), pp.1-11.

Reed, P.B. and Selbee, L.K., 2002, November. Is there a distinctive pattern of values associated with giving and volunteering? The Canadian case. In *32nd ARNOVA conference, Montreal, Canada*.

Reeve, H.K. and Hölldobler, B., 2007. The emergence of a superorganism through intergroup competition. *Proceedings of the National Academy of Sciences*, *104*(23), pp.9736-9740.

Rehman, J. and Ahmedov, A., 2011. Islamic Law of Obligatory Alms (Zakat). A Teaching and Learning Manual. *UK Centre for Legal Education*.

Reiley, D. and Samek, A.S., 2015. *How do Suggested Donations Affect Charitable Gifts? Evidence from a Field Experiment in Public Broadcasting*. CESR-Schaeffer Working Paper No. 2015–031,SSRN, 2015. http://ssrn.com/abstract=2702174. [Accessed 17 March, 2016].

Reinstein, D. and Riener, G., 2009. House money effects on charitable giving: an experiment. Unpubl Work Pap.

Reynaud, A. and Couture, S., 2012. Stability of risk preference measures: results from a field experiment on French farmers. *Theory and decision*, *73*(2), pp.203-221.

Reynolds, G. S., 1968. *A primer of operant conditioning*. Glenview, Ill.: Scott, Foresman

Rondeau, D. and List, J.A., 2008. Matching and challenge gifts to charity: evidence from laboratory and natural field experiments. *Experimental economics*, *11*(3), pp.253-267.

Rondeau, D., Poe, G.L. and Schulze, W.D., 2005. VCM or PPM? A comparison of the performance of two voluntary public goods mechanisms. *Journal of public economics*, *89*(8), pp.1581-1592.

Rooney, P., Brown, E. and Mesch, D., 2007. Who decides in giving to education? A study of charitable giving by married couples. *International Journal of Educational Advancement*, 7(3), pp.229-242.

Ross, L. and Nisbett, R.E., 2011. *The person and the situation: Perspectives of social psychology*. Pinter & Martin Publishers.

Rosenthal, R., 2000. Imaging homelessness and homeless people: Visions and strategies within the movement (s). *Journal of Social Distress and the Homeless*, *9*(2), pp.111-126.

Rothschild, M. and Stiglitz, J., 1976. Equilibrium in competitive insurance markets: An essay on the economics of imperfect information. *The quarterly journal of economics*, pp.629-649.

Rusbult, C.E. and Van Lange, P.A., 2003. Interdependence, interaction, and relationships. *Annual review of psychology*, *54*(1), pp.351-375.

Saad, R.A.J., 2010. *Gelagat Kepatuhan Zakat Perniagaan di Negeri Kedah Darulaman* (Doctoral dissertation, Universiti Utara Malaysia).

Sääksvuori, L., Mappes, T. and Puurtinen, M., 2011. Costly punishment prevails in intergroup conflict. *Proceedings of the Royal Society of London B: Biological Sciences*, p.rspb20110252.

Sabahaddin, Z.A.İ.M., 1993. Recent interpretations of the economic aspects of zakah. *Maliye Araştırma Merkezi Konferansları*, (35).

Sadeq, A.H.M., 1980. Distribution of wealth in Islam. *Hussain, KT vd.,(bsk.), Thoughts on Islamic Economics, C*, *1*, pp.44-93.

Sanusi, N.A., Bahar, M. and Fadzlin, N., 2005. Gelagat kepatuhan pembayaran zakat pendapatan: Kajian kes UUM.

Sapingi, R., Ahmad, N. and Mohamad, M., 2011. A study on zakah of employment income: Factors that influence academics' intention to pay zakah. In *2nd International Conference on Business and Economic Research (2nd ICBER 2011) Proceeding* (pp. 2492-2507)..

Sargeant, A. and Woodliffe, L., 2008. Individual giving behavior: a multidisciplinary review. *The Routledge Companion to Nonprofit Marketing*.

Saxton, G.D. and Wang, L., 2014. The social network effect: The determinants of giving through social media. *Nonprofit and Voluntary Sector Quarterly*, *43*(5), pp.850-868.

Schervish, P.G. and Havens, J.J., 1997. Social participation and charitable giving: A multivariate analysis. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, *8*(3), pp.235-260.

Schimmel, A., 1992. *Islam: an introduction*. SUNY Press.

Schlegelmilch, B.B., Love, A. and Diamantopoulos, A., 1997. Responses to different charity appeals: the impact of donor characteristics on the amount of donations. *European Journal of Marketing*, *31*(8), pp.548-560.

Schnellenbach, J., 2012. The economics of taxing net wealth: A survey of the issues. *Public Finance and Management*, *12*(4), p.368.

Schotter, A. and Sopher, B., 2003. Social learning and coordination conventions in intergenerational games: An experimental study. *Journal of Political Economy*, 111(3), pp.498-529.

Scott, J.C., 1987. Resistance without protest and without organization: peasant opposition to the Islamic Zakat and the Christian Tithe. *Comparative studies in society and history*, *29*(3), pp.417-452.

Searle, S.R., Casella, G. and McCulloch, C.E., 1992. Variance components John Wiley and Sons. *New York, New York, USA*.

Sefton, M., Shupp, R. and Walker, J.M., 2007. The effect of rewards and sanctions in provision of public goods. *Economic inquiry*, *45*(4), pp.671-690.

Sen, A.K., 1977. Rational fools: A critique of the behavioral foundations of economic theory. *Philosophy & Public Affairs*, pp.317-344.

Shang, J. and Croson, R., 2009. A field experiment in charitable contribution: The impact of social information on the voluntary provision of public goods. *The Economic Journal*, *119*(540), pp.1422-1439.

Shearman, S.M. and Yoo, J.H., 2007. "Even a penny will help!": Legitimization of paltry donation and social proof in soliciting donation to a charitable organization. *Communication Research Reports*, *24*(4), pp.271-282.

Shirazi, N.S., 1996. *System of Zakāt in Pakistan: an appraisal*. International Publishing Company.

Siddiqui, M. A., 2009. Determinants of Poverty in Pakistan: Findings from Survey Data 2005. *European J. Social Sci.*, 12(1), 52-64.

Sidman, M., 1960. *Tactics of scientific research: Evaluating experimental data in psychology* (Vol. 5). New York: Basic Books.

Sitzia, S. and Zizzo, D.J., 2011. Does product complexity matter for competition in experimental retail markets?. *Theory and Decision*, 70(1), pp.65-82.

Silvergleid, J.E., 2003. Effects of watchdog organizations on the social capital market. *New Directions for Philanthropic Fundraising*, *2003*(41), pp.7-26.

Small, D.A. and Verrochi, N.M., 2009. The face of need: Facial emotion expression on charity advertisements. *Journal of Marketing Research*, *46*(6), pp.777-787.

Smith, J.R. and McSweeney, A., 2007. Charitable giving: The effectiveness of a revised theory of planned behaviour model in predicting donating intentions and behaviour. *Journal of Community & Applied Social Psychology*, *17*(5), pp.363-386.

Smith, S., Windmeijer, F. and Wright, E., 2015. Peer effects in charitable giving: Evidence from the (running) field. *The Economic Journal*, 125(585), pp.1053-1071.

Soetevent, A.R., 2005. Anonymity in giving in a natural context—a field experiment in 30 churches. *Journal of public Economics*, *89*(11), pp.2301-2323.

Spence, M., 1973. Job market signaling. *The quarterly journal of Economics*, *87*(3), pp.355-374.

Spence, A.M., 1974. *Market signaling: Informational transfer in hiring and related screening processes* (Vol. 143). Harvard Univ Pr.

Staub, E. and Baer, R.S., 1974. Stimulus characteristics of a sufferer and difficulty of escape as determinants of helping. *Journal of Personality and Social Psychology*, *30*(2), p.279.

Sunstein, C. and Thaler, R., 2008. Nudge. *The politics of libertarian paternalism. New Haven*.

Tan, J.H. and Bolle, F., 2007. Team competition and the public goods game. *Economics Letters*, *96*(1), pp.133-139.

Tannenbaum, D. and Ditto, P.H., 2011. Information asymmetries in default options. Unpublished Working Paper). Retrieved from http://home. uchicago. edu/davetannenbaum/documents/default% 20information, 2

Thaler, R.H., 2015. *Misbehaving: The making of behavioral economics*. WW Norton & Company.

Thornton, G., 2008. *Take a fresh look at some of the Not for Profit issues currently affecting the sector: Grant Thornton Not for Profit survey 2007/2008*, viewed 8 September 2016, http://www.grantthornton.co.ng/Assets/documents/pubseminars/NFP-Survey2007-2008.pdf

Tinkelman, D. and Mankaney, K., 2007. When is administrative efficiency associated with charitable donations?. *Nonprofit and Voluntary Sector Quarterly*, *36*(1), pp.41-64.

Trussel, J.M. and Parsons, L.M., 2007. Financial reporting factors affecting donations to charitable organizations. *Advances in Accounting*, *23*, pp.263-285.

Ulman, J.D. and Sulzer-Azaroff, B., 1975. Multielement baseline design in educational research. *Behavior analysis: Areas of research and application*, pp.377-391.

United Nations. Statistical Division, 2008. *Designing household survey samples: practical guidelines* (Vol. 98). United Nations Publications.

Van Diepen, M., Donkers, B. and Franses, P.H., 2009. Does irritation induced by charitable direct mailings reduce donations?. *International journal of research in marketing*, *26*(3), pp.180-188.

Van Lange, P.A., De Cremer, D., Van Dijk, E. and Van Vugt, M., 2007. Self-interest and beyond. *Social psychology: Handbook of basic principles*, pp.540-561.

Van Lange, P.A., Bekkers, R., Schuyt, T.N. and Vugt, M.V., 2007. From games to giving: Social value orientation predicts donations to noble causes. *Basic and Applied Social Psychology*, *29*(4), pp.375-384.

Van Slyke, D.M. and Brooks, A.C., 2005. Why do people give? New evidence and strategies for nonprofit managers. *The American Review of Public Administration*, 35(3), pp.199-222.

Vesterlund, L., 2003. The informational value of sequential fundraising. *Journal of Public Economics*, *87*(3), pp.627-657.

Vesterlund, L., 2016. Using Experimental Methods to Understand Why and How We Give to Charity. *Handbook of Experimental Economics*, *2*, pp.91-151.

Wahid, H. and Kader, R.A., 2010. Localization of Malaysian zakat distribution: Perceptions of amil and zakat recipients. *Bangi, Malaysia, sn*, pp.461-484.

Waite, W.W. and Osborne, J.G., 1972. Sustained behavioral contrast in children. *Journal of the experimental analysis of behavior*, *18*(1), pp.113-117.

Wang, T., Brownstein, R. and Katzev, R., 1989. Promoting charitable behaviour with compliance techniques. *Applied Psychology*, *38*(2), pp.165-183.

Weale, M., 2010. *Taxation of Wealth and Wealth Transfers: Commentary by Martin Weale; Dimensions of Tax Design: The Mirrlees Review*. Oxford University Press for the Institute for Fiscal Studies.

West, S.A., Gardner, A., Shuker, D.M., Reynolds, T., Burton-Chellow, M., Sykes, E.M., Guinnee, M.A. and Griffin, A.S., 2006. Cooperation and the scale of competition in humans. *Current Biology*, *16*(11), pp.1103-1106.

West, S.A., Griffin, A.S. and Gardner, A., 2007. Social semantics: altruism, cooperation, mutualism, strong reciprocity and group selection. *Journal of evolutionary biology*, *20*(2), pp.415-432.

Weyant, J.M. and Smith, S.L., 1987. Getting More by Asking for Less: The Effects of Request Size on Donations of Charity1. *Journal of Applied Social Psychology*, *17*(4), pp.392-400.

Wiepking, P. 2008. For the Love of Mankind. A Sociological Study on Charitable Giving. *PhD Dissertation Department of Philanthropic Studies*. VU University Amsterdam: Amsterdam, the Netherlands.

Wiepking, P. and Maas, I., 2009. Resources that make you generous: Effects of social and human resources on charitable giving. *Social Forces*, *87*(4), pp.1973-1995.

Wiepking, P. and Bekkers, R., 2012. Who gives? A literature review of predictors of charitable giving. Part Two: Gender, family composition and income. *Voluntary Sector Review*, *3*(2), pp.217-245.

Wilhelm, M.O. and Bekkers, R., 2010. Helping behavior, dispositional empathic concern, and the principle of care. *Social Psychology Quarterly*, *73*(1), pp.11-32.

Wilhelm, M.O., Rooney, P.M. and Tempel, E.R., 2007. Changes in religious giving reflect changes in involvement: Age and cohort effects in religious giving, secular giving, and attendance. *Journal for the Scientific Study of Religion*, *46*(2), pp.217-232.

Williams, K.D. and Williams, K.B., 1989. Impact of source strength on two compliance techniques. *Basic and Applied Social Psychology*, *10*(2), pp.149-159.

Wilson, C., 1977. A model of insurance markets with incomplete information. *Journal of Economic theory*, *16*(2), pp.167-207.

Wilson, J. (2009). Give and take. *Consumer*, 488, pp.18-20.

Wooldridge, J.M., 2010. *Econometric analysis of cross section and panel data*. MIT press.

Yörük, B.K., 2009. How responsive are charitable donors to requests to give?. *Journal of Public Economics*, *93*(9), pp.1111-1117.

Yörük, B.K., 2016. Charity ratings. *Journal of Economics & Management Strategy*, *25*(1), pp.195-219.

Zainol, B. and Kamil, M.I., 2007. The role of attitude and subjective norm on intention to comply zakat on employment income. *IkaZ International Journal of Zakat*, *1*(1), pp.113-134.

Zagefka, H. and James, T., 2015. The psychology of charitable donations to disaster victims and beyond. *Social Issues and Policy Review*, *9*(1), pp.155-192.

Zaman, R., 1980. Policy Implications of Introducing Zakah into Bangladesh and into Saudi Arabial. *Some Aspects of the Economics of Zakat by Zaman, MR, Ed., Indiana: American Trust Publications*.

Zayas, F.G., 2003. *The Law and Institution of Zakat*. *Kuala Lumpur: The Other Press*.

Zelmer, J., 2003. Linear public goods experiments: A meta-analysis. *Experimental Economics*, *6*(3), pp.299-310.

Zuhayly, W., 2008. Zakat: Kajian Berbagai Mazahab, diterjemahkan Agus Effendy. *Remaja Rosdakarya, Bandung*.