Organ Donation Shortage – Can Rewards Help Out?

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Abstract

For decades economic literature has examined the shortage in donated cadaveric organs prevalent all over the world. We take an attempt at finding a solution by taking advantage of the special design of the organ donor card in Germany, with which one can both affirm and dissent organ donation. We conducted an experiment in order to assess the efficacy of monetary and non-monetary incentives in motivating people to fill in the German organ donor card and in increasing the number of organ donors. In the first treatment people were asked whether they would be willing to fill out an officially valid organ donor card without any external incentives. In treatments two and three individuals were offered 10€ in cash or a donation to charity of 10€ in exchange for filling out the card, respectively. We find that a monetary incentive can significantly increase both the number of filled in organ donor cards and the number of organ donors, whereas a payment to charity cannot. The charity incentive even results in slightly less organ donors than the no-reward scenario. This might follow the theory of moral licensing, which says that good actions can free us to do something bad.

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1. Introduction

With the introduction of immunosuppressive drugs, which prevent transplanted organs from being rejected, the number of organ transplants began to grow rapidly during the 1970s (Becker & Elías, 2007). However, there is still a great shortage of available organs for transplantation. Cadaveric organ donation (hereinafter referred to as "organ donation") is therefore an important topic for society, albeit considered unpleasing by some individuals. Not least due to its sensitivity, the topic of organ donation does not emerge in the daily routine. This in turn leads to a lack of information about organ donations for large parts of society. Often people are not even aware of the actual functionality of the organ donation system employed in their own home country. While countries such as Germany, Switzerland or the U.S. employ different versions of opt-in systems, meaning that people have to indicate their willingness to donate organs after death, other countries like Spain or Portugal apply opt-out systems, in which every citizen is considered an organ donor unless explicitly indicated otherwise. These systems have a great impact on the overall ratio of organ donors in a population. As reported by the German Organ Transplantation Foundation (DSO), in 2012 Germany had about 12.8 donors per one million inhabitants, whereas Spain counted roughly 32 donors (DSO, 2012). Most importantly however is that none of the countries in the world can claim to have found equilibrium between the supply and demand of organ donations, although Spain, as the leader in this field, comes closest to a sufficient supply of organ donors (Statista, 2013a).

In Germany about 11,300 people are currently waiting for organ transplantations and on average about three persons die each day because they do not get a new organ in time (Sueddeutsche, 2013). The topic of organ donations has received special attention in Germany in recent years. This is because information about severe irregularities in the procedure of assigning organs became public in 2012. It turned out that doctors had intentionally forged certain patient documents in order to influence the otherwise centrally administered distribution of organs. Since this has been widely perceived as a scandalous procedure, the German organ donation system has lost credibility and trust among the German population. This has probably contributed to the recent reduction in the number of organ donors so that in 2012 Germany experienced a considerable decrease in the absolute number of organ donors to 1046, whereas in 2011 there had been 1200 donors, accounting for a decrease of almost 13% (see Figure 1).

In light of this generally large gap between supply and demand in organ donations, recent literature has discussed the characteristics of different organ donation systems (Abadie & Gay, 2006; Atwood et al., 2012). Some authors have focused on investigating potential ways to overcome the supply shortage in organ transplants (Howard, 2007; Wellington & Sayre, 2011; Burkell et al., 2013). However, mainly due to ethical reasons, only a few of these studies have actually employed an experimental setting.

Figure 1. Development of Number of Organ Donors in Germany
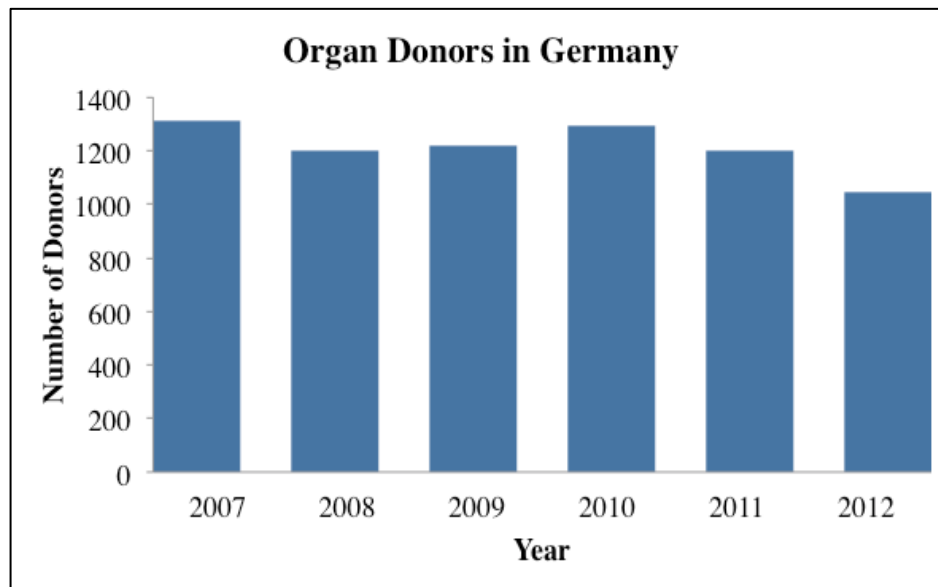
Source: Statista, 2013b

The aim of our work is to find out about ways to increase the number of people who fill in the organ donor card and ultimately become organ donors. This paper contributes to the current literature by taking advantage of two special characteristics of the German organ donation system in order to experimentally test what types of intervention can increase the willingness to fill in an organ donor card. First, there is no central entity registering the citizens' preference on organ donation. This means that the organ donor card is the only medium that depicts an individual's decision with respect to organ donation after death. Second, the German organ donor card leaves the option to indicate the unwillingness to donate organs. As an underlying rationale for this study, the following research questions will be investigated:

I.   *Do external incentives have a positive impact on people's willingness to fill out an organ donor card?*

II. *Do external incentives have an influence on the answer option chosen among the individuals who decided to fill out an organ donor card?*

III. *Can external incentives increase the overall number of organ donors?*

Hence, in light of the decreasing number of organ donors, our study assesses ways to increase the willingness to donate among individuals on a larger scale. Moreover, different behavioural economic effects are assumed to have an influence on the actual decision whether to become an organ donor or not. As such, among others this paper discusses the effects of moral self-regulation and altruism in the setting of organ donations (Elster, 1990; Fehr & Fischbacher, 2002; Sachdeva et al., 2009).

In our opinion, the only way to come up with valid results is to conduct an experiment in the course of which individuals have to make a real life decision rather than just answering hypothetical survey questions. Therefore we carried out an experiment among German universities. In doing so this study adds considerable value to the current literature in various ways. It has been argued that using experimental data is necessary in order to find reliable effects on such sensitive topics, as survey responses have led to very different results so far (Barnett & Kaserman, 2002; Wellington & Whitmire, 2007). Since only experiments can assure randomization and thus guarantee a high degree of internal validity, conducting an experiment in the ethically highly sensitive realm of organ donations adds new value to the current literature. Another reason as to why an experiment leads to more well-informed implications is that survey data might suffer from a non-randomized hypothetical bias, which means that individuals tend to overestimate the actual value of a good (Murphy et al., 2005).

In order to isolate the hypothesized effects the subjects were randomly assigned to three different treatment groups. In the first group (hereinafter referred to as "control treatment") subjects were given the opportunity to fill in an organ donor card without any compensation offered in exchange. In the second group (hereinafter referred to as "money treatment") subjects were offered 10€ in exchange for filling in the organ donor card, irrespective of what they indicated on that organ donor card, as the card offers several options. One of them is, that individuals can dissent organ donation. In the third treatment group (hereinafter referred to as "charity treatment") subjects were promised that 10€ would be donated to the non-profit, humanitarian institution Red Cross if they decided to fill out the donor card, again irrespective of their actual choice. This special feature of being able to dissent organ donation on the German donor card actually paved the way to conduct this experiment, as the Transplantation Law from 1997 prohibits offering incentives for an actual donation of organs in Germany.

As a result, cash incentives positively affect the fraction of filled in donor cards, whereas a charity incentive does not impact the willingness to fill out the card. Among those individuals who fill in the card we moreover find that a monetary incentive does not impact the fraction of individuals who choose to become an organ donor. The charity incentive significantly reduces this respective fraction compared to the control treatment. In turn, among the same participants the fraction of individuals who declare their unwillingness to donate increases significantly for the charity incentive. Overall, we observe that the monetary incentive significantly increases the number of organ donors, whereas the charity incentive decreases this number, albeit not statistically significantly.

In the following section this paper is set in the context of relevant literature on this topic. Subsequently, Section 3 describes the German organ donation system. The experimental design is outlined in Section 4. Section 5 explains the tested hypotheses. Section 6 describes the statistical tests used in order to uncover possible effects. The results are presented in Section 7 and subsequently discussed in Section 8. Section 9 concludes.

2. Study in the Context of Relevant Literature

As mentioned earlier, recent literature about organ donations has mainly focused on ways to encourage the donation of organs in order to close the gap between supply and demand of organ transplants. As Wellington & Sayre (2011) pointed out, different approaches in order to increase the number of organ donations have been proposed. Among others they mentioned changes in laws, increased funds for education, and implementation of "best practices" in terms of approaching the family of the deceased or financial incentives (ibid).

Some literature has focused on comparing opt-in with opt-out systems in terms of organ supply. Abadie & Gay (2006) came up with a data set of more than 20 countries over a 10-year-period on organ donation rates and factors affecting these rates. Their most important finding is that in presumed consent countries organ donation rates are on average 25-30% higher. Presumed consent thereby refers to a system in which every individual is classified as an organ donor as long as she does not explicitly oppose to donation before death (ibid). With their findings they confirmed a theory set up earlier by Johnson & Goldstein (2003) who had hypothesized that consent rates would be higher in presumed consent countries as many citizens would not bother to incur the costs of opting out. This is in line with the "status quo bias" that has been discovered by Samuelson & Zeckhauser (1988) more than two decades ago. They confronted individuals with a hypothetical choice task, once with no defined status quo and once with one of the options already set as status quo. They found that an alternative became more popular when it was set as the status quo and that the status quo bias depends positively on the number of alternatives (ibid). The status quo bias has been examined in more detail by various literatures in subsequent years (Hartman et al., 1991; Kahneman et al., 1991; Anderson, 2003; Kempf & Ruenzi, 2006; Cesarini et al., 2012). In contrast to examining the effect of switching to a different system, Howard (2007) looked at how the supply in donated organs could be increased within the confines of the respective current system. He concluded that quality improvement programs, public and professional education and policies to encourage the use of organs from marginal donors are most promising. By the latter he referred to older donors or even donors with a history of diabetes or hypertension (ibid).

Moreover, a potential market for organs has been evaluated, although with very different results. Already in 1992 Barnett, Blair & Kaserman argued that a market-based organ procurement system is superior to any other as it would address both the issues of potential donors refusing to donate and that of them never being asked. According to the authors the latter is the main cause for the organ shortages and altruistic systems cannot solve the issue (ibid). Ten years later, Kaserman & Barnett (2002) estimated the equilibrium price for a cadaveric kidney in 1996 at below 600$. Including living donors, they even ended up with only 50$ (ibid). Wellington & Whitmire (2007) suggested that these results might suffer from a hypothetical bias as Kaserman & Barnett had based their estimation on a survey of less than 400 undergraduate students. Wellington & Whitmire themselves estimated an equilibrium price of almost 150,000$ when allowing living donors to enter the market, also using survey results of slightly more than 400 individuals. Due to this huge spread in the results they called into question whether surveys are an adequate means when working on such sensitive topics,

and moreover they came to the conclusion that a market is barely capable of cutting the shortage of kidneys for transplantation (ibid).

A lot of literature has discussed financial incentives for organ donations. A general problem with monetary incentives has been found by Titmuss (1970) in his book *"The Gift Relationship"*. He claimed that intrinsic motivation could potentially be decreased by the provision of extrinsic forms of incentives ("crowding out"). Subsequently, many studies could confirm the results of Titmuss.

As such, Frey & Oberholzer-Gee (1997) affirmed Titmuss's theory when they conducted in-person interviews at several households in two Swiss communities where the government intended to build two repositories to store nuclear waste. When these citizens were asked whether they would accept the construction of these facilities if they were provided monetary compensation, the level of acceptance dropped significantly compared to when no compensation was offered (ibid).

Gneezy & Rustichini (2000a) found that the number of late-coming parents increased when they introduced a fine for being late in their field study of a group of day-care centres in Israel. In a different paper in that same year they could observe similar phenomena for two different experiments in Israel (Gneezy & Rustichini, 2000b). First, when they promised children who went from house to house to collect monetary donations for a good cause that they would get one percent of the total amount collected, they saw the total amount collected shrink in comparison to a group of children that was not promised any such financial reward for collecting money. Second, when they rewarded students of the University of Haifa with a small amount of money for each question of an IQ test that was answered correctly (in addition to a fixed reward for participation), they observed that these students performed worse than their peers who were only paid out the participation reward (ibid).

In the procedure of blood donations, a closely related setting to organ donation, Mellström & Johannesson (2008) could partly confirm the crowding out effect by Titmuss. They found that in the blood donation setting the effect holds for women and could be alleviated by allowing the subjects to donate the monetary incentive to charity. On the other hand, Lacetera et al. (2012) found an increase in blood donations in the US when they offered monetary incentives. However, in contrast to Mellström & Johannesson (2008), the study by Lacetera et al. (2012) used gift cards instead of cash. Due to different preferences for gift cards versus cash among individuals one has therefore to be cautious when comparing those two results. Moreover, Lacetera et al. point to the fact that a substantial proportion of the increase in blood donations came from donors of neighbouring communities where no monetary incentive was offered for blood donation and who might have donated in their community otherwise. Hence, they emphasize that it is important to take such substitution effects into account when assessing the efficacy of monetary incentives (ibid).

Costa-Font et al. (2013) used the data from a survey of 15 European countries in 2002 in order to examine the relationship between different types of incentives and the likelihood of

donating blood. They also confirmed the crowding out effect as they found a negative association between being in favour of monetary rewards for blood donation and the likelihood of having donated blood. Based on their findings they came to the conclusion that non-monetary rewards might be the more suitable type of incentive. In line with that, Schwindt & Vining (1998) had earlier argued in favour of setting up "mutual insurance pools" which would give priority on organ waiting lists to those individuals that had previously registered as organ donors themselves.

Byrne & Thompson (2001) have identified reasons for the perverse responses to monetary incentives. They came to the conclusion that financial incentives, be they paid out as a reward for registration or donation itself, distort the signal that registration makes, which might result in a lowered willingness to engage in organ donation. According to them the only way to overcome the negative effect of financial incentives would be to grant full autonomy to registered donors and to make the registration as donor or non-donor mandatory for everyone. This would not necessarily increase organ donations in response to financial incentives, but it would serve to eliminate its negative effect. Moreover, they argued in favour of financial rewards being paid out posthumously to the family of the deceased. If paid upon registration, individuals might only register as organ donors in order to get the promised financial reward and subsequently dissent organ donation. On the other hand, if such a subsequent change would not be possible after registration this would lead to a moral dilemma for physicians, who might take organs from people whose most recent wish is not to become an organ donor (ibid).

However, in almost all countries financial compensation for organ transplants is prohibited. Therefore, this paper offers financial incentives only for filling out the organ donor card rather than for stating the effective willingness to donate. The design of the German organ donor card leaves the possibility to deny organ donation or to pass the decision over to a person of choice. By that, it is in the scope of ethical and social norms to conduct this type of experiment.

Next to financial incentives, personal values have been found as being influencing factors on individuals' willingness to donate organs (Ryckman et al., 2009). In a study in the Netherlands it has been found that values of social conformity are especially positively correlated with the intention to become an organ donor (ibid). Another study among Dutch adolescents revealed social outcome expectations, negative outcome beliefs, anxiety, positive outcome beliefs and involvement with organ donation as key to their intention to register as organ donors – the negative outcome beliefs being the strongest factor (Reubsaet et al., 2001). By "negative outcome beliefs" the authors refer to negative outcomes that people believe might be the result of them registering as organ donors. An example would be that registering as organ donor comes with the risk that these organs might end up being traded. Other scientists have also stated the fact that more weight is attached to negative than to positive outcome beliefs (Parisi & Katz, 1986; Cacioppo & Gardner, 1993; Skowronski, 1997; Brug et al., 2000). Skowronski (1997) conducted two separate studies at Ohio State University at Newark and found that donation-unfavourable attitudes and beliefs discriminate more

strongly among those groups of individuals who differ in organ donation willingness than donation-favourable attitudes and beliefs. He claimed that individuals who are unwilling to sign an organ donor card maintain this unwillingness due to negatives associated with organ donation, like for instance concerns about undesirable recipients of their organs (ibid). In a school-based cross-sectional survey among Dutch adolescents Brug et al. (2000) also found that negative outcome expectancies are the strongest predictor of the willingness to register as an organ donor of all assessed possible determinants of organ donation registration. In their opinion the registration as an organ donor is determined by the absence of negative, rather than the presence of positive outcome expectancies (ibid).

Moreover, previous studies have come to the conclusion that a lack of knowledge and an information deficit can be a major obstacle to organ donation and suggested to inform citizens more properly about organ donation in order to increase the willingness to donate organs (Horton & Horton, 1990; Exley et al., 1996; Wesslau et al., 2007). Horton & Horton (1990) claimed in their study that there are considerable knowledge barriers that prevent large parts of the population from becoming organ donors. They mainly mentioned a wrong understanding of brain death, wrong opinions about religious support of organ donation and the individual's fear that their death might be determined prematurely or even be hastened once doctors realize they had agreed to engage in organ donation after death. Reubsaet et al. (2001) noticed that the more correct knowledge an individual had the more she was ready to register as an organ donor. In that sense, the findings by Reubsaet et al. have been consistent with a so-called "learning-hierarchy" decision making model, which says that knowledge causes attitude, which itself may cause the willingness to donate and eventually results in the registration as an organ donor (Horton & Horton, 1990). Wesslau et al. (2007) therefore suggested including the topic of organ donation in the school curriculum in order to raise the necessary awareness.

In a recent study Burkell et al. (2013) investigated reciprocity systems under which some degree of priority is offered to registered donors who require an organ transplant. However, they found mixed evidence, arguing that people who are in favour of donations rate the reciprocity system more positively than people who are still undecided, as the latter have doubts regarding the enforcement of reciprocity. Thus, they concluded that people are more convinced of the efficacy than the fairness of a reciprocity system.

Moreover, Horton & Horton (1991) and Skowronski (1997) found that pro-social actions like blood donations and organ transplants are regarded as being motivated by altruism. However, it has been discovered that, despite being the most valuable form of blood donation, 0-negative blood donors did not donate more frequently than did their counterparts with different blood groups, even though pure altruism would have suggested so. Wildman & Hollingsworth (2009) assumed that individuals are motivated by social duty rather than pure altruism. Another view proposed that altruistic behaviour might be induced by an internal balancing of moral self-worth (Sachdeva et al., 2009). In three experiments the authors investigated the phenomena of moral cleansing and moral licensing, which are both part of a concept called moral self-regulation. In that concept people's self-worth is influenced by how morally they perceive they have behaved in the past. Furthermore, people are thought of as

having a moral equilibrium, which is the degree of people's self-worth they always strive to achieve. Related to that, moral cleansing describes a situation where people engage in moral behaviour in order to compensate for past immoral behaviour. Moral licensing on the other hand means that people do not have sufficient reason to engage in a moral action once they have established their reputation as a moral person (ibid).

Confirming these two concepts, Branas-Garza et al. (2013) found a negative correlation between past and future giving behaviour in a dictator game. By those self-regulating actions people try to close the gap between their moral equilibrium and their current level of moral self-worth. In the scope of our paper, moral cleansing and especially moral licensing are further investigated in light of the pro-social action of donating organs. So far, moral licensing effects have been shown in other domains. As such, Khan & Dhar (2006) found that people are more likely to buy a luxury good after they have been asked to imagine that they have volunteered to spend time doing community service. Another paper confirmed the hypothesis that endorsing Barack Obama during the presidential election made individuals subsequently more likely to favour Whites over Blacks (Effron et al., 2009). In congruence with Monin and Miller's paper from 2001 they said that endorsing Obama granted these people moral credentials, which in turn reduced their concern with appearing prejudiced (ibid). Moreover, Klotz & Bolino (2013) found that organizational citizenship behaviour might lead to subsequent counterproductive work behaviour by employees. Furthermore, by conducting a controlled field experiment among households, Tiefenbeck et al. (2013) discovered that moral licensing does also take place in the context of daily energy and water consumption. The study investigated the impact of a water conservation campaign on electricity consumption. The authors observed that the households who received weekly feedback on their water consumption lowered their water use, but simultaneously they increased their electricity consumption. They concluded that moral licensing can more than offset the benefits of focused energy efficiency campaigns at least in the short-term (ibid).

Our study contributes to the current literature by first investigating if extrinsic incentives (10€ in cash or a 10€ payment to charity) increase the willingness to fill out the organ donor card. Second, once a card has been filled out it is tested if the actual answer choices differ between the no incentive treatment and one of the incentive treatments, respectively. Through this, altruism and reciprocity as well as self-regulation effects are taken into account. Third, this study contributes by looking at the overall success of extrinsic motivation on gaining new organ donors in Germany.

3. Organ Donation in Germany

Germany's organ donation procedure is primarily organized by *Eurotransplant*, an organization responsible for the mediation between donor and recipient of donated organs in eight European countries. All organs that are donated in Germany will be registered with *Eurotransplant*, which in turn will allocate the respective organ to the recipient of highest need among the eight member states (Austria, Belgium, Croatia, Germany, Hungary,

Luxembourg, The Netherlands, and Slovenia). This means that the organ donor can by no means specify or determine who the recipient of its donated organs will be at the end. Only in special cases and with the approval of *Eurotransplant*, local German transplantation centres will be allowed to allocate organs themselves. This regulation was taken advantage of by some physicians in the above-portrayed scandal in Germany in 2012.

Since 1997 there exists the German Transplantation Law, which among other things defines the judicial and medical preconditions for organ donations and rules out any form of market or trade of organs and tissues. The easiest way to become an organ donor is to fill out the organ donor card (see Appendix A). It can simply be downloaded, printed and filled out. Additionally it can be acquired for free at different health-related institutions. The organ donor card is supposed to be carried around with other documents like an ID, so that it can be found easily after death. It is important to note that filling out the donor card does not automatically imply being an organ donor. The card leaves the following possibilities:

Option A: Donating all organs/tissues that can be of any use
(„Ja, ich gestatte, dass nach der ärztlichen Feststellung meines Todes meinem Körper Organe und Gewebe entnommen werden")

Option B: Donating all organs/tissues that can be of any use except for *[xyz]*
("Ja, ich gestatte dies, mit Ausnahme folgender Organe/Gewebe:")

Option C: Donating only the organs/tissues *[xyz]*
("Ja, ich gestatte dies, jedoch nur für folgende Organe/Gewebe")

Option D: Donating neither organs nor tissues
("Nein, ich widerspreche einer Entnahme von Organen oder Geweben")

Option E: Handing over the decision to person *[xyz]*
("Über JA oder NEIN soll dann folgende Person entscheiden:")

The organ donor card is therefore a means of signalling the willingness to donate and it is the clearest way to express one's wish regarding organ donation. An alternative way would be to orally express one's preferences to close relatives. In case neither of the two has happened during lifetime, relatives are supposed to decide according to the presumed will of the deceased. If this is impossible to identify for the relatives, they are supposed to decide based on their own opinion. This in turn leads to a refusal rate by family members of 73%, which is mainly due to the fact that up to 90% of the relatives do not know about the deceased's will (Wesslau et al., 2007). It is important to understand that there is no central entity in Germany that registers an individual's willingness to engage in organ donation. Hence, filling out the organ donor card is the safest and quickest way to communicate one's preference. The lack of any central register also means that individuals can change their opinion easily at any time by getting a new organ donor card and throwing the previous card away.

The question of how many people in Germany are carrying an organ donor card is very difficult to answer and all numbers given by different entities are no more than estimations. In 2011, the German Organ Transplantation Foundation (DSO) estimated that approximately 20% of the entire population carried an organ donor card (DSO, 2011). In light of the organ transplantation scandal in mid-2012 and the low number of organ donations in Germany, the government reacted by passing a new law on November 1st 2012 ("Law for Regulation of Decisional Solutions in the Transplantation Law"). This step aimed at significantly increasing the population's willingness to engage in organ donation. First, the law obliges all German health insurance companies to send out both information about organ donation and the organ donor card itself to their customers in order to confront them with the topic. Within the last year the *Techniker Krankenkasse* (TK)*,* the second largest public health insurance company in Germany, sent out roughly 7,500,000 organ donor cards together with information material to its clients (Techniker Krankenkasse, 2013). As the TK was among the first health insurance companies to comply with the law, the success of this measure is still hard to determine. In March 2013, a couple of months after the majority of its clients had received mail, the TK claimed that it was successful as - compared to the overall country's average - TK-clients were ten percentage points more likely to have filled out an organ donor card (Wegener, 2013). Second, a new campaign was started by the Federal Ministry of Health in order to increase awareness of the topic among the German population. It includes television and cinema spots as well as posters, all featuring German celebrities presenting their organ donor card.

4. Experimental Design

In the following we will explain the experimental treatments. Thereafter, we will elaborate on the subjects participating in our experiment. Finally, we will thoroughly outline the procedure of the experiment. However, first recall our underlying research questions:

I.   *Do external incentives have a positive impact on people's willingness to fill out an organ donor card?*

II. *Do external incentives have an influence on the answer option chosen among the individuals who decided to fill out an organ donor card?*

III. *Can external incentives increase the overall number of organ donors?*

4.1 Experimental Treatments

In the course of this experiment three different treatments were carried out: the control treatment, the money treatment and the charity treatment. In treatment group one (control treatment) individuals were simply asked whether they would be willing to fill out the organ donor card in the course of this experiment. No external incentives of any kind were offered in exchange. In treatment group two (money treatment) individuals were asked the exact same question as the participants in treatment group one, but they were offered 10€ in cash in

exchange for filling out the card, regardless of which answer option they would choose. In treatment group three (charity treatment) subjects were also asked the exact same question as the individuals in treatment groups one and two, but the incentive provided was different. In exchange for filling out the organ donor card 10€ was transferred to the German Red Cross (a non-profit, humanitarian charity institution), again independently of the answer option chosen by the participant.

It is important to note that the experimental setting rewards filling out the donor card and not choosing one specific option. The latter would not only give rise to serious moral concerns, but it would also hurt prevailing German law as any positive commitment to organ donation must not have happened in exchange for money. Hence, individuals choosing *Option D* (not willing to donate organs) did also receive the respective external incentive. This might seem counterintuitive at a first glance, but there is a reasonable logic behind it. Filling out the organ donor card – regardless of the option chosen – is of significant value to society in itself for two major reasons. First, the process of determining the deceased's will is accelerated, which saves time and thus costs. Second, a very difficult and unpleasant decision is taken away from relatives if the deceased has clearly stated her preference on the organ donor card.

In all of the treatments the subjects were aware that they were taking a real life decision, not a hypothetical one. They were told that the organ donor card would be valid from the moment they sign it in case they decided to fill out the card.

4.2 Subjects

The experiment was performed at four different German universities: the universities of Cologne, Duesseldorf, Frankfurt/Main, and Mannheim. These universities were chosen in order to avoid potential biases related to the geographical concentration of subjects or to the different academic focus of each university. All of the four universities are public.

All subjects were informed about this experiment via email a couple of days prior to the first session. The email contained a link with which they could sign up for the event. At all four universities the information text about this experiment was exactly the same. It provided information about the place and time of the different experimental sessions and how one could sign up for a specific session. Moreover, it said that every participant would earn at least 5€ for participation with the randomly allocated opportunity to gain another 10€. Furthermore we announced that the duration of the experiment would be at most 45 minutes. No information about the content of the experiment was provided – this was in order to avoid any severe selection bias. At each university the experiment was conducted in up to six sessions a day with every treatment present and randomly allocated to the participants in each of the sessions. Moreover, the experiment was conducted at most for three days in a row at each university. On the one hand, this was to ensure that sufficient data could be gathered. On the other hand, the focus was on minimizing the possibility that the content of the experiment would leak over time to other possible participants. For this reason the latest possible sign-up time at each university was set prior to the first session at this university. That way the

unlikely case of anyone signing up only because they had previously heard about the content of the experiment was prevented.

The vast majority of participants were students. This is common practice in behavioural economic studies, but one has to keep in mind how this influences the external validity of our study. We believe that our sample reflects the student population at each of the respective universities. Although we do not have any data about the average values of for instance age, subjects or gender of the overall student population of the different universities, we believe that our sample can be considered representative. Also when looking at the data we gathered about the individuals we cannot find any outstanding characteristics. Still, it is not possible for us to rule out any selection bias with absolute certainty. Among the participants of University of Mannheim there is a comparably large group of students with a business background, but this is not surprising as University of Mannheim is quite a small university with a focus on business and economic studies. Some of the individuals participating in our experiments had earlier agreed on receiving mails informing them about upcoming experiments. One might argue that these students are slightly more attentive than the average student as they had heard about the existence of such experiments at their university before. They might even be more prone to reacting to monetary incentives as such experiments usually come with some form of monetary reward. Even though there is no clear indication that this might be true, it is impossible to disprove it.

We also believe that our study sample represents the overall German student population to a large extent. To the best of our knowledge there is no clear selection bias evident that would make the students participating in our study unrepresentative in any way. Some might claim that the universities were not perfectly representative of Germany from a geographic point of view. However, there is no clear reasoning for why the geographic location should have an influence on the students' behaviour, especially because it is very common in Germany to move away from home for studying purposes. Moreover, the four universities we picked are located in three different states ("Bundesland") and the responding behaviour was not significantly different across the four different universities according to our data.

The transferability of the experiments' results to the entire German population is limited. The reason for that is twofold. First, as mentioned previously students are generally regarded as being scarce on money. This might make them more prone to monetary incentives than large parts of the German population. Second, they are more highly educated than the majority of the German population, which might have an influence on the respondents' behaviour. One has to keep these characteristics in mind when making inferences from this study. Nevertheless, for the very practical reason that students are more easily accessible on a large scale than other groups of society, this limitation in the external validity of the data is very common among behavioural economic experiments. This does not imply that no inferences can be made from the study at hand.

Table 1. Descriptive Statistics of Participating Subjects

Treatment	Without donor card [absolute]	Without donor card [%]	Age	Gender		Religion		Place of Birth		
				Male	Female	Christian	No Christian	Western Germany	Eastern Germany	Outside Germany
Control treatment	105	56.8%	23.3	62	43	74	31	90	4	9
Money treatment	106	50.5%	24.7	63	43	77	29	81	10	13
Charity treatment	109	58.3%	24.3	59	50	72	37	87	4	14
Total	320	55.0%	24.1	184	136	223	97	258	18	36

Treatment	Field of Study						Monthly Budget		Highschool GPA	Blood Donors
	Business	Educational	Law	Medicine	Natural Sciences	Philosophy	<750€	≥750€		
Control treatment	40	21	12	5	7	16	74	31	2.16	32
Money treatment	48	7	13	3	13	16	72	34	2.03	34
Charity treatment	50	11	12	6	11	16	63	46	2.01	23
Total	138	39	37	14	31	48	209	111	2.06	89

In total, 582 individuals came to our experiment. As our subjects of interest were only those who did not have an organ donor card yet, we had to exclude the ones with organ donor card from our data set. This left us with 320 individuals (55%), equally distributed among the three different treatment groups. These 320 subjects build our sample size. As can be taken from Table 1, it consists of 184 male and 138 female participants with an average age of 24.1 years.

It is very unlikely that the percentage of people who did not have an organ donor card when showing up at the experimental premises would have been as low as 55% had we done the experiment with a sample perfectly representative of the overall German population. We assume that students are generally more likely to possess an organ donor card, as they are among the most highly educated individuals in society. Hence, they are more likely than other segments of society to deal with this or some related topics. Another factor contributing to a generally larger spreading of the organ donor card among the German population is probably the new amendment to the Transplantation Law (2012) that we elaborated on in part three of this paper. Nevertheless, even in a segment of the population where the organ donor card is presumably more widely spread than in most other segments of the German population, not even 50% possess an organ donor card.

Even though the procedure we applied in order to randomize the subjects into the three different treatments (see section 4.3 for more details on this) should guarantee in itself that the average characteristics of the individuals in each of the three treatments are similar, we also perform t-tests on the individuals' characteristics in order to see whether there are any significant differences between the three treatments. Table 1 displays all tested characteristics.

We perform three pairwise t-tests for all characteristics respectively, examining whether the observed differences between the treatments are statistically significant. As we use the 5%-significance level in the course of this paper to assess whether our hypotheses can be confirmed or not, we also apply this significance level when examining the differences in characteristics between our treatments. This also means that by chance we would expect every 20th test to reveal a significant difference. From Appendix B one can take that two tests result in a p-value below 0.05, which is not surprising given that we performed 45 tests in total for the 15 different characteristics. Hence, this can be taken as a strong hint that the randomization into the three treatments has been successful. The reason why for some characteristics the number of observations is less than the number of individuals in the respective treatment – 105, 106, and 109 for the control, money and charity treatment, respectively – is that in these cases some individuals did not provide us with the respective information on "Page 2 – Participant's Information".

4.3 Procedure

When the subjects arrived at the premises they had to show their national ID card in order to be able to participate in this experiment. This had been announced in the invitation and it served to make sure that only German citizens participated in this experiment. Individuals who were not able to show their national ID card or had not signed up were not admitted to the experiment. Thereafter each subject had to draw a number (hereinafter referred to as "ID")

and take the seat with that same number. At each working place the participants found two sheets of paper (upside down) and one large, brown envelope that was sealed. We asked all subjects to leave these documents as they were until they were told otherwise. Since each of the sessions included all three different treatments, the participants were randomly allocated to one of the three treatment groups as they were randomly assigned to a seat. Before the experiment could begin, we provided all participants with some information regarding the experimental setting and procedure. We asked them to remain silent throughout the entire experiment and to raise their hand in case they had any questions so that these could be answered privately. Moreover, we announced that some of them would receive an impersonal follow-up text message on their mobile phones some time after the experiment, containing a question that had to be answered by them, as it was still part of the experiment. It was neither disclosed who would receive the message nor what it would be about or when it would be sent.

After these instructions were given, the subjects were asked to turn over the two sheets of paper in front of them, but to keep the brown envelope on their desk as it was. These two sheets were "Page 1 - Experiment Instructions" and "Page 2 – Participant's Information", the latter asking several background questions and whether the individuals were already in possession of an organ donor card (see Appendix C for all documents handed out). After they had filled out both sheets, we collected them immediately. The brown envelope remained where it was.

Thereafter we asked all those IDs that had confirmed the possession of an organ donor card on "Page 2 – Participant's Information" to accompany one of us out of the room and bring all their belongings. Nobody was told based on which information they were asked to leave the room. Outside of the room they were paid out the participation reward of 5€. For these individuals the experiment was over already. While these individuals were paid out, the remaining subjects in the room were given instructions on how to proceed further. We told them that they could now open the brown envelope and start working on the documents it contained within a time span of exactly 15 minutes. The envelope contained "Page 3 – Decision Organ Donor Card", a sheet "Remarks about Organ Donation", an organ donor card and "Page 4 – Copy of Organ Donor Card". Only the subjects in the control group additionally found a small, empty white envelope in it. The individuals were asked to thoroughly read "Page 3 – Decision Organ Donor Card" and "Remarks about Organ Donation" first. Then they were supposed to make their decision on whether to fill in the organ donor card or not. In case they decided in favour of filling in the card, they were supposed to completely fill in the organ donor card they had found in the brown envelope.

"Page 4 – Copy of Organ Donor Card" is an exact copy (content-wise) of the German organ donor card. Additionally, it offered the opportunity to provide a short rationale for the decision made. All individuals were supposed to write their individual ID on it and tick the same option they had chosen on the actual organ donor card. That way the individuals' behaviour could be tracked anonymously. In case an individual decided against filling out the organ donor card, "Page 4 – Copy of Organ Donor Card" should be left empty as well (except

for the individual ID and a voluntary rationale of their decision). It is important to understand that this sheet exclusively served academic purposes – it only displayed the five different options (*Option A - E*) of the backside of the organ donor card. As there was neither a signature required nor space for personal data, this document could by no means be used in any official way. Except for "Remarks about Organ Donation" no further information about organ donation was provided to the individuals and no individual had more than 15 minutes time to make her decision. If an individual had made her final choice sooner than that, she nevertheless had to wait until the end of the 15 minutes time span.

In case the individuals in the control treatment would decide in favour of filling out the organ donor card they were asked to put the card into the white envelope prior to the end of the 15 minutes time frame and to take it out of the room once the experiment was over. In case they would not fill out the card they were supposed to put the empty organ donor card into the brown envelope together with the other three sheets and take the empty white envelope out of the room after the experiment. That way we preserved the participants' confidentiality, as other participants could not observe if or if not the individual had decided to fill out the organ donor card. After the 15 minutes had expired, everyone in the room was supposed to put back all three sheets into the brown envelope ("Page 3 – Decision Organ Donor Card", "Remarks about Organ Donation" and "Page 4 – Copy of Organ Donor Card"). At this point we reminded the subjects that it was forbidden to talk about the experiment's content to possible participants. Then we called up the subjects in the control treatment to come to the front one by one. Regardless of whether they had filled out the donor card or not, we asked them to leave the brown envelope in the room and to take the white envelope out of the room in any case. After each of the individuals in the control group had left the room, the experiment was over for each of them (except for the text message those who had filled out the card would still be asked to respond to at some point).

After all subjects of the control group had left the room, the subjects of the money treatment and the charity treatment were still in the room. A similar procedure to that of the control group followed. First of all, we called up the subjects of treatment group two (money treatment) to individually come to the front, and to bring the large brown envelope. As in the control treatment we asked them to leave the envelope at our desk. Additionally, we asked them to show the forefront of their organ donor card – it was emphasized before how important it was to show only the forefront and not the backside of the organ donor card as the latter would have revealed the chosen option on the donor card. For anonymity reasons we wanted to avoid that participants revealed their chosen option in front of us. Thanks to "Page 4 – Copy of Organ Donor Card" we could observe the chosen option for each ID in the aftermath of the experiment. Individuals shortly displayed the forefront of the donor card so that we could quickly see whether the subject had filled in the donor card or not. If the individual did not fill in the organ donor card she was paid out 5€, in case she did she received 15€ (5€ participation reward plus a 10€ reward for filling out the card). Either way, the participant was handed over a white envelope with the respective amount of money in it in order to make sure that others in the room could not draw any conclusions about the individual's choice. It is apparent that in this setting it was theoretically possible to fill out the

organ donor card's forefront without filling out its backside and still receive 15€ (as the backside was not checked). Still, this scenario is highly unlikely. The reason is that individuals were told only after the 15 minutes how their organ donor cards were about to be checked. Thus, there was no way they could have known this during the 15 minutes within which they were making their decision whether to fill out the organ donor card or not. Moreover, if the individuals had not filled out the card correctly just in order to "skim the cream" and get the 15€ instead of only five, they would have thrown the card away after the experiment. As will be elaborated on later, this was checked in the course of the experiment.

After the last individual of the money treatment had left the room, only those of the charity treatment were remaining. When we called them up to the front desk one by one, we asked them to put the brown envelope on our desk. There they received the 5€-participation reward. They were told to leave the room with their organ donor card, regardless of whether they had decided in favour of or against filling it out. In case they had filled it out, which we could check on "Page 4 – Copy of Organ Donor Card", a transfer of 10€ to the German Red Cross would be made on their behalf. We did not need to check the organ donor card immediately because the money transfer was made in the aftermath of the experiment. Again, theoretically there is the possibility to tick one of the answers *Option A* to *E* on "Page 4 – Copy of Organ Donor Card" in order to get 10€ transferred to the Red Cross, but still to not fill out the actual organ donor card at all. Nevertheless this is not more than a theoretical option either as during the 15 minutes they had for their decision they could not know that the donor card would not be checked. Hence, there was no incentive to deviate on "Page 4 – Copy of Organ Donor Card" from the actual decision made on the organ donor card.

Still, there is one issue that could theoretically seriously harm the results of this experiment. That is, if individuals realize that a decision can be revised at any point in time they could just throw the card away after the experiment, as there is no central register in Germany that would store their data. Hence, one cannot rule out that some individuals, especially in the two incentive treatments, only fill out the card in order to get the 10€ reward or payment to charity and then throw the card away afterwards. If this had happened on a large scale, it would have harmed the results. In order to observe whether individuals actually kept the organ donor card after the experiment or whether they had thrown it away, we had marked the organ donor cards prior to the experiment. It was assured that people who did not know about this marking would not notice it. The organ donor cards used in the course of this experiment have the same format as a typical check card.[1] With a blue waterproof marker the originally white edges of these cards were painted in three different ways (top left, right edge and both top left and right edge). Tests prior to the experiment confirmed that individuals not initiated would not recognize that the organ donor card looks slightly different from how it looks like originally (entirely white edges). Thus, in the course of the experiment four differently marked organ donor cards were used (only white edges; top left painted blue; top left and right edge painted blue; right edge painted blue). For each session a differently marked donor card was used.

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[1] The German Organ Transplantation Foundation (DSO) provided us with more than 500 organ donor cards in check card format. Only this enabled us to mark the cards as required.

Five days after the day of a respective session an impersonal text message was sent to all participants that had filled out the organ donor card, asking them to respond to the following question:

"Are any of the edges of your organ donor card not entirely white? In case they are not, please specify where and how they are marked?"

Five days were picked as the time span until the first text message was sent out based on the assumptions that those individuals who were planning to throw away the card when doing the experiment would do so right after or at least very soon after the experimental session. Following this argument, someone who keeps the card for at least five days after his experimental session will also keep it for longer. Hence, the participant did not have in mind to throw away the card when making her decision on whether to fill out the organ donor card or leave it blank. In case we did not receive any answer within two days, we sent out a second text message. A week after this second message we called up the respective participants if they had still not answered to the previous messages within now overall fourteen days after their experimental session. It turned out that the number of wrong answers to our control question was equally distributed among the three treatments (<10% for all treatments). Also the number of individuals who we could not reach via phone was equally distributed among the three treatments. Thus, we can conclude that the validity of our experiment is not harmed by people only filling out the card in order to get the external incentive provided by the experimental setting.

5. Hypotheses

Let X_1, X_2, and X_3 denote the fractions of subjects that fill out the organ donor card in the control treatment (no extrinsic incentive), the money treatment (10€ payment), and the charity treatment (10€ to the Red Cross), respectively. Moreover, let Y_1, Y_2, and Y_3 be the fractions of individuals who indicated that they want to donate among the subjects who filled out the card in treatments one, two, and three, respectively. Finally, let D_1, D_2, and D_3 be the fractions of new donors among all the subjects in treatment one, two, and three, respectively. With this in mind, we test six hypotheses in total in order to answer the previously mentioned three research questions. Each research question involves two hypotheses, which are outlined herein.

5.1 Do External Incentives Have a Positive Impact on People's Willingness to Fill Out an Organ Donor Card?

H1a: Money-Incentive-Hypothesis
Previous literature has shown that the introduction of a monetary payment can have different effects, depending on the respective purpose and setting. On the one hand, as found by Titmuss (1970) and confirmed by several other studies, monetary incentives can actually decrease the positive effect of intrinsic motivation on performance, leading to an overall negative effect of financial incentives on performance (Gneezy & Rustichini, 2000a/b; Bohnet

et al., 2001; Fehr & Gächter, 2002; Fehr & Rockenback, 2003; Fehr & List, 2004; Falk & Kosfeld, 2006; Johannesson & Mellström, 2008). On the other hand, monetary incentives can also have a positive effect and hence act as a means to motivate individuals to conduct certain behaviour (Lacetera et al., 2012). In line with this we argue that in our setting monetary incentives will increase the fraction of individuals who fill out the organ donor card. The reasoning is as follows: In this experiment the decision is completely anonymous and unobservable which means that a signalling effect cannot be present, as is in line with the argument by Byrne & Thompson (2001). Signalling refers to an individual trying to increase her social esteem by conducting a pro-social action. According to signalling models of social esteem by Bénabou & Tirole (2006) and Ellingsen & Johannesson (2008) material incentives decrease the signalling value of a pro-social activity. This in turn can explain why performance can be negatively correlated to increased monetary incentives. However, as argued, signalling is not an issue in the setting of this study as, due to the anonymous nature of the experiment, individuals are not able to increase social esteem.

Therefore, the first hypothesis to be tested is that the introduction of a monetary payment will increase the fraction of people who fill out the organ donor card:

Hypothesis 1a: *The fraction of individuals filling out the organ donor card is higher with payment than without payment, that is, $X_2 > X_1$.*

H1b: Charity-Incentive-Hypothesis

Introducing a payment to charity tests whether altruism is the actual source of motivation for people to fill out the organ donor card. Filling out the organ donor card might be perceived as a pro-social act in itself because indicating one's will takes the decision off someone else and accelerates the process after an individual's death. Since we argue that altruistic people are more willing to conduct pro-social actions - as is in line with previous research by Horton (1991) and Skowronksi (1997) - we predict that the fraction of people filling out the card will be increased by the charity incentive. We assume that some genuinely altruistic people might see the action of filling out the organ donor card as an action with only personal consequences (making an officially valid decision on the organ donor card) and not as a pro-social action. For those individuals the donation to charity might be a more obvious opportunity to do something pro-social.. Moreover, others might consider filling out the card as a pro-social action but might not see this as reason enough to bear the accompanying personal consequences. In other words, for them the price they have to pay for filling out the card is too high. For these subjects offering another possibility to conduct a pro-social action like donating to charity might be an efficient motivation as then the return they get for bearing personal consequences increases. According to this logic we would expect more people to fill in the card in the charity treatment compared to the control treatment.

Therefore, the second hypothesis to be tested is that the introduction of a payment to charity will increase the fraction of people who fill out the organ donor card:

Hypothesis 1b: *The fraction of individuals filling out the organ donor card is higher with a charity payment than without payment, that is, X3 > X1.*

5.2 Do External Incentives Have an Influence on the Answer Option Chosen Among the Individuals Who Decided to Fill Out the Organ Donor Card?

H2a: Money-Choice-Hypothesis

After having looked at the fractions of people filling out the organ donor card, we subsequently take the actual answer choice into account. In light of previously discussed behavioural economics effects, we argue that the fraction of people indicating their actual willingness to become a donor is different for people getting motivated to fill out the card by a monetary payment compared to those getting motivated solely by their own intrinsic motivation. In line with the effect of moral cleansing (Sachdeva et al., 2009), we argue that people who have received money for filling out the organ donor card tend to tick one of the three available "yes"-options more often. They might perceive receiving money as an immoral act and then use the act of becoming an organ donor as a means to compensate. By that they try to regain their moral equilibrium. Furthermore, we argue that people might feel committed after having received money so that now they want to pay back by becoming an organ donor as a form of reciprocity. However, we cannot rule out the opposite effect, meaning that less people choose to become an organ donor but instead indicate their unwillingness to donate. This is because we assume that some of those people who fill out the card in this treatment have made this decision affected by the monetary payment and would not have filled out the card in the control treatment. This means that in the money treatment more individuals fill out the card. Moreover, these additional people are obviously different from the people who filled in the card in the control treatment as they only filled out the organ donor card for the money. This selection effect might decrease the fraction of organ donors as these additional individuals would not have filled in the card without any payment and thus would not have chosen to become organ donors. We argue that for these individuals indicating not to become an organ donor is therefore the "easier" and more straightforward option as it involves less personal consequences. We assume that especially the answer *Option E*, by which the ultimate decision is handed over to a particular third person, is most attractive to those people, as this would change the least for an individual compared to not filling out the card at all.

Therefore, the third hypothesis to be tested is that of all individuals who fill out the organ donor card in the money treatment, the fraction of people who agree to become organ donors is different from the respective fraction among all people who fill out the card in the control treatment. However, in which direction the incentive will influence the choice cannot be predicted:

Hypothesis 2a: *Of all the people who fill in the card with a monetary payment, the fraction of individuals who choose one of the three "yes"-options (Option A, B or C) is different from the respective fraction among all the people who fill in the card without payment, that is, Y2 ≠ Y1.*

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H2b: Charity-Choice-Hypothesis

Additionally, we hypothesize that the actual choice on the organ donation card is also influenced by a payment to charity. On the one hand, we assume a moral licensing effect to be present when people fill out the organ donor card in exchange for a payment made to charity. Again, in line with Sachdeva et al. (2009), we assume that people who fill out the organ donor card feel that they have done something good because they have initiated a payment to charity. By that their level of moral self-worth increases and they feel as if to have "bought a license" to act immorally subsequently. Even though we sincerely feel that no answer option is morally inferior to any other, we strongly believe that by society in general *Option D* is perceived as morally inferior to the O*ptions A, B,* or *C*. Hence, in the realm of a moral licensing effect we argue that *Option D* of the organ donor card becomes more attractive to individuals who fill out the organ donor card under the promise of a payment to charity. On the other hand, we assume that people who fill out the card in this treatment might be driven by altruism as reflected in the *charity-incentive-hypothesis* because some of them would not have filled out the card without any payment to charity. This in turn means that those individuals who fill out the card in this treatment also tend to choose one of the three *Options A, B* o*r C*, leading to a lower fraction of individuals choosing the *Option D*. However, we cannot specify which of these opposing effects - moral licensing or altruism - is stronger.

Hence, the fourth hypothesis to be tested is that of all individuals who fill out the organ donor card in the charity treatment, the fraction of people who agree to become organ donors is different from the respective fraction among all people who fill out the card in the control treatment. However, in which direction the incentive will influence the choice cannot be predicted:

Hypothesis 2b: *Of all the people who fill in the card with a charity payment, the fraction of individuals who choose one of the three "yes"-options (Option A, B or C) is different from the respective fraction among all people who fill in the card without payment, that is, Y3 ≠ Y1.*

5.3 Can External Incentives Increase the Overall Number of Organ Donors?

H3a: Money-Donors-Hypothesis

Next, we test whether the introduction of a monetary incentive leads to an overall increase in the number of new organ donors. In contrast to the *money-choice-hypothesis*, here not only those individuals who filled out the card are taken into account, but all individuals in the money treatment comprise the subject pool for this hypothesis. That is, we hypothesize that among all individuals in the respective treatments the percentage of new organ donors is higher in the money treatment than in the control treatment. This is basically a combination of the *money-incentive-hypothesis* (H1a) and the *money-choice-hypothesis* (H2a). We argue that no matter in which direction the *money-choice-hypothesis* will go, the positive effect of the *money-incentive-hypothesis* will outweigh the possibly negative effect of the monetary

payment on the percentage of "yes"-options (*Options A, B,* or *C*) chosen. That is, even if among all the people who filled out the organ donor card in the money treatment the percentage of people who chose one of the three answers *Option A*, *B* or *C* is lower than in the control treatment, the increased percentage of people who actually filled out the card in the money treatment will overall lead to more new organ donors. Put differently, we argue that the effect of the *money-incentive-hypothesis* (H1a) is larger than the effect of the *money-choice-hypothesis* (H2a) as in H2a there are counteracting effects which at least to a certain degree offset each other, whereas in H1a only positive effects are assumed to be present.

Hence, the fifth hypothesis to be tested is that of all individuals in the money treatment, the percentage of people who choose to become an organ donor is larger than the respective percentage in the control treatment.

Hypothesis 3a: *The money treatment is more effective in acquiring new organ donors than the control treatment, that is, D2 > D1.*

H3b: Charity-Donors-Hypothesis
Finally, we test whether the introduction of a charity payment leads to an overall increase in the number of new organ donors. That is, we hypothesize that among all individuals in the respective treatments the percentage of new organ donors is higher in the charity treatment than in the control treatment. This is basically a combination of the *charity-incentive-hypothesis* (H1b) and the *charity-choice-hypothesis* (H2b). We argue that no matter in which direction the *charity-choice-hypothesis* will go, the positive effect of the *charity-incentive-hypothesis* will outweigh the possibly negative effect of the charity payment on the percentage of "yes"-options (*Option A, B,* or *C)* chosen. That is, even if among all people who filled out the organ donor card in the charity treatment the percentage of people who chose one of the three "yes"-options is lower than in the control treatment, the increased percentage of people who actually filled out the card in the charity treatment will overall lead to more new organ donors. Put differently, we argue that the effect of the *charity-incentive-hypothesis* (H1b) is larger than the effect of the *charity-choice-hypothesis* (H2b) as in H2b there are counteracting effects which at least to a certain degree offset each other, whereas in H1b only positive effects are assumed to be present.

Hence, the final hypothesis to be tested is that of all individuals in the charity treatment, the percentage of people who choose to become an organ donor is larger than the respective percentage in the control treatment.

Hypothesis 3b: *The charity treatment is more effective in acquiring new organ donors than the control treatment, that is, D3 > D1.*

6. Statistics

In order to statistically determine whether our six hypotheses can be supported or not we are using the non-parametric Pearson chi-square test. The advantage of the Pearson chi-square test is that it does not impose a linearity assumption on the distribution of the data. Therefore we set up contingency tables, which list the frequencies of the joint occurrence of layers of two categorical variables (for an example, see Appendix D). We will illustrate this by explaining how we tested hypothesis 1a. The same logic then applies to the testing of the remaining hypotheses as well. The two categorical variables are the treatment group and the answer option. Since we only use pairwise comparison in order to assess the differences between two treatments and because we only look at whether individuals filled in the donor card or not, each of the two categorical variables has two layers respectively. For the treatment group these are the layers "control" and "money" and for the answer option these are the layers "filled in" and "left blank" for our hypothesis 1a. Hence, the contingency table consists of two columns ("control" and "money") and two rows ("filled in" and "left blank"). These tables are set up for the actual frequencies and the expected ones based on the given distribution. The chi-square test then determines whether the observed frequencies differ significantly from the expected frequencies. This procedure allows us to determine whether observed differences in behaviour across two treatments are of statistical significance.

We additionally use multivariate regression models in order to confirm the results of the non-parametric tests and in order to be able to control for the subjects' characteristics. For our regressions we used the nonlinear probit model which is based on a standard normal cumulative distributional function. The reason for that is that the regressions' dependent variables are limited in the sense that they only take on two values (binary variables). Using a linear model would have been possible even in the case like ours where we have a binary dependent variable, but it comes at the cost of heteroskedasticity and moreover it might result in negative probabilities or probabilities that are greater than one. Whereas the latter is an obvious issue, the obstacles that come with heteroskedasticity are subtler: even though it does not harm the coefficients' validity, it jeopardizes the standard errors. Heteroskedasticity thereby refers to a changing variance in the error term in response to changing values for the regressors. The problem resulting from that is that the usual t-statistics or F-tests cannot be applied. By using robust standard errors, we further addressed the heteroskedasticity problem in our regression analysis.

In our regression equation we control for the characteristics age and gender of our participants. We collected these data in our questionnaire. In fact we ended up using only a fraction of the data we had collected in the course of the experiment in order to avoid overspecification. The reasons for collecting the data in the first place are twofold. First, by comparing the personal characteristics we could confirm that the randomization into one of the three treatments was successful. In a perfectly randomized experiment the characteristics of the individuals in each treatment group are on average exactly the same. The variety of data that we collected allows us to confirm that the randomization has worked. Therefore, the differences in behaviour are most likely due to the offered external incentives. Second, the

variety of data gathered on "Page 2 – Participant's Information" also served to distract the individuals from the question asking them whether they were in possession of an organ donor card already. As we used the answer given to that question as criteria for whether the individuals would become part of our sample size or not, it was important to us to make sure that the participants sorted out would not be able to figure out based on what information they were not included into the sample size. The number of questions asked on "Page 2 – Participant's Information" served this purpose.

Before going into more detail with the performed regression models, we want to repeat that in all of the following models we only look at those individuals who did not have an organ donor card when participating in the experiment. Furthermore, we count all those individuals that had filled out the card but who we were not able to reach via phone as if they had not filled out the card. We do so in order to not overestimate possible effects: one could claim that some of the individuals who did not answer the control question were ashamed of admitting that they had thrown away the card immediately after the experiment just in order to get the reward (without making a commitment of any kind).

6.1 Do External Incentives Have a Positive Impact on People's Willingness to Fill Out an Organ Donor Card?

For testing research question one we use the following regression model:

For all participants:

$$dy_1 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \beta_4 dmale + \varepsilon$$

For men only:

$$dy_2 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \varepsilon$$

For women only:

$$dy_3 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \varepsilon$$

The variable β_0 is the intercept and ε is the error term. As described earlier, we used the non-linear probit model. The dummies dy_1 to dy_3 are the dependent variables and take the value one if participants filled out the organ donor card and answered the control question (text message) correctly. In all other cases this variable takes the value zero. The coefficients of the variables *dmoney* and *dcharity, β_1* and *β_2,* are the ones we are primarily interested in for testing our first two hypotheses. The dummies *dmoney* and *dcharity* each have the value one if the respective subject was either in the money treatment or in the charity treatment, respectively. The coefficients can be interpreted in reference to both dummies taking value zero – the control treatment.

The other two variables included in our regression model serve as control variables – in our case this is the variable *age* and for dy_1 it is *dmale*, the latter being a dummy that takes value one if the participant was male and zero for women. It might theoretically be possible that these characteristics influence the subjects' willingness to fill out the organ donor card or their chosen option on the organ donor card. Gender differences in preferences are quite an established phenomenon among behavioral economists and have been controlled and tested for in the past as well (Eckel & Grossmann, 1998; Andreoni & Vesterlund, 2001; Camerer, 2003; Croson & Gneezy, 2004; Mellström & Johannesson, 2010). For dy_2 and dy_3 we only look at male and female participants respectively, which is equivalent to introducing an interaction term with gender to all variables included in the regression. As non-linear models can cause some problems when using proper interaction terms and can therefore require using a different estimator for making correct inferences, we perform these additional two regressions separately (Ai & Norton, 2003; Powers, 2005; Berry et al., 2010). We include *age* in order to control for whether older participants behave differently from younger ones. Theoretically this could be possible as the preconditions between the two groups are different in the sense that older participants are more likely than their younger counterparts to have been confronted with the topic of organ donation before.

6.2 Do External Incentives Have an Influence on the Answer Option Chosen Among the Individuals Who Decided to Fill Out the Organ Donor Card?

For research question two we use a very similar probit model to the one just presented. One important difference is that in the following three regressions we only look at those individuals who filled out the organ donor card, which implies that they did not have an organ donor card prior to the experiment.

For all participants that filled out the card:

$$dy_4 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \beta_4 dmale + \varepsilon$$

For all men that filled out the card:

$$dy_5 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \varepsilon$$

For all women that filled out the card:

$$dy_6 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \varepsilon$$

The control variables included in the model are the same as the ones included in the model that was testing hypotheses 1a and 1b. The dummies dy_4 to dy_6 take the value one if the participants chose one of the three "yes"-options on the organ donor card and answered the control question (text message) correctly. In all other cases this variable takes the value zero. Again, the coefficients for the dummy variables *dmoney* and *dcharity* are of primary interest. Regarding the gender differences we are proceeding exactly as we did for the hypotheses 1a and 1b.

6.3 Can External Incentives Increase the Overall Number of Organ Donors?

In contrast to the regression models of research question two, we now consider all subjects of the respective treatments (as in research question one). The following three regression equations are used:

For all participants:

$$dy_7 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \beta_4 dmale + \varepsilon$$

For men only:

$$dy_8 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \varepsilon$$

For women only:

$$dy_9 = \beta_0 + \beta_1 dmoney + \beta_2 dcharity + \beta_3 age + \varepsilon$$

The control variables included in the model are the same as the ones included in the prior models. The variables dy_7 to dy_9 take the value one if the participants chose one of the three "yes"-options on the organ donor card and answered the control question (text message) correctly. In all other cases this variable takes the value zero. The difference to the earlier mentioned model that we used to test the hypotheses 2a and 2b is that we do not need to narrow our sample down to those who filled out the card. The reason is that here we are looking at the share of affirmative answers in the total group of participants per treatment group. The gender differences are taken into account as described in the previous models.

When interpreting the coefficients in the results section of this paper, we always refer to the "marginal effects". This has to be done because otherwise the coefficients' magnitude could not be interpreted as we are using a non-linear model. Without referring to the "marginal effects" only the sign and significance level of the betas can be used for inferences.

6.4 Robustness Checks

As mentioned earlier, in our paper we count all those individuals that we did not reach for an answer to our control question as if they had not filled in the organ donor card at all, in order to get a cautious estimator. As a first robustness check we conducted the same analyses as we described in the course of this section, this time counting only those who gave us the wrong answer to our control question as if they had not filled out the card. We do this because it is far from obvious that those who did not answer to our control question indeed threw away the organ donor card directly after the experiment.

In the course of this paper we always pool *Option A, Option B,* and *Option C* and count the accumulated number of these three options as the amount of individuals affirming organ donation. Even though *Option B* and *Option C* constrain the amount of organs that can be donated, it is still a clear decision in favour of organ donation. Hence, there is no reason to

differentiate between the three options in this paper. Moreover, in the analyses that will be presented in the results section we pooled the *Options D* and *Option E* and counted their total as the overall number of "no"-answers given. We do this in order to get a cautious estimator as there might have been some individuals filling out the card only in order to receive the reward but without intending to make a commitment. In that case they would have most likely chosen *Option E* as it is closest to not filling out the card for the fact that a third person will end up deciding. From the pooling of *Option D* and *Option E* it follows that throughout the entire paper we count *Option E* as "filled in". This is reasonable as participants made an officially valid decision on the donor card by determining the person who would have to decide about the participant's willingness to donate in case of death. As a second robustness check we did the same tests also for the case where we counted the answer *Option E* as if the participants choosing this option had not filled in the card. This is because from a policy perspective a definite decision - more specifically referring to "yes" or "no" - is more interesting. We did this robustness check for the analysis of the hypotheses 1a to 2b. For hypotheses 3a and 3b this robustness check is not necessary because here the answer *Option E* is pooled with *Option* D and *Left Blank* as we are only looking at how many new donors have come out of this experiment in the three different treatment groups. Hence, we only look at the number of *Options A, B* and *C* given.

Earlier in this section we explained why we think that the probit model is to be preferred to a linear model in this case. On the other hand, we also stated that using an OLS does not harm the coefficients' validity even if the dependent variables are binary. Therefore we also perform a multivariate OLS with robust standard errors as a third robustness check of our results.

Finally, we conduct another probit regression where we successively add covariates about the characteristics of the subjects. In doing so we are able to test if the coefficients of the treatment variables change in response to adding information about the individuals into our regression. In an ideal case, including more covariates would not change these coefficients.

7. Results

Table 2. Results Overview

| Treatment | Subjects Total | Filled In # | Filled In % | Answer Options | | | | | |
				A,B,C #	A,B,C %	D #	D %	E #	E %
Control	105	37	35.24%	29	78.38%	4	10.81%	4	10.81%
Money	106	76	71.70%	47	61.84%	13	17.11%	16	21.05%
Charity	109	38	34.86%	21	55.26%	13	34.21%	4	10.53%
Total	**320**	**151**	**47.19%**	**97**	**64.24%**	**30**	**19.87%**	**24**	**15.89%**

An overview of the experimental results can be found in Table 2. In total this experiment results in 151 filled out organ donor cards split up into 37 in the control treatment, 76 in the money treatment and 38 in the charity treatment. Overall, this study yields 97 new organ donors. Of these 97 new donors, 29 individuals did not get any payment, whereas 47 have filled out the card for a 10€ payment, and the remaining 21 individuals belonged to the charity

treatment. In the following, our three research questions will be answered one at a time by presenting the results of our hypotheses tests and regressions.[2]

7.1 Do External Incentives Have a Positive Impact on People's Willingness to Fill Out an Organ Donor Card?

Our first research question asks if external incentives can motivate people to fill out an organ donor card. In order to answer this question two hypotheses have been set up: the *money-incentive-hypothesis* and the *charity-incentive-hypothesis*. As can be seen in Figure 2, without any extrinsic motivation 35.24% of the subjects filled out the organ donor card. With a payment of 10€, this fraction increased to 71.70%.[3] After conducting a chi-square test, we found that this difference is statistically significant (p-value < 0.001). Therefore, we can reject the null hypothesis of no difference between these treatments. With the introduction of a charity payment, 34.86% of the subjects filled out the organ donor card compared to the 35.24% in the control treatment.[4] Another chi-square test revealed that this difference is not statistically significant (p-value: 0.954). Hence we cannot reject the null hypothesis of no difference in that case. Thus, the answer to this research question is a qualified "yes". Whereas monetary incentives clearly have a positive impact on people's willingness to fill out an organ donor card, charity incentives do not.

Figure 2. Distribution of Filled in Donor Cards in Respective Treatments

Fractions of People Having Filled Out the Organ Donor Card per Treatment

■ Control Treatment   ■ Money Treatment*   ■ Charity Treatment**

71.70%

35.24%   34.86%

Treatments
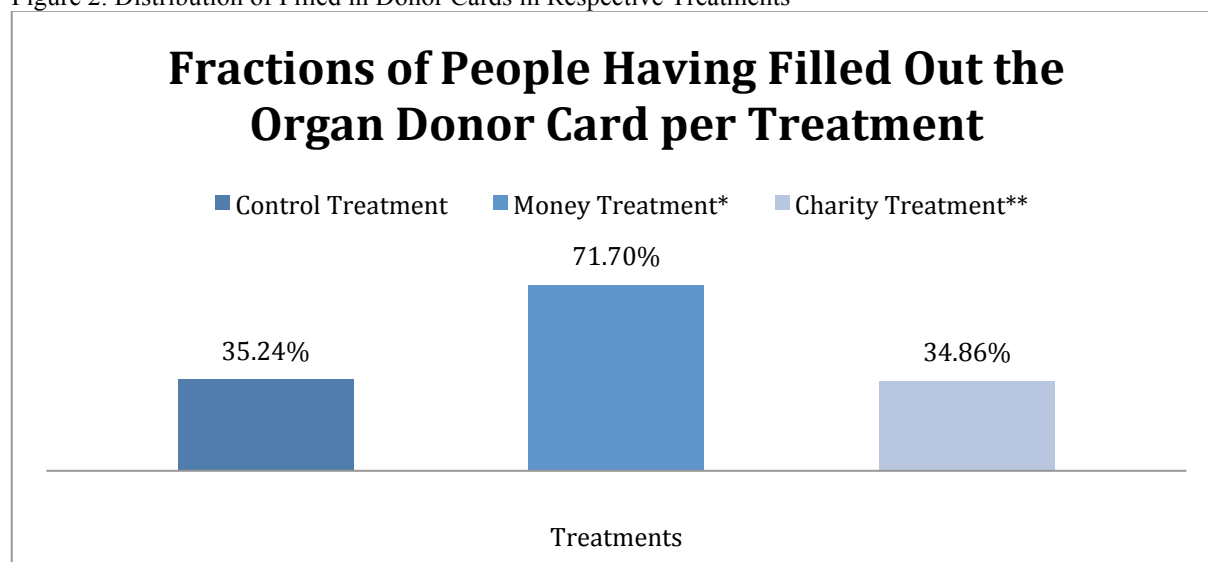
* P-value Control vs. Money < 0.001
**P-value Control vs. Charity = 0.954

In order to control for background information of the individuals we conduct a probit regression. As can be seen in the first column of Table 3 the regression results confirm the non-parametric test results. The dummy variable for "money" is highly significant (p-value: <0.001) and positive, meaning that the probability to fill out the organ donor card increases by approximately 39% for individuals who have been assigned to the money treatment compared

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[2] For the detailed test outputs of our robustness checks, please see Appendix D.
[3] No subject who filled out the card in the money treatment refused to take the 10€ payment.
[4] No subject who filled out the card in the charity treatment disagreed with a 10€ payment to charity.

to those in the control treatment. In contrast to that, the dummy variable "charity" is not significant (p-value: 0.939), meaning that being assigned to the charity treatment does not influence the probability of filling out the organ donor card. Furthermore, we find that age is significantly negatively correlated to people's willingness to fill out the organ donor card, whereas we did not find any gender effect. However, we have to keep in mind that only a very restrictive range of age groups has been tested in the course of this experiment, as the great majority of participants were students. In summary the probit regression analysis confirms the results of the non-parametric tests and finds support for the *money-incentive-hypothesis* for both genders, while no evidence can be found for the *charity-incentive-hypothesis*.

Table 3 - Results of a Probit Regression on the Probability to Fill Out the Organ Donor Card

Variable		All subjects	Men	Women
Treatment: money	Marginal Effect	0.395	0.393[1]	0.399[1]
	Stand. Err.	0.063	0.085	0.096
	P-value	<0.001	<0.001	<0.001
Treatment: charity	Marginal Effect	0.005	-0.038[2]	0.057[2]
	Stand. Err.	0.071	0.093	0.108
	P-value	0.939	0.685	0.599
Age	Marginal Effect	-0.019	-0.020	-0.016
	Stand. Err.	0.005	0.006	0.007
	P-value	<0.001	0.001	0.029
Male	Marginal Effect	-0.026		
	Stand. Err.	0.059		
	P-value	0.656		
Number of observations		320	184	136
Chi-Square Value		50.77	30.54	20.48
P-Value		<0.001	<0.001	<0.001
Log-Likelihood		-193.992	-109.823	-83.850
Pseudo R2		0.123	0.135	0.110

[1] β men = β women: p-value = 0.9397
[2] β men = β women: p-value = 0.5067

7.2 Do External Incentives Have an Influence on the Answer Option Chosen Among the Individuals Who Decided to Fill Out the Organ Donor Card?

The second research question asks if external incentives have an impact on the actual choice of whether to become an organ donor or not. In order to answer this question the following two hypotheses have been set up: the *money-choice-hypothesis* and the *charity-choice hypothesis*. With respect to these hypotheses we look at the actual response behaviour by checking which option the participants indicated on the organ donor card. In the upper part of Figure 3 we show the different answers for the respective treatments in the way they have been recorded. The lower part shows those fractions in the way we apply them in the further analysis, where the answers *Option D* and *Option E* are pooled. It is important to note that

here only those individuals who have filled out the card are used as the baseline group. Whereas 78.38% of all individuals who filled out the organ donor card in the control treatment chose to become an organ donor, this respective fraction decreased to 61.84% with the introduction of a monetary payment. Instead, the pooled fractions of individuals who filled out the card and chose either to dissent organ donation (*Option D*) or delegated the decision to another person (*Option E*) increased with the introduction of a monetary payment form 21.62% to 38.16%. However, the chi-square test did not reveal any significant difference between those fractions (p-value: 0.213). Therefore, we cannot reject the null hypothesis of no difference between the control treatment and the money treatment. When we look at the charity treatment, we can see that the fraction of people who chose "yes" decreased further to only 55.26% whereas the fraction of subjects who stated their unwillingness to become an organ donor (*Option D*) or chose *Option E* increased to 44.74%. Here, the chi-square test reveals a significant difference in the answer choices between the control treatment and the charity treatment (p-value: 0.034). Hence, we find support for the *charity-choice-hypothesis* and we can therefore reject the null hypothesis of no difference. Thus, the answer to our research question is a qualified "yes" again. Whereas monetary incentives do not have a significant impact on the answer option chosen among individuals who filled out the card, charity incentives significantly decrease the pooled percentages of *Options A, B,* and *C* chosen and increase the pooled percentages of *Options D* and *E*.

Figure 3. Distribution of Answer Choices in Respective Treatments Among Those Who Filled In
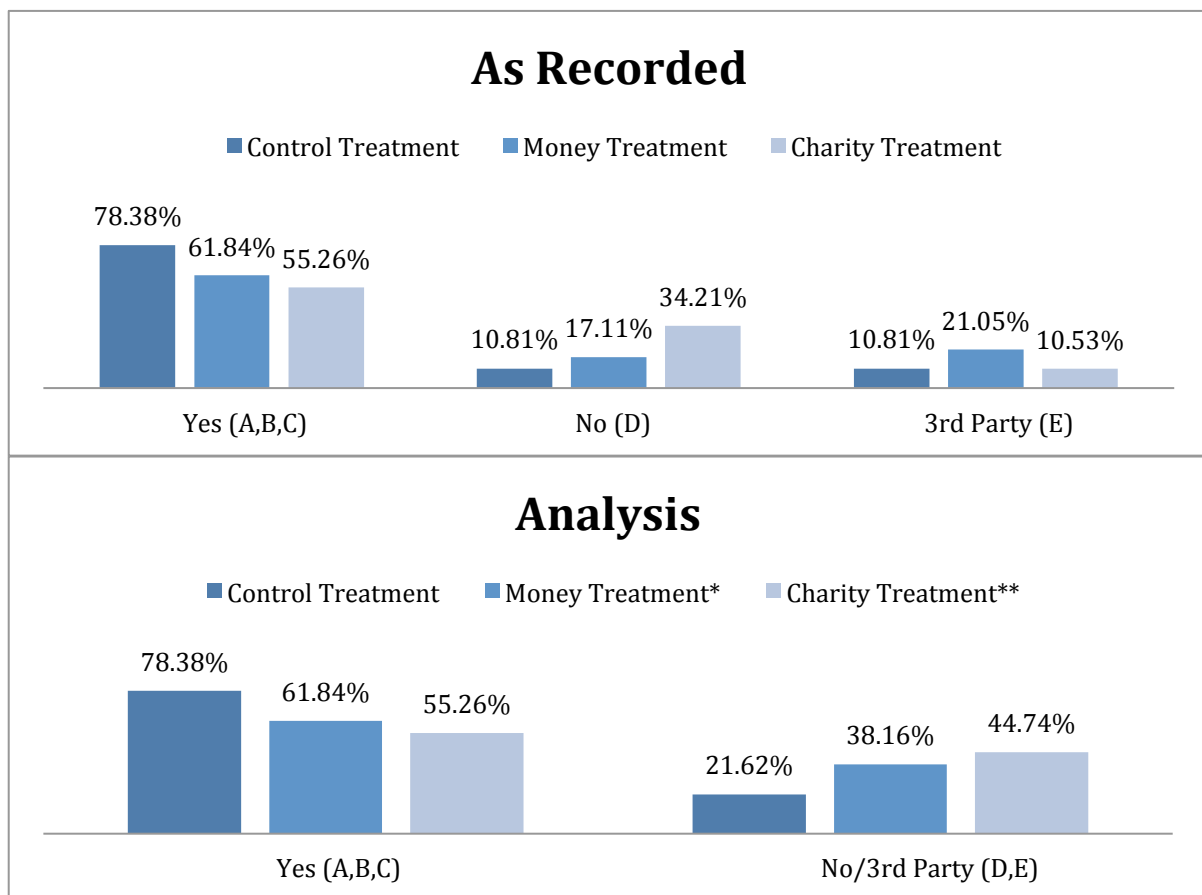
* P-value Control vs. Money = 0.213
**P-value Control vs. Charity = 0.034

Again, for both of these hypotheses (2a and 2b) we conduct a probit regression analysis in order to control for potentially influencing background factors of the individuals. Table 4 summarizes the results of this analysis. Slightly in contrast to the result of the non-parametric

test, the regression analysis shows a significant impact of the monetary payment on the actual answer choices at the 10% level (p-value 0.097). Also the OLS analysis that we conduct in order to back up the results shows a borderline significant p-value of 0.095. However, this implies only weak evidence that the null hypothesis of no difference does not hold. The discrepancy of these results is due to a difference in methods and it means that the results have to be tested in a bigger sample in order to find conclusive evidence. Based on the non-parametric test results, we cannot reject the null-hypothesis of no difference, albeit this result should be interpreted cautiously. The negative coefficient points towards a decrease in *Options A, B* and *C* answers chosen.

Table 4 - Results of Probit Regression on the Actual Answer Choice Among Those Who Filled In

Variable		All subjects	Men	Women
Treatment: money	Marginal Effect	-0.167	-0.348[1]	0.093[1]
	Stand. Err.	0.099	0.120	0.164
	P-value	0.097	0.010	0.574
Treatment: charity	Marginal Effect	-0.249	-0.256[2]	-0.225[2]
	Stand. Err.	0.118	0.182	0.175
	P-value	0.035	0.150	0.211
Age	Marginal Effect	-0.036	-0.002	-0.038
	Stand. Err.	0.010	0.009	0.018
	P-value	0.175	0.802	0.037
Male	Marginal Effect	0.143		
	Stand. Err.	0.079		
	P-value	0.073		
Number of observations		151	85	66
Chi-Square Value		10.50	7.06	8.03
P-Value		0.033	0.070	0.045
Log-Likelihood		-93.198	-47.390	-41.031
Pseudo R2		0.053	0.080	0.094

[1] β men = β women: p-value = 0.025
[2] β men = β women: p-value = 0.837

In line with the previous results, the impact of the charity treatment turns out to be significantly negative (p-value: 0.035), meaning that the likelihood of an indication to become an organ donor decreases by 24.9% if the individual gets motivated to fill out the organ donor card by a 10€ payment to charity. Thus, the regression analysis finds strong evidence for the *charity-choice-hypothesis* in favour of an inherent moral-licensing effect. As was the case in the previous regression analysis, we control for age and gender and again find an insignificantly negative effect for age.

By looking at the separate equations for men and women, we find a significant relation between the monetary incentive and men's willingness to become organ donors (p-value: 0.010). In essence, introducing a monetary incentive significantly reduces the fraction of men who chose to become organ donors. The charity treatment only insignificantly reduces this fraction (p-value: 0.150). For women both of these variables are insignificant. Furthermore, for the monetary incentive the coefficient between men and women shows a significant difference. Gender differences in behavioural economic experiments have already been observed in previous research by Camerer (2003), Croson & Gneezy (2004), and Johannesson & Mellström (2008). However, when interpreting these results one has to take into account that the sample size was quite small, especially for the separate regressions for men and women. Therefore, one should avoid deriving extensive implications from these results, which were not part of any a priori hypothesis either.

7.3 Can External Incentives Increase the Overall Number of Organ Donors?

Finally, we investigate the overall effect of extrinsic incentives on the number of new organ donors. Specifically, we asked if extrinsic incentives could actually increase the number of new organ donors. In order to answer this question the test results of the *money-donors-hypothesis* and *charity-donors-hypothesis* will be presented hereafter.

Figure 4. Distribution of Answer Choices in Respective Treatments Among All Subjects of Treatments
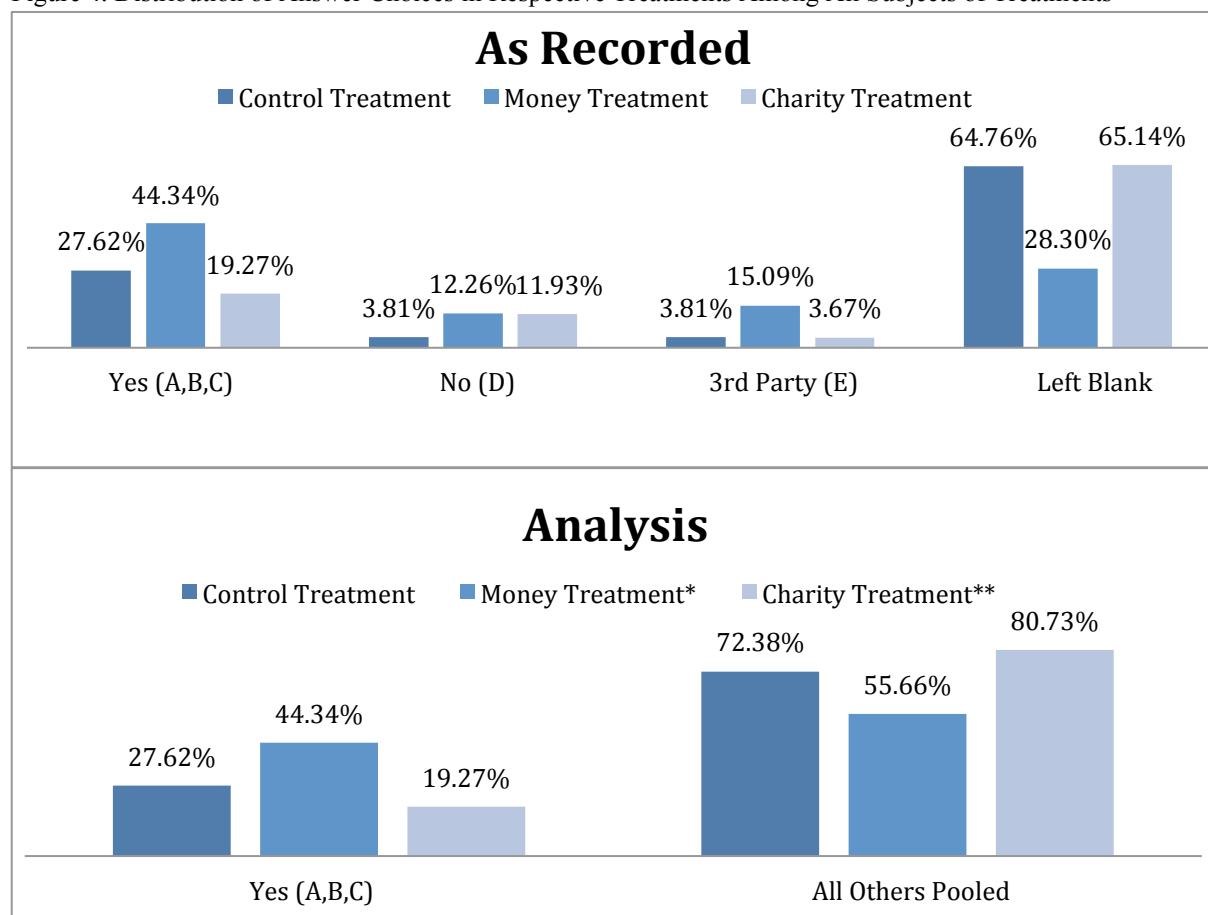
* P-value Money = 0.011
**P-value Charity = 0.149

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In the upper part of Figure 4 we show the different answers for the respective treatments the way they have been recorded. The lower part shows those fractions the way we apply them in the further analysis, where the *Options D, E,* and *Left Blank* are pooled. The important difference between the percentages presented in Figure 3 and those presented in Figure 4 is that here (Figure 4) the baseline includes all individuals of the respective treatment, whereas in Figure 3 only those who actually filled out the card were considered.

For the *money-donors-hypothesis* we can reject the null hypothesis of no difference between the two treatments (money and control) in terms of new donors (p-value: 0.011) after having applied another chi-square test. However, the *charity-donors-hypothesis* reveals somewhat surprising results. Here we see that the charity treatment actually results in *less* new donors. Although this result is not statistically significant (p-value: 0.149) it is surprising, as we had previously hypothesized that the charity treatment would result in significantly *more* new donors. This however cannot be shown with the data at hand and we cannot reject the null-hypothesis of no difference after all. In all tests the answers *Option D* and *E* and *Left Blank* are pooled. Hence, the most straightforward answer to our last research question is that the efficacy of external incentives in increasing the overall number of organ donors depends on the type of external incentive. Whereas a monetary incentive can significantly increase the amount of new organ donors, a charity incentive even works in the opposite direction, albeit not statistically significantly. However, a trend towards less new organ donors in the charity treatment can be recognized.

Again, we backed up these test results with a probit regression analysis, presented in Table 5.

Table 5 - Results of Probit Regression on the Actual Answer Choice Among All

Variable		All subjects	Men	Women
Treatment: Money	Marginal Effect	0.203	0.131[1]	0.298[1]
	Stand. Err.	0.067	0.087	0.104
	P-value	0.002	0.130	0.004
Treatment: Charity	Marginal Effect	-0.054	-0.055[2]	-0.046[2]
	Stand. Err.	0.064	0.085	0.100
	P-value	0.406	0.526	0.647
Age	Marginal Effect	-0.018	-0.014	-0.027
	Stand. Err.	0.006	0.006	0.010
	P-value	0.004	0.032	0.007
Male	Marginal Effect	0.039		
	Stand. Err.	0.053		
	P-value	0.459		
Number of observations		320	184	136
Chi-Square Value		25.78	9.04	19.02
P-Value		<0.001	0.029	<0.001
Log-Likelihood		-187.820	-113.134	-73.030
Pseudo R2		0.073	0.043	0.131

[1] β men = β women: p-value = 0.188
[2] β men = β women: p-value = 0.973

Confirming the results from the non-parametric test, the regression output shows a statistically significant increase in the number of organ donors for the monetary incentive treatment (p-value: 0.002). Moreover, the coefficient for the charity treatment is indeed negative, even though not statistically significant (p-value: 0.406). The coefficient for the variable *age* is also negative, meaning that one additional year of age decreases the likelihood that the individual fills out the card. However, again only a very restrictive range of age groups has been tested and the coefficient is only slightly negative. Gender does not have an influence on the decision of whether to become an organ donor or not. When comparing the coefficients for men and women for the money treatment as well as the charity treatment we do not find any significant difference. Thus, the two external incentives have the same effect for both genders when it comes to the decision of whether to become an organ donor or not. To summarize the results in terms of our research questions, Table 6 gives an overview of the answers to the different research questions and their corresponding hypotheses.

Table 6 - Summary of Research Questions, Hypotheses and Results

Research Question	Hypotheses	P-Value χ^2-test	P-Value Probit	Reject at $\alpha = 5\%$[*]
Do external incentives have a positive impact on people's willingness to fill out an organ donor card?	X2 > X1	<0.001	<0.001	**Yes**
	X3 > X1	0.954	0.728	**No**
Do external incentives have an influence on the answer option chosen among the individuals who decided to fill out the organ donor card?	Y2 ≠ Y1	0.213	0.097	**No**
	Y3 ≠ Y1	0.034	0.035	**Yes**
Can external incentives increase the overall number of organ donors?	D2 > D1	0.011	0.002	**Yes**
	D3 > D1	0.149	0.406	**No**

* We use the conventional 5% significance level in order to find strong evidence for rejecting a null hypothesis as has been done in previous literature (Gneezy & Rustichini, 2000a; Fehr & List, 2004).

Additionally, we asked the respondents for their specific motivation for (1) (not) filling out the organ donor card and (2) choosing the specific answer option they indicated after all. The main reason for people to fill out the card was that they had thought about this before but did not have the time to do so. On the other side, the main reason for people not to fill out the card was that they needed more time and information before making such a personal and big decision. Interestingly, this reason has been stated far more frequently in the control treatment, where no extrinsic motivation was provided (34 times), than in the money treatment (16 times). For those individuals who actually filled out the card and chose to become an organ donor after death, the two main reasons were that they would not need their organs after death and that this was a good opportunity to do something good and save lives. For those people who chose *Option B* or *C*, meaning that they limited their willingness to donate certain organs, the main reason to do so was that they felt a special connection to some of their organs which is why they wanted to keep them after death. Another frequently mentioned reason was that people were worried about their outward appearance if specific organs were donated. In case subjects filled out the card but indicated not to become an organ donor, the most popular reason was that they did not trust the present German organ donation system. This is clear evidence for the negative impact the recent organ donation scandal in Germany is having on citizens' attitudes and beliefs. However, some people also admitted that they only filled out the card due to the provided incentives. Finally, for answer *Option E*

the most preferred person to delegate the decision to was the individual's mother. Trust and a very intimate relation were the two dominant explanatory factors.

7.4 Robustness Checks

As mentioned earlier, we substantiate all our results by performing various robustness checks. First, we look at how the different results to our three research questions change if we treat all individuals who did not reply to the follow up question as if they had answered correctly. However, this robustness check reveals no difference to our previous results. Both the non-parametric test and the regression confirm our previous results. That is, we find a significant impact of the money treatment on the percentage of individuals filling out the card but we do not find a significant impact on the actual answer choice among those individuals who filled out the card. In total, the money treatment still leads to significantly more organ donors than the control treatment. For the charity treatment this stays the other way around, implying no significant increase of the percentage of individuals filling out the card, but a significant decrease of answer *Option A*, *B* or *C* chosen among those who filled out the card. In total this leads to less organ donors than in the control treatment, although this result stays insignificant.

Second, we conduct the same analyses for research questions one and two by treating those individuals who chose *Option E* on the organ donor card as if they had not filled in the card. Also under this condition both the non-parametric test as well as the regression confirm our previous answer to these two research questions. That is, also by treating *Option E* as "not filled in" we find a significant impact of the money treatment on the percentage of individuals filling out the card. We cannot observe a significant impact on the actual answer choice among those individuals who filled out the card. Again, for the charity treatment there is no significant increase of the percentage of individuals who filled out the card, but a significant decrease of answers *Option A*, *B* or *C* chosen among those who filled out the card.

Third, we perform OLS analyses for all our research questions and once again all our previous results can be confirmed. Not only the significance, but also the magnitude of the coefficients of the treatment variables is similar to the magnitude found in our probit regressions.

Finally, we successively add covariates to our initial probit regression specification. For all of the three research questions, the coefficients of the treatment variables only change slightly when we add information about the participants. This implies that the effect found in our previous results can be considered internally valid and robust. Only for research question II we find that the coefficient of the treatment variable charity becomes insignificant at the 5% level when we add information about the participants' field of study. However, we do not consider this a threat to our previous results, as the coefficient stays significant at the 10% level and a slight influence of the added information is logical by chance. For a detailed view on all robustness check results, we refer to Appendix D.

8. Discussion

We believe that the results obtained in the course of this behavioural economic experiment come with implications for further economic research. Moreover, we think that from the insights gained some inferences can be made that might be valuable and relevant for health politics in Germany, but also other countries suffering from organ donation shortages.

8.1 Do External Incentives Have a Positive Impact on People's Willingness to Fill Out an Organ Donor Card?

First, we asked whether external incentives influence people's willingness to fill out an organ donor card. Our results show mixed evidence, depending on the form of external incentives. Without any incentive, approximately one third of the individuals decided to fill out the organ donor card.

When individuals were offered a cash incentive of 10€ more than 70% of them were willing to fill out the card. As individuals were randomly allocated to the different treatments, this implies that the 10€ incentive is effective in motivating individuals to fill out an organ donor card. This result is in line with the arguments presented by Ariely et al. (2009), who found that monetary incentives had no effect on pro-social activity efforts made in public but they sure did increase these efforts made in private. In fact they claim that image crucially depends on visibility. This is in line with Bénabou & Tirole (2006) who claimed that attaining a good social image motivates people and that offering money might dilute the signal of a pro-social act. In a paper about blood donation, Mellström & Johannesson were able to confirm this theory for women, who were less willing to donate blood once they were offered money in exchange (Mellström & Johannesson, 2008). Even though filling out the organ donor card might not be perceived by everyone as a pro-social act per se, we assume that the above mentioned papers' logic partly applies to our setting as well. Due to the private nature of the decision in our experimental setting, the social image did most likely not play an important role in this decision process. According to the signalling theory by Bénabou & Tirole (2006) and Ellingsen & Johannesson (2008), getting money in exchange for filling out the card might have scared off some individuals if the setting had been public. However, in our private setting a negative effect of the extrinsic reward could not have been expected. Also, it is important to understand that our experimental setting incentivizes filling out the organ donor card and not a specific answer option. As the answer 'no' (*Option D*) was therefore incentivized as well, a crowding out was even more unlikely prior to the experiment in contrast to previous work where this has been observed (Frey & Oberholzer-Gee, 1997; Gneezy & Rustichini, 2000a/b; Mellström & Johannesson, 2008).

With respect to hypothesis 1b, where we assumed that a 10€ payment to charity would also positively impact the percentage of individuals who fill out the organ donor card, we found that this measure is ineffective. Offering a donation to charity in exchange for filling out the donor card does not have a statistically significant effect on people's willingness to fill out the card. A priori, we argued that a payment to charity would attract some more altruistic people as the pro-social nature of the donation to charity is more obvious than of filling out the card.

Hence, individuals who do not value altruism highly enough to fill out an organ donor card without incentives would then be motivated by the second opportunity to do something pro-social - donating to charity. However, it turned out that providing the opportunity to conduct another altruistic action is not an efficient incentive in our setting.

One possible explanation for that might be that people who filled out the card in the control treatment were already driven by altruism. Thus, these people were already motivated by the pro-social act of filling out the organ donor card. Therefore, there was no significant difference between the control and the charity treatment. Providing those people with a different incentive that does not target altruistic feelings might therefore be more efficient. This is confirmed by the highly significant impact of the cash incentive. Moreover, this shows again that signalling is not a driving factor of individuals' motivation in our study, due to the private nature of the decision in our experimental setting. As Mellström & Johannesson (2008) pointed out, a charity option might facilitate the signalling of pro-social behaviour.[5] The signalling model set up by Bénabou & Tirole (2006) says that people try to signal altruism to others when performing civic activities in order to receive social esteem. Seabright (2004) argued in the same direction when he stated that individuals seek to signal altruism in order to be more successful at a later partner matching stage. Due to the decision's private nature these thoughts did not play any role in the individuals' decision process in our experiment that in turn might be causal for why the charity treatment did not increase the participants' willingness to fill out the organ donor card.

When we asked the respondents for their reasoning for not filling out the card, the main concern was that they needed more time and information in order to take this big and personal decision. Therefore, the confirmation of our *money-incentive hypothesis* suggests that even a comparably small one-time monetary incentive is capable of sweeping rational long-term doubts out of way. This in itself is remarkable from a behavioural economic perspective and worth being investigated further, which however is out of the scope of this paper.

We want to emphasize that in our experimental setting individuals had no other choice than to at least shortly think about the issue of organ donation. In fact they were confronted with the topic for exactly 15 minutes. Therefore one has to be very cautious when assuming that sending out organ donor cards to every citizen will lead to every third of them filling out the card as was the case in our control treatment. The difference is that at home, under a completely different setting, one can just immediately throw away the card without spending more than one thought on the issue. In our experiment it was impossible to reduce the time span during which one was confronted with the topic. On the other hand, no individual had the option to deal with this topic for longer than 15 minutes even if she wanted. In reality people can take more time to think their decision through, for instance in order to gather information. This was not possible in our experiment. This is why we think the 35% share of people willing to fill in the donor card in the control treatment should be interpreted in

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[5] However, in the paper by Mellström & Johannesson (2008) the subjects were able to choose between donating to charity and collecting a cash payment. This differs from our setting in which the charity treatment did not leave the option for collecting a cash payment.

comparison with the 70% in the money treatment rather than on its own. Nevertheless, we are convinced that the highly significant confirmation of hypothesis 1a and the rejection of hypothesis 1b point to a very interesting line of thought and that it should be the basis for further research on related topics. Extrinsic motivation does indeed have an impact on people's willingness to fill out an organ donor card. However, the appropriate form of this extrinsic incentive is essential. In our experiment we have seen that the provision of an incentive that is attractive to altruistic people does not have an impact on their willingness to fill in the organ donor card. Instead, incentives that provide different motivations - like a cash incentive - are more efficient.

8.2 Do External Incentives Have an Influence on the Answer Option Chosen Among the Individuals Who Decided to Fill Out the Organ Donor Card?

Next, we asked whether the same extrinsic incentives also influence the actual choice individuals indicate on the organ donor card. Here it is important to note that we only consider those individuals that filled out the card. It turns out that external incentives indeed induce different choices among the individuals.

In the *money-choice-hypothesis* (2a) we claimed that the monetary incentive would change the percentage of *Option A, B,* or *C* chosen among all subjects who filled out the card in that treatment compared to all those who filled out in the control treatment. However, this hypothesis cannot be confirmed. Previously we have reasoned our hypothesis by claiming that individuals might feel morally obliged to choose one of the options *Option A, B,* or *C*, in line with the effect of moral cleansing. This phenomenon describes how individuals try to restore their moral equilibrium from which they have deviated when they conducted an immoral action (Sachdeva et al., 2009). In our setting, we argued that receiving money for filling out an organ donor card might be seen as morally debatable. Moreover, we argued that individuals in the money treatment might prefer the "yes"-options as a form of reciprocity. The importance of reciprocity in society has been emphasized in literature decades ago. Already in 1950 the German philosopher Georg Simmel stated that a social equilibrium could not exist without "the reciprocity of service and return service" (Simmel 1950, p. 387). The existence of both positive and negative reciprocity is well established in economic literature (e.g. Rabin, 1993; Berg et al., 1995; Fehr & Gächter, 2000; Dufwenberg & Kirchsteiger, 2004). We are only referring to positive reciprocity here in the sense of doing good to someone who has done good to oneself. In our setting, we reasoned that the individuals might want to pay back to society by donating their organs after having received 10€ for filling out the card. However, the reason for not specifying the direction of the possible effect of the money treatment in hypothesis 2a was that a self-selection issue might be present. One can assume that a lot of those participants who filled out the organ donor card in the money treatment would not have done so if they had been randomized into the control treatment. Bearing in mind that this portion of the participants only filled out the card because of the money, it is hard to make a case that they would then be inclined to answer "yes" on the organ donor card as it comes with more personal consequences than rejecting organ donation.

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In our sample the individuals in the money treatment chose the answers *Option A, B,* or *C* less frequently than their peers in the control treatment, but not significantly. This points towards the presence of a self-selection effect, in which refusing organ donation comes with less immediate consequences to the individual than affirming it. With even less consequences comes answer *Option E*. This answer is closest to not filling out the card at all as in both cases a third person would be asked. The only fact that differentiates these two alternatives is that by choosing *Option E* the individual specifies which person should be asked after the individual is deceased. Following our argument here it would make sense if this answer option was most frequent among the money treatment. In our data set every fifth individual in the money treatment indeed chose the answer *Option E* compared to only every tenth individual in the control treatment.

It is important to note that our results cannot confirm the definite presence of any of the above-mentioned theories, as the difference between the answer options chosen in the money treatment is not statistically significant from the ones chosen in the control treatment. Nevertheless, this does not mean that they are not present at all. As they are counteracting in their effects, they might have outweighed each other to a certain extent. Given the results, it is impossible for us to determine with certainty which effect was the strongest.

As a second part of this research question we hypothesized that there would be a significant difference between the percentage of people who agree to become organ donors of all people who filled out the card in the charity treatment, and this fraction of all people who fill out the card in the control treatment. Again, we were not sure in which direction such a difference would lean as we assumed opposite effects to be present. On the one hand we assumed that more altruistic people would have selected into filling out by the charity incentive and therefore increase the fraction of answer *Option A, B,* or *C* chosen, as one would expect altruistic people to affirm organ donation. On the other hand, in line with Sachdeva et al. (2009), we predicted a moral licensing effect, implying that people who got motivated by the charity treatment felt as if they have "bought a license" to now negate a pro-social activity. In other words, this means that good behaviour frees us to do something bad (Merrit et al., 2010). Therefore, we assumed that those people might decrease the fraction of answers *Option A, B,* or *C* chosen and in turn the percentage of the answers *Option D* or *E* would increase.

Looking at the results, we observe a significant difference in the percentages of answer options chosen between the charity and control treatment. Specifically, we observe that in the charity treatment those who filled out the card chose the "yes"-option (*Option A, B,* or *C*) significantly less frequently and instead the "no"-option (*Option D* and *E*) significantly more frequently compared to their peers in the control treatment.

From an academic perspective this is a very interesting finding as it is in line with moral licensing (Sachdeva et al. 2009). One of the earliest literatures pointing to that topic was a paper from the year 2001, which came to the conclusion that people are more likely to provide politically incorrect responses if they feel their past behaviour reveals a lack of

prejudice (Monin & Miller, 2001). Only in recent years has this construct received a little more attention in economics and psychology. Mazar & Zhong stated that individuals are more likely to cheat or steal after they have purchased green products rather than after purchasing conventional products (Mazar & Zhong, 2010). The data we gathered in our experiment contributes to this comparably new field of research. In our setting filling out the card triggers a donation of 10€ to the German Red Cross, which is perceived as good from a moral perspective. Next to deciding whether or not to fill out the card, the second decision they have to make is which specific answer option they choose. Even though we strongly believe that no answer option chosen is worse than any other, we assume that individuals feel that the *Options D* and *E* are perceived as morally inferior to choosing one of the "yes"-options (*Options A, B* and *C*) as the latter is perceived positively by society. Based on previous literature and given the significant increase in the number of answer option "no" chosen on the organ donor card among the individuals who filled out the card, we can assume that the participants in the charity treatment might have used the positive act of donating to charity (by filling out the card) as license for denying organ donation. After doing something good they might not have felt obliged anymore to do another good thing and so they were more inclined to dissent organ donation.

This effect is apparently stronger than the self-selection effect that might be present. As mentioned earlier, by self-selection we refer to the phenomenon that the charity incentive brings more merely altruistic people to filling out the card. These additional individuals would then tend to affirm organ donation as they are driven by altruism. We cannot say if this self-selection effect was not present at all, but we can conclude that it was not severe enough to outweigh the moral licensing effect. An indication against the presence of the self-selection effect is that the fraction of people having filled out the organ donor card did not increase in the charity treatment compared to the control treatment, as was tested in hypothesis 1b. However, it might also be the case that some individuals who would have filled out without any incentive dropped out in the charity treatment, whereas others selected into filling out.

8.3 Can External Incentives Increase the Overall Number of Organ Donors?

Finally, we asked if external incentives could, overall, lead to more organ donors. As mentioned in the beginning of this paper, health insurance companies in Germany are legally obliged to confront their customers with the issue of organ donation since 2012. This experiment partly suggests that this measure might lead to a considerable number of new organ donors in Germany as in the experiment at hand the mere confrontation with the topic (control treatment) led to 29 new organ donors. This means that approximately every fourth individual who did not have an organ donor card prior to participating in this experiment left the experimental setting as a organ donor in this treatment. Nevertheless, one has to keep in mind that in our setting the preconditions in terms of time available and access to information were different compared to the scenario where individuals receive mail by their insurance companies to their homes.

Our results point into the direction that an external monetary incentive, possibly in the form of a one-time financial reward, might be even more successful in bringing people to fill out the

donor card and in acquiring new organ donors than the mere confrontation with the issue. We know from hypothesis 1a that the share of those filling out the card in the money treatment was approximately twice of what it was in the control treatment. Even though the monetary incentive did not yield a higher percentage of affirmative answers among those people who filled out the card, it still highly increased the number of new organ donors from 29 to 47. This finding is probably of even more relevance to politics and medicine than the question of how to bring people to filling out the organ donor card as the ultimate goal is to increase the number of organ donors.

The charity incentive however did not only fail to increase the share of participants willing to fill in the card. It also significantly increased the number of individuals dissenting organ donation among those willing to fill in the card as seen in the results of H2b. Thus, in total the charity treatment resulted in less new organ donors (21) than the control treatment (29). This suggests that a payment to charity can actually be counterproductive for campaigns that try to increase the supply of donated organs in the long-term, even though the difference is not statistically significant in our experiment.

Given all these findings, it might be worthwhile thinking about how they could be of practical relevance for Germany's organ donation system. Thereby we always assume that the ultimate goal of any organ donation system should be to acquire as many organ donors as possible in order to reduce the shortage in supply of donated organs. This would not only reduce the year-long waiting times, but above all it would contribute to saving lives.

As currently there is no central register for organ donors in Germany, a decision made on organ donation can be revised at any point in time and without the need to tell a third party. Incentivizing to fill out the organ donor card is therefore not a straightforward process. One possibility would be to set up such a central register where everyone would automatically be registered at birth. In order to avoid switching to an opt-out system, which is hardly feasible under current German constitutional law, everyone who has not actively changed his status would be registered as "decision open". This would be equivalent to individuals who do not have an organ donor card in the current system. Thus, with a central register designed in the previously described way the starting situation would be as it is nowadays in Germany: everyone's decision is "open" (no donor card) unless one actively changes it by getting an organ donor card. The advantage compared to the current system would be that the organ donor card would be obsolete and every deceased's will could simply be checked in this central database.

One possible scenario for applying the insights gained from hypothesis 1a would be that anyone who is changing his status from "decision open" for the first time in his life gets a financial and one-time reward in exchange. According to our experimental setting this reward would be paid out to everyone who changes their status, regardless of whether they switch their status to consenting or dissenting organ donation. Our results suggest that such a reward would lead to many more people changing their status compared to a scenario where changing the status would not be incentivized. Obviously, citizens would still need to have the

possibility to change their opinion during their lifetime. In order to avoid that people switch back to "decision open" after having made their first change just in order to get the reward, one could connect any subsequent change in status with a small effort. An example would be to make people visit an administrative agency in order to change the decision.[6] This also had the advantage that people would actually think through their decision before making it. Thanks to such a central register every citizen's decision could be determined quickly by accessing the database, which is superior to the current situation where at first it has to be determined whether the deceased has filled out a card during lifetime. Due to the reward for making a decision and based on our experiment's results, one could expect that many would indeed make a decision in response to the monetary incentive, which could in turn also result in more organ donors.

The appropriate amount of such a reward for changing the status for the first time needs to be set based on further analysis. In our experiment a comparably minor reward of only 10€ was sufficient to double the willingness to fill out the organ donor card compared to the control treatment. Still, the external validity is limited here in the sense that the participants in our experiment were, by great majority, students. They are more likely to react to comparably minor monetary incentives compared to wealthier groups in society. We will elaborate on this in more detail in section 8.4 of this paper. An analysis to determine the most efficient amount for this reward would need to incorporate a cost-benefit analysis. Here one would have to bear in mind that incentivizing everyone for making a decision also means that a considerable amount of money is wasted on those who would have made a decision even without such an incentive. In our example approximately 35% of the control treatment was willing to fill out the card without any incentive – paying them would therefore be an additional cost in such a calculation.[7]

The benefits in this scenario are twofold. First, there is a social value attached to making a decision about organ donation, even if it does not affirm organ donation. This is because it accelerates the process of determining the deceased's will and because it takes a very serious decision from a third party. In further research these benefits would have to be expressed in monetary terms. Second, due to the additional share of filled in donor cards one might end up with a larger total number of organ donors compared to the scenario where no one-time incentive is paid out. This in turn will result in less waiting time for a transplant and more life years gained, which can be expressed in monetary terms as well. In health economics, it is not unusual to quantify the value of an additional life year gained and express it in monetary terms (Hirth et al., 2000). Based on these accumulated gains one could quantify which amount would be most efficient as a one-time monetary incentive to individuals in exchange for changing their donation status so that the overall benefit for society would be increased. We consider this a very interesting line of thought with high relevance to health politics not only in Germany and we therefore encourage further research to work on this question.

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[6] Another possibility would be to make a subsequent change of decision impossible for a certain time span, for instance a year. However, this might interfere with constitutional law.

[7] However, one could also just see this as a transfer of money from the government to the households instead of a cost, as no actual resource would be used up.

8.4 Limitations and External Validity

When drawing inferences from this study one should always have in mind the potential limitations of this experiment. This is important when interpreting our results. It does not mean that the results are not transferable to the real world, but it still affects the external validity of our study. For instance, in our setting individuals were always limited to exactly 15 minutes in their decision process and they could barely avoid being confronted with the topic of cadaveric organ donation. In reality this is obviously different.

Moreover, the great majority of our participants were students and many of them were less than 25 years old. Even though it is common practice among behavioural economic experiments to have mainly students as participants, this can limit the extent of inferences that can be made. This is simply because the participants are not representative of the overall German population as they are better educated and younger compared to the population average. Moreover, students are generally scarce in funds, which in turn might make them more prone to react to external monetary incentives than other groups in society.

Also the representativeness of our sample for the overall German student population might be questioned as we gathered the data at only four different universities in Germany. As mentioned earlier in this paper we nevertheless do not see any clear indication for why students at geographically differently located universities should behave significantly different from our sample. As we do not have any data on the average characteristics of the students at each of the four universities we visited in the course of our experiment, we cannot prove either that our sample is fully representative of the student population at each of the four universities respectively. Some of the individuals participating in our study had earlier agreed on receiving mails informing them about upcoming experiments. These subjects might be seen as slightly more attentive than the remaining individuals at the respective university. Moreover, depending on the expected nature and usual type of reward paid out to participants of these experiments, one might also argue that these individuals are either more pro-social or more easily motivated by monetary incentives than their peers at each university.

Apart from that, the incentives offered had a value of 10€. It might have been that a different amount would have led to slightly different results, meaning that 10€ theoretically could have been insufficient to incentivize individuals on an even larger scale. This is in line with the suggestions made by Wellington & Sayre (2011) who examined the association between financial incentives and organ donation in the United States. They concluded that in an ideal scenario one would offer different amounts of financial compensation in order to analyse the effect of financial incentives (ibid). Moreover, we paid the participants in the money treatment in cash. There is previous literature saying that the effect of an external incentive can actually depend on the form of the incentive. In a study about blood donation in an Italian town it was observed that external incentives paid out in cash decreased the people's willingness to donate, but a voucher of the same nominal value did not (Lacetera & Macis, 2010).

Furthermore, in the charity treatment we picked the German Red Cross as the recipient of the donations. In case some participants in the charity treatment have had any sort of issues with this organization, they probably would not have filled out the card just in order to avoid that the Red Cross gets a charity payment. Following this argumentation, it could also have been the case that the Red Cross is perceived as a favourite charity institution for some, which means that they only filled out the card in order for the Red Cross to get the charity payment, but would not have done so for any other charity institution. Thus, one has to account for the fact that we measure the charity incentive by using the Red Cross, which does not always induce the same reaction among all individuals. A way to overcome or at least reduce this issue in future research would be to offer the participants the possibility to choose among different entities as possible recipients of the donation.

Our sample consists of 320 individuals that did not possess an organ donor card when they showed up at the experimental premises. That way there were at least 100 individuals per treatment group, which was important to us as it allowed us to base our inferences made from this study on results attained from a sufficiently large sample size. Still, as is the case in the majority of experimental studies, more participants would have been even better as it would have increased the robustness of the results. Especially when we assess the effect of gender on the reaction to the different external incentives, our simple size melts down to well below 100. As mentioned in the results section of this paper, these results have therefore to be interpreted cautiously. When examining hypothesis 2a, we found that based on the non-parametric test the respondents' behaviour was not significantly different in the money treatment compared to the control treatment. Using either a probit regression model or an OLS would have attached a weak significance (10%-level) to the difference between money and control treatment. This difference is not dramatic as for the latter two tests the p-value is only borderline significant, but most likely it would have not occurred with a larger sample size.

Even though this experiment takes advantage of the special design of the German organ donor card and even though the experiment was conducted in Germany, the insights gained can also be relevant in any other country. The study never intended to come up with findings that are only valuable within German borders, but rather we used the specialty of the German system as a means to assess possible solutions to the worldwide problem of organ donation shortage. On the other hand we are aware of the limitations this automatically imposes on the external validity of our results. Previous literature has already stated that countries can be a very important source of variation. Costa-Font et al. (2013) found that the association between non-monetary rewards and blood donation was very heterogeneous across countries, whereas the one between monetary rewards and blood donation was not. We assume that there are several special characteristics both in the local organ donation systems and among the local population that prevent the results of this study to be fully applicable to any other country in the world. Nevertheless we are convinced that the basic insights are not limited to any national borders.

9. Conclusion

In order to assess if external rewards can contribute to combating the organ donation shortage, we carried out an experiment among German students. Specifically, we investigated three research questions, using six hypotheses. First we examined whether external incentives can motivate people to fill out an organ donor card. This answer is a qualified yes - whereas a 10€ monetary cash incentive clearly has a positive impact on people's willingness to fill out an organ donor card, a 10€ payment to charity does not. Next we were interested in the question of whether those same external incentives have an influence on the answer option chosen among those individuals who decided to fill out the organ donor card. We found that the 10€ cash incentive had no impact on the actual answer choice, whereas the charity payment significantly decreased the percentage of "yes" answers among all those individuals who got motivated to fill out the card by the external incentive. Finally, we tested if the external incentives can increase the overall number of new organ donors. The results show that the cash payment significantly increases the number of organ donors, whereas the 10€ payment to charity does not. Instead, for the charity incentive the results point towards a decrease in new organ donors as compared to no external incentive. This implies that a monetary cash incentive for filling out the organ donor card might be able to help overcoming organ donation shortages. Interestingly, providing a charity incentive shows the reverse effect and might therefore not be an appropriate means to increase the supply of organs.

10. References

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11. Appendix

Appendix A - The German Organ Donor Card

Appendix B - Check of Randomization

Table 7 - Check of Randomization by Pairwise T-Tests

Variable		Treatments			P-Values		
					Control =	Control =	Money =
		Control	Money	Charity	Money	Charity	Charity
Age	Observations	105	106	109	0.136	0.218	0.728
	Mean	23.276	24.651	24.284			
Male	Observations	105	106	109	0.955	0.470	0.435
	Mean	0.590	0.594	0.541			
Christian	Observations	105	106	109	0.729	0.490	0.297
	Mean	0.705	0.726	0.661			
East	Observations	103	104	105	0.102	0.978	0.094
	Mean	0.039	0.096	0.038			
West	Observations	103	104	105	0.072	0.362	0.368
	Mean	0.874	0.779	0.829			
Abroad	Observations	103	104	105	0.382	0.293	0.858
	Mean	0.087	0.125	0.133			
Educational	Observations	101	100	106	0.005*	0.038*	0.393
	Mean	0.208	0.070	0.104			
Philosophical	Observations	101	100	106	0.976	0.883	0.859
	Mean	0.158	0.160	0.151			
Medicine	Observations	101	100	106	0.482	0.821	0.353
	Mean	0.022	0.017	0.023			
Law	Observations	101	100	106	0.811	0.900	0.714
	Mean	0.119	0.130	0.113			
Natural science	Observations	101	100	106	0.152	0.382	0.560
	Mean	0.069	0.130	0.104			
Business	Observations	101	100	106	0.232	0.275	0.906
	Mean	0.396	0.480	0.472			
Rich	Observations	105	106	109	0.586	0.054	0.166
	Mean	0.295	0.330	0.422			
GPA	Observations	96	99	105	0.166	0.111	0.866
	Mean	2.155	2.027	2.012			
Blood donor	Observations	105	106	109	0.803	0.118	0.069
	Mean	0.305	0.321	0.211			

* significant (5% level)

Appendix C - Documents Handed Out to Participants

As the experiment was conducted in Germany with only German citizens, the language of instruction was German. Below we present a translation of the documents handed out to the participants. Please be aware that the participants had slightly different sheets "Page 3 – Decision Organ Donor Card" and "Remarks about Organ Donation" in front of them, depending on the treatment group they have been randomized into. That is why there will be three slightly different version of each of these sheets in this Appendix. In order to indicate more clearly which of them belongs to what treatment group, this will be explained in a "side-note". This side-note was not printed on the documents handed out to the participants.

Page 1 – Experiment Instructions

General Remarks
Thank you very much for taking the time and participating in this experiment. As announced on the sign-up page you have used in order to confirm your participation, this experiment will last on average between 30 and 45 minutes. All data that is gathered throughout the experiment will only be accessible to the experimenters as it is common practice in behavioural economic experiments. The data will be treated confidentially and it will not be handed over to third persons. When evaluating the data they will only be used anonymously. Drawing inferences from the data about individual behaviour will not be possible.

Everyone who is reading these instructions should have **formally confirmed his participation with the experimenters by now and should have received an individual ID number**. Moreover, **please assure now that the ID you were assigned to is the same as the ID of your working place**. If that is not the case, please raise your hand now.

For the validity of this experiment it is essential that you make your own decisions. As of now, **talking to one of your neighbours is forbidden for the time of the experiment. Furthermore, we ask you not to look at what other participants are doing, but instead to focus entirely on the documents in front of you**. In case you should not comply with the aforementioned rules we will be forced to exclude you from the experiment – in that case your data will not be evaluated and you will not receive the participation reward. **Moreover, we ask you not to talk to potential participants of this experiment about the experiment's procedure and/or content – be it friends, relatives or the next group of participants**. This would severely put the experiment's validity at risk.

In case you have any questions throughout the experiment, please signal this by **raising your hand**. One of the experimenters will come to your working place and answer your questions individually.

Please stick to the order of the sheets throughout the entire experiment (which you can take from the top of each page). Now please turn around "Page 2 – Participant's Information" and start filling it out. You can put the sheet "Page 1 – Experiment Instructions" next to you so that you can look up required information whenever you need to.

ID:

Please only read this sheet if you have read „Page 1 - Experiment Instructions"

Please fill in this sheet completely and truthfully – please make sure you have specified your ID in the top left of this sheet. It is fundamentally important that all fields are completed. We are asking for your cell phone number as some of you will receive an impersonal control question in the aftermath of this experiment via phone.
Please fill in the form below legibly using lettering. In case you have any question, please raise your hand. Thank you very much!

Age		Religion				
Place of birth		Subject of studies / Profession				
Cell phone number						
Targeted degree (in case you are working already please specify the highest degree attained)	☐	Diploma	☐	Bachelor	☐	Master
	☐	Staatsexamen	☐	Other:		
Marital status	☐	Married	☐	Single	☐	In a relationship
	☐	Divorced	☐	Widowed		
How much money do you have at hand per month (incl. rent) (in €)?	☐	< 300	☐	301-500	☐	501-750
	☐	751-1,000	☐	> 1,000		
How do you finance your studies? (more than one answer possible)	☐	Parents	☐	Work	☐	Loan
	☐	Scholarship	☐	Other:		
What is your attained high-school GPA (e.g. 2.6)?						
How successful are you in your current studies?	☐	Best 5%	☐	Best 25%	☐	Best 50%
	☐	Lower 50%	☐	I do not know		
Did you serve any of these service (if not, please leave empty)?	☐	Military service	☐	Civil service	☐	Volunteer social year
Gender	☐	Male	☐	Female		
What is the profession of your parents?	Mother		Father			
Are you a registered stem cell donor?			☐	Yes	☐	No
What type of health insurance do you possess?			☐	Private	☐	Statutory
Have you donated blood before?			☐	Yes	☐	No
Do you possess an organ donor card?			☐	Yes	☐	No

When you have completed the above form, please wait. **It will be collected by the experimenters shortly**. **Please leave the brown envelope as it is.**

Page 3 – Decision Organ Donor Card
(Side-note by authors: handed out to control treatment)

In the course of this experiment we are confronting you with the decision of whether you want to fill out an organ donor card here and now or whether you want to leave the decision open and hence leave the organ donor card empty.

Therefore please stick to the following sequence:

Step 1: Next to this "Page 3 – Decision Organ Donor Card" you will find an organ donor card, "Page 4 – Copy of Organ Donor Card" and two small, white envelopes in the brown envelope you just opened. In case you are lacking any of the aforementioned documents, please raise your hand so that we can give you the remaining documents.

Step 2: You have indicated that you do not possess an organ donor card. In case that is not true, please raise your hand now.

Step 3: Now please read the sheet "Remarks about Organ Donation" (next page) thoroughly and carefully. After that, please continue with step four.

Step 4: Please decide whether you want to fill out the organ donor card or whether you do not want to fill it out. Please keep in mind the following: **your answer will not be judged** and it **remains confidential** – only act in accordance to your personal conviction. In case you decide in favour of filling out the organ donor card, please fill out both its forefront and backside and do not forget to sign the organ donor card on its backside. If you decide that you do not want to fill out the organ donor card or if you decide to postpone the decision, simply leave the organ donor card empty. Please be aware that there is no right or wrong decision.

Step 5: When you have made your decision, we kindly ask you to fill out „Page 4 – Copy of Organ Donor Card" with the exact same option that you have chosen on your organ donor card. **Please make sure that the option chosen on your organ donor card is the same as the one you indicate on "Page 4 – Copy of Organ Donor Card". In case you have decided not to fill out the organ donor card, please leave the options on "Page 4 – Copy of Organ Donor Card" empty as well in accordance to your decision made**. Regardless of which decision you have made you can provide us with a rationale of your decision on the bottom of "Page 4 – Copy of Organ Donor Card".

Step 6: Please put the organ donor card in one of the two small, white envelopes. In case you have decided to fill out the card, please put the empty small envelope into the large, brown envelope. In case you have decided not to fill out the card, please put the small envelope together with the organ donor card into the large, brown envelope.
Now, please put the little piece of paper with your assigned ID on it, both "Page 3 – Decision Organ Donor Card" and "Page 4 – Copy of Organ Donor Card" back into the large brown envelope on your table. Thereafter there will only be a large, brown envelope and a small white envelope in front of you. That way we make sure that no third person can directly observe the decision you have made.

Now please wait for further instructions by the experimenters.

There are several different answer options on the organ donor card. Therefore please look carefully at the organ donor card next to you. Please read thoroughly through all different answer options. Your decision will be treated completely confidentially.

Please be aware that this decision is **not hypothetical. Fill in the organ donor card only if you are fully convinced that you are able to and that you want to make such a far-reaching decision right now. If that is not the case, simply leave the organ donor card empty. For the experiment both is of equal value**. In case you decide that you want to fill out the organ donor card, please keep the following in mind:

- If you choose one of the three "yes"-options you are officially signalling your willingness to engage in cadaveric organ donation. In case of your death this can mean that your organs will be removed and transplanted.
- If you choose "no", you officially deny your willingness to engage in cadaveric organ donation after your death. In the course of this experiment you do not have any disadvantage compared to participants that choose to approve organ donation.
- If you choose "On yes or no the following person has to decide", it can happen that after your death this specified person will be asked to decide on whether your organs will be transplanted or not. In the course of this experiment you do not have any disadvantage compared to participants that approve or reject cadaveric organ donation.

If you decide to fill out the organ donor card, please do so completely and on both the forefront and backside of the organ donor card. Only then the organ donor card counts officially as "filled in" and your decision as officially taken by you. **Without signature the organ donor card is NOT valid.**

Please be aware that a filled-out organ donor card is to be carried around all the time exactly like the national ID card. Only then your will can be determined quickly after your death.

If for whatever reason you feel uncomfortable making this decision in the course of this experiment or if you need more information, leave the organ donor card empty. You will not have any disadvantage during this experiment compared to other participants who decide to fill in the card. You have to bear the consequences of your decision entirely by yourself. If you do not fill in the organ donor card it means that you do not want to make this decision right now and in the case of your death a third party would decide for you according to your presumed will.

In case you need an organ donor card or information brochures at a later point in time, we can recommend you some web sites and information centres. In that case you can contact us in the aftermath of this experiment (masterthesisexperiment@gmail.com) – we will be happy to send you specific links or contact details.

Please continue now with step four on "Page 3 – Decision Organ Donor Card".

Page 3 – Decision Organ Donor Card
(Side-note by authors: handed out to money treatment)

In the course of this experiment we are confronting you with the decision of whether you want to fill out an organ donor card here and now or whether you want to leave the decision open and hence leave the organ donor card empty.
In case you decide that you want to completely fill in the organ donor card, you will get 10€ (in addition to the 5€-participation reward) in the end of the experiment. <u>Please be aware that for getting the additional 10€ it is irrelevant which answer option you choose on the organ donor card. The 10€ payment does not depend on any specific answer option, but only on you filling out the organ donor card.</u>

Therefore please stick to the following sequence:

Step 1: Next to this "Page 3 – Decision Organ Donor Card" you will find an organ donor card and "Page 4 – Copy of Organ Donor Card" in the brown envelope you just opened. In case you are lacking any of the aforementioned documents, please raise your hand so that we can give you the remaining documents.

Step 2: You have indicated that you do not possess an organ donor card. In case that is not true, please raise your hand now.

Step 3: Now please read the sheet "Remarks about Organ Donation" (next page) thoroughly and carefully. After that, please continue with step four.

Step 4: Please decide whether you want to fill out the organ donor card or whether you do not want to fill it out. Please keep in mind the following: **your answer will not be judged** and it **remains confidential** – only act in accordance to your personal conviction. In case you decide in favour of filling out the organ donor card, please fill out both its forefront and backside and do not forget to sign the organ donor card on its backside. If you decide that you do not want to fill out the organ donor card or if you decide to postpone the decision, simply leave the organ donor card empty. Please be aware that there is no right or wrong decision.

Step 5: When you have made your decision, we kindly ask you to fill out „Page 4 – Copy of Organ Donor Card" with the exact same option that you have chosen on your organ donor card. **Please make sure that the option chosen on your organ donor card is the same as the one you indicate on "Page 4 – Copy of Organ Donor Card". In case you have decided not to fill out the organ donor card, please leave the options on "Page 4 – Copy of Organ Donor Card" empty as well in accordance to your decision made**. Regardless of which decision you have made you can provide us with a rationale of your decision on the bottom of "Page 4 – Copy of Organ Donor Card".

Step 6: Please put "Page 3 – Decision Organ Donor Card" and "Page 4 – Copy of Organ Donor Card" back into the large, brown envelope on your table. Thereafter please leave the envelope on the table. Please put the organ donor card on your table, with the forefront up.

Now please wait for further instructions by the experimenters.

There are several different answer options on the organ donor card. Therefore please look carefully at the organ donor card next to you. Please read thoroughly through all different answer options. Your decision will be treated completely confidentially.

Please be aware that this decision is **not hypothetical**. **Fill in the organ donor card only if you are fully convinced that you are able to and that you want to make such a far-reaching decision right now. If that is not the case, simply leave the organ donor card empty. For the experiment both is of equal value**. In case you decide that you want to fill out the organ donor card, please keep the following in mind:

- If you choose one of the three "yes"-options you are officially signalling your willingness to engage in cadaveric organ donation. In case of your death this can mean that your organs will be removed and transplanted.
- If you choose "no", you officially deny your willingness to engage in cadaveric organ donation after your death. In the course of this experiment you do not have any disadvantage compared to participants that choose to approve organ donation.
- If you choose "On yes or no the following person has to decide", it can happen that after your death this specified person will be asked to decide on whether your organs will be transplanted or not. In the course of this experiment you do not have any disadvantage compared to participants that approve or reject cadaveric organ donation.

If you decide to fill out the organ donor card, please do so completely and on both the forefront and backside of the organ donor card. Only then the organ donor card counts officially as "filled in" and your decision as officially taken by you. In that case you would get an additional 10€ plus the 5€-participation reward in the end of the experiment. **Without signature the organ donor card is NOT valid and the 10€ would then not be paid out to you.**

Please be aware that a filled-out organ donor card is to be carried around all the time exactly like the national ID card. Only then your will can be determined quickly after your death.

If for whatever reason you feel uncomfortable making this decision in the course of this experiment or if you need more information, leave the organ donor card empty. You have to bear the consequences of your decision entirely by yourself. If you do not fill in the organ donor card it means that you do not want to make this decision right now and in the case of your death a third party would decide for you according to your presumed will. However, in this case you will not receive the 10€ but only the participation reward of 5€ at the end of this experiment.

In case you need an organ donor card or information brochures at a later point in time, we can recommend you some web sites and information centres. In that case you can contact us in the aftermath of this experiment (masterthesisexperiment@gmail.com) – we will be happy to send you specific links or contact details.

Please continue now with step four on "Page 3 – Decision Organ Donor Card".

In the course of this experiment we are confronting you with the decision of whether you want to fill out an organ donor card here and now or whether you want to leave the decision open and hence leave the organ donor card empty.

In case you decide that you want to completely fill in the organ donor card, 10€ will be donated to the German Red Cross in the aftermath of the experiment. Irrespective of that you will get the 5€-participation reward in the end of the experiment. <u>Please be aware that for the charity donation of 10€ to happen it is irrelevant which answer option you choose on the organ donor card. The 10€-donation to the German Red Cross does not depend on any specific answer option, but only on you filling out the organ donor card.</u>

Therefore please stick to the following sequence:

Step 1: Next to this "Page 3 – Decision Organ Donor Card" you will find an organ donor card and "Page 4 – Copy of Organ Donor Card" in the brown envelope you just opened. In case you are lacking any of the aforementioned documents, please raise your hand so that we can give you the remaining documents.

Step 2: You have indicated that you do not possess an organ donor card. In case that is not true, please raise your hand now.

Step 3: Now please read the sheet "Remarks about Organ Donation" (next page) thoroughly and carefully. After that, please continue with step four.

Step 4: Please decide whether you want to fill out the organ donor card or whether you do not want to fill it out. Please keep in mind the following: **your answer will not be judged** and it **remains confidential** – only act in accordance to your personal conviction. In case you decide in favour of filling out the organ donor card, please fill out both its forefront and backside and do not forget to sign the organ donor card on its backside. If you decide that you do not want to fill out the organ donor card or if you decide to postpone the decision, simply leave the organ donor card empty. Please be aware that there is no right or wrong decision.

Step 5: When you have made your decision, we kindly ask you to fill out „Page 4 – Copy of Organ Donor Card" with the exact same option that you have chosen on your organ donor card. **Please make sure that the option chosen on your organ donor card is the same as the one you indicate on "Page 4 – Copy of Organ Donor Card". In case you have decided not to fill out the organ donor card, please leave the options on "Page 4 – Copy of Organ Donor Card" empty as well in accordance to your decision made**. Regardless of which decision you have made you can provide us with a rationale of your decision on the bottom of "Page 4 – Copy of Organ Donor Card".

Step 6: Please put "Page 3 – Decision Organ Donor Card" and "Page 4 – Copy of Organ Donor Card" back into the large, brown envelope on your table. Thereafter please leave the envelope on the table. Please put the organ donor card on your table, with the forefront up.

Now please wait for further instructions by the experimenters.

Remarks about Organ Donation
(Side-note by authors: handed out to charity treatment)

There are several different answer options on the organ donor card. Therefore please look carefully at the organ donor card next to you. Please read thoroughly through all different answer options. Your decision will be treated completely confidentially.

Please be aware that this decision is **not hypothetical**. **Fill in the organ donor card only if you are fully convinced that you are able to and that you want to make such a far-reaching decision right now. If that is not the case, simply leave the organ donor card empty. For the experiment both is of equal value**. In case you decide that you want to fill out the organ donor card, please keep the following in mind:

- If you choose one of the three "yes"-options you are officially signalling your willingness to engage in cadaveric organ donation. In case of your death this can mean that your organs will be removed and transplanted.
- If you choose "no", you officially deny your willingness to engage in cadaveric organ donation after your death. In the course of this experiment you do not have any disadvantage compared to participants that choose to approve organ donation.
- If you choose "On yes or no the following person has to decide", it can happen that after your death this specified person will be asked to decide on whether your organs will be transplanted or not. In the course of this experiment you do not have any disadvantage compared to participants that approve or reject cadaveric organ donation.

If you decide to fill out the organ donor card, please do so completely and on both the forefront and backside of the organ donor card. Only then the organ donor card counts officially as "filled in" and your decision as officially taken by you. In that case 10€ would be donated to the German Red Cross (you will get the 5€-participation reward in the end of the experiment). **Without signature the organ donor card is NOT valid and the 10€ would then not be donated to the German Red Cross.**

Please be aware that a filled-out organ donor card is to be carried around all the time exactly like the national ID card. Only then your will can be determined quickly after your death.

If for whatever reason you feel uncomfortable this decision in the course of this experiment or if you need more information, leave the organ donor card empty. You have to bear the consequences of your decision entirely by yourself. If you do not fill in the organ donor card it means that you do not want to make this decision right now and in the case of your death a third party would decide for you according to your presumed will. However, in this case the 10€ will not be donated to the German Red Cross. You would still receive the participation reward of 5€ in the experiment's end.

In case you need an organ donor card or information brochures at a later point in time, we can recommend you some web sites and information centres. In that case you can contact us in the aftermath of this experiment (masterthesisexperiment@gmail.com) – we will be happy to send you specific links or contact details.

Please continue now with step four on "Page 3 – Decision Organ Donor Card".

Page 4 – Copy of Organ Donor Card

ID:

In case that after my death the donation of organs/tissue for transplantation is possible, I hereby declare:

◯ YES, I allow my organs and tissue to be removed after the medical certification of my death.

◯ YES, I allow this with the exception of the following organs/tissue:
_____

◯ YES, I allow this, but only for the following organs/tissue:
_____

◯ NO, I dissent the removal of my organs or tissue.

◯ On YES or NO the following person shall decide (Please provide here *only* the degree of your relationship, e.g. brother)
_____

Why did you decide in favour or against filling out the organ donor card (optional)?
_____
_____
_____

In case you filled out the organ donor card, why did you decide for the answer option you have chosen (optional)?
_____
_____
_____

As you are asked to provide neither your name nor your signature on this sheet, it is not officially valid. It simply serves academic purposes.

Appendix D - Robustness Checks

Research Question I

I. Nonparametric Tests - Treating Non-Available Individuals As If They Had Correctly Responded To The Follow-Up Question

Table 8 - Robustness I - Chi Square Test on the Percentages of Filled in Donor Cards (**H1a**)

Actual			
	Control	Money	Total
Filled in	41	84	125
Left blank	64	22	86
Total	105	106	211
Expected			
	Control	Money	Total
Filled in	62	63	125
Left blank	43	43	86
Total	105	106	211
P-Value:	**<0.001**		

Table 9 - Robustness I - Chi Square Test on the Percentages of Filled in Donor Cards (**H1b**)

Actual			
	Control	Charity	Total
Filled in	41	47	88
Left blank	64	62	126
Total	105	109	214
Expected			
	Control	Charity	Total
Filled in	43	45	88
Left blank	62	64	126
Total	105	109	214
P-Value:	**0.545**		

II. Nonparametric Tests - Treating "Option E" as "Not Filled In"

Table 10 - Robustness II - Chi Square Test on the Percentages of Filled in Donor Cards (**H1a**)

Actual			
	Control	Money	Total
Filled in	33	60	93
Left blank	72	46	118
Total	105	106	211
Expected			
	Control	Money	Total
Filled in	46	47	93
Left blank	59	59	118
Total	105	106	211
P-Value:	**<0.001**		

Table 11 - Robustness II - Chi Square Test on the Percentages of Filled in Donor Cards (**H1b**)

Actual			
	Control	Charity	Total
Filled in	33	34	67
Left blank	72	75	147
Total	105	109	214
Expected			
	Control	Charity	Total
Filled in	33	34	67
Left blank	72	75	147
Total	105	109	214
P-Value:	**0.970**		

III. Regression Analysis - Treating Non-Available Individuals As If They Had Correctly Responded To The Follow-Up Question

Table 12 - Research Question 1 - Treating Non-Available (N/A) Individuals as Correctly Responded

Variable		All subjects	Men	Women
Treatment: money	Marginal Effect	0.411	0.409	0.413
	Stand. Err.	0.055	0.072	0.085
	P-value	<0.001	<0.001	<0.001
Treatment: charity	Marginal Effect	0.063	0.072	0.050
	Stand. Err.	0.066	0.869	0.103
	P-value	0.347	0.415	0.626
Age	Marginal Effect	-0.005	-0.005	-0.005
	Stand. Err.	0.004	0.005	0.008
	P-value	0.203	0.289	0.513
Male	Marginal Effect	0.011		
	Stand. Err.	0.058		
	P-value	0.864		
Number of Observations		320	184	136
Chi-Square Value		43.07	24.42	18.48
P-Value		<0.001	<0.001	<0.001
Log-Likelihood		-194.336	-111.663	-82.652
Pseudo R2		0.109	0.107	0.112

IV. Regression Analysis - Treating "Option E" as "Not Filled In"

Table 13 - Research Question 1 - Treating "Option E" as "Not filled In"

Variable		All subjects	Men	Women
Treatment: money	Marginal Effect	0.383	0.372	0.404
	Stand. Err.	0.069	0.091	0.104
	P-value	<0.001	<0.001	<0.001
Treatment: charity	Marginal Effect	0.008	-0.028	0.055
	Stand. Err.	0.072	0.095	0.113
	P-value	0.907	0.770	0.626
Age	Marginal Effect	-0.018	-0.020	-0.014
	Stand. Err.	0.005	0.007	0.010
	P-value	<0.001	0.003	0.170
Male	Marginal Effect	0.018		
	Stand. Err.	0.062		
	P-value	0.765		
Number of observations		320	184	136
Chi-Square Value		41.99	27.14	17.92
P-Value		<0.001	<0.001	0.001
Log-Likelihood		-187.092	-107.262	-78.551
Pseudo R2		0.112	0.117	0.107

V. Regression Analysis - OLS

Table 14 - Research Question 1 - OLS

Variable		All Subjects
Treatment: money	Coefficient	0.385
	Stand. Err.	0.063
	P-value	<0.001
Treatment: charity	Coefficient	0.010
	Stand. Err.	0.065
	P-value	0.882
Age	Coefficient	-0.014
	Stand. Err.	0.003
	P-value	<0.001
Male	Coefficient	-0.024
	Stand. Err.	0.052
	P-value	0.644
Constant	Coefficient	0.704
	Stand. Err	0.086
	P-value	<0.001
Number of observations		320
F-Value		20.79
P-Value		<0.001
R2		0.159

VI. Regression Analysis - Including Covariates

Table 15 - Research Question 1 - Probit Regression Including Covariates[*]

Variable		Specification (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Money	Marginal Effect	0.395	0.365	0.395	0.394	0.393	0.385	0.385	0.391	0.391
	Stand. Err.	0.063	0.063	0.064	0.635	0.064	0.067	0.067	0.070	0.070
	P-value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Charity	Marginal Effect	0.005	-0.004	0.007	0.008	-0.011	-0.0001	0.001	-0.036	-0.035
	Stand. Err.	0.071	0.070	0.071	0.071	0.071	0.074	0.074	0.077	0.077
	P-value	0.939	0.954	0.925	0.908	0.875	0.999	0.987	0.643	0.646
Age	Marginal Effect	-0.019		-0.019	-0.018	-0.018	-0.021	-0.020	-0.018	-0.018
	Stand. Err.	0.005		0.005	0.005	0.005	0.007	0.007	0.006	0.006
	P-value	<0.001		<0.001	<0.001	<0.001	0.002	0.002	0.004	0.004
Male	Marginal Effect	-0.026			-0.027	-0.032	-0.032	-0.031	0.002	0.002
	Stand. Err.	0.059			0.060	0.061	0.064	0.064	0.067	0.067
	P-value	0.656			0.647	0.597	0.620	0.625	0.980	0.979
Christian	Marginal Effect				0.046	0.067	0.074	0.073	0.060	0.060
	Stand. Err.				0.064	0.066	0.068	0.069	0.072	0.072
	P-value				0.474	0.316	0.283	0.289	0.407	0.406
East	Marginal Effect					0.062	0.075	0.076	0.012	0.011
	Stand. Err.					0.122	0.123	0.123	0.125	0.125
	P-value					0.613	0.543	0.538	0.925	0.928
Educational	Marginal Effect						0.145	0.148	0.180	0.180
	Stand. Err.						0.134	0.134	0.140	0.140
	P-value						0.288	0.280	0.216	0.217
Philosophical	Marginal Effect						0.073	0.075	0.103	0.103
	Stand. Err.						0.136	0.136	0.143	0.143
	P-value						0.590	0.582	0.475	0.476
Medicine	Marginal Effect						0.118	0.123	0.111	0.111
	Stand. Err.						0.182	0.183	0.181	0.181
	P-value						0.523	0.509	0.549	0.548
Law	Marginal Effect						-0.028	-0.024	0.001	0.001
	Stand. Err.						0.142	0.142	0.151	0.151
	P-value						0.846	0.868	0.993	0.994
Business	Marginal Effect						0.019	0.023	0.029	0.029
	Stand. Err.						0.118	0.119	0.128	0.128
	P-value						0.870	0.845	0.821	0.820
Rich	Marginal Effect							-0.012	-0.007	-0.007
	Stand. Err.							0.067	0.069	0.070
	P-value							0.856	0.921	0.919
GPA	Marginal Effect								-0.101	-0.101
	Stand. Err.								0.056	0.056
	P-value								0.073	0.073
Blood donor	Marginal Effect									0.004
	Stand. Err.									0.075
	P-value									0.961
Number of observations		320	320	320	320	312	299	299	281	281
Chi-Square Value		50.77	37.39	50.82	51.27	52.64	46.18	46.20	49.11	49.10
P-Value		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Log-Likelihood		-193.992	-201.767	-194.091	-193.734	-188.275	-182.089	-182.074	-167.401	-167.400
Pseudo R2		0.123	0.088	0.123	0.125	0.128	0.120	0.120	0.140	0.140

[*] Specification (1) shows our initial model. In models (2) - (9) we successively add covariates in order to compare the treatment coefficients. We follow the exact same procedure in Table 23 and Table 28.

Research Question II

I. Nonparametric Tests - Treating Non-Available Individuals As If They Had Correctly Responded To The Follow-Up Question

Table 16 - Robustness I - Chi Square Test on the Actual Answer Choice (**H2a**)

Actual			
	Control	Money	Total
Options A,B,C	31	53	84
Options D,E	10	31	41
Total	41	84	125
Expected			
	Control	Money	Total
Options A,B,C	28	56	84
Options D,E	13	28	41
Total	41	84	125
P-Value:	**0.376**		

Table 17 - Robustness I - Chi Square Test on the Actual Answer Choice (**H2b**)

Actual			
	Control	Charity	Total
Options A,B,C	31	24	55
Options D,E	10	23	33
Total	41	47	88
Expected			
	Control	Charity	Total
Options A,B,C	26	29	55
Options D,E	15	18	33
Total	41	47	88
P-Value:	**0.018**		

II. Nonparametric Tests - Treating "Option E" as "Not Filled In"

Table 18 - Robustness II - Chi Square Test on the Actual Answer Choice (**H2a**)

Actual			
	Control	Money	Total
Options A,B,C	29	47	76
Option D	4	13	17
Total	33	60	93
Expected			
	Control	Money	Total
Options A,B,C	27	49	76
Option D	6	11	17
Total	33	60	93
P-Value:	**0.522**		

Table 19 - Robustness II - Chi Square Test on the Actual Answer Choice (**H2b**)

Actual			
	Control	Charity	Total
Options A,B,C	29	21	50
Option D	4	13	17
Total	33	34	67
Expected			
	Control	Charity	Total
Options A,B,C	25	25	50
Option D	8	9	17
Total	33	34	67
P-Value:	**0.014**		

III. Regression Analysis - Treating Not Available Individuals As If They Had Correctly Responded To The Follow-Up Question

Table 20 - Research Question 2 - Treating Non-Available (N/A) Individuals as Correctly Responded

Variable		All subjects*	Men*	Women*
Treatment: money	Marginal Effect	-0.171	-0.362	0.091
	Stand. Err.	0.135	0.139	0.171
	P-value	0.143	0.016	0.592
Treatment: charity	Marginal Effect	-0.252	-0.277	-0.224
	Stand. Err.	0.122	0.190	0.169
	P-value	0.039	0.148	0.201
Age	Marginal Effect	-0.013	-0.003	-0.036
	Stand. Err.	0.008	0.011	0.021
	P-value	0.173	0.813	0.041
Male	Marginal Effect	0.161		
	Stand. Err.	0.088		
	P-value	0.078		
Number of observations		172	99	73
Chi-Square Value		15.03	10.06	12.35
P-Value		0.021	0.041	0.036
Log-Likelihood		-96.252	-50.126	-44.627
Pseudo R2		0.051	0.077	0.096

*who filled in

IV. Regression Analysis - Treating "Option E" as "Not Filled In"

Table 21 - Research Question 2 - Treating "Option E" as "Not filled In"

Variable		All subjects*	Men*	Women*
Treatment: money	Marginal Effect	-0.091	-0.232	0.113
	Stand. Err.	0.099	0.129	0.172
	P-value	0.358	0.087	0.516
Treatment: charity	Marginal Effect	-0.297	-0.327	-0.250
	Stand. Err.	0.126	0.182	0.198
	P-value	0.013	0.056	0.194
Age	Marginal Effect	-0.016	-0.007	-0.040
	Stand. Err.	0.009	0.008	0.018
	P-value	0.074	0.385	0.033
Male	Marginal Effect	0.108		
	Stand. Err.	0.077		
	P-value	0.154		
Number of observations		127	74	53
Chi-Square Value		12.45	4.62	8.84
P-Value		0.014	0.202	0.032
Log-Likelihood		-63.199	-33.194	-27.338
Pseudo R2		0.090	0.075	0.158

*who filled in

V. Regression Analysis - OLS

Table 22 - Research Question 2 - OLS

Variable		All Subjects*
Treatment: money	Coefficient	-0.147
	Stand. Err.	0.088
	P-value	0.095
Treatment: charity	Coefficient	-0.223
	Stand. Err.	0.104
	P-value	0.033
Age	Coefficient	-0.014
	Stand. Err.	0.010
	P-value	0.188
Male	Coefficient	0.135
	Stand. Err.	0.079
	P-value	0.087
Constant	Coefficient	1.007
	Stand. Err	0.251
	P-value	<0.001
Number of observations		151
F-Value		3.10
P-Value		0.018
R2		0.067

*who filled in

VI. Regression Analysis - Including Covariates

Table 23 - Research Question II - Probit Regression Including Covariates

Variable		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Specification					
Money	Marginal Effect	-0.167	-0.178	-0.161	-0.166	-0.165	-0.198	-0.198	-0.227	-0.216
	Stand. Err.	0.099	0.099	0.010	0.099	0.100	0.106	0.106	0.109	0.111
	P-value	0.097	0.078	0.114	0.098	0.107	0.067	0.067	0.046	0.061
Charity	Marginal Effect	-0.249	-0.250	-0.254	-0.236	-0.240	-0.238	-0.238	-0.252	-0.253
	Stand. Err.	0.118	0.118	0.119	0.119	0.121	0.127	0.127	0.138	0.138
	P-value	0.035	0.035	0.033	0.047	0.047	0.060	0.059	0.066	0.063
Age	Marginal Effect	-0.036		-0.013	-0.013	-0.014	-0.006	-0.006	-0.050	-0.051
	Stand. Err.	0.010		0.010	0.010	0.010	0.013	0.013	0.016	0.016
	P-value	0.175		0.194	0.182	0.164	0.649	0.661	0.002	0.001
Male	Marginal Effect	0.143			0.141	0.138	0.178	0.178	0.086	0.082
	Stand. Err.	0.079			0.079	0.080	0.085	0.085	0.089	0.088
	P-value	0.073			0.077	0.085	0.038	0.038	0.334	0.351
Christian	Marginal Effect				0.086	0.088	0.130	0.130	0.169	0.177
	Stand. Err.				0.092	0.094	0.101	0.101	0.106	0.106
	P-value				0.339	0.341	0.191	0.190	0.104	0.087
East	Marginal Effect					0.005	0.019	0.019	0.184	0.181
	Stand. Err.					0.161	0.152	0.152	0.124	0.124
	P-value					0.977	0.900	0.901	0.233	0.242
Educational	Marginal Effect						0.281	0.280	0.292	0.287
	Stand. Err.						0.114	0.114	0.106	0.108
	P-value						0.068	0.070	0.067	0.075
Philosophical	Marginal Effect						0.320	0.320	0.318	0.302
	Stand. Err.						0.094	0.096	0.097	0.103
	P-value						0.017	0.020	0.032	0.049
Medicine	Marginal Effect						0.055	0.054	0.234	0.232
	Stand. Err.						0.230	0.234	0.147	0.145
	P-value						0.818	0.824	0.291	0.289
Law	Marginal Effect						0.358	0.358	0.284	0.278
	Stand. Err.						0.083	0.085	0.118	0.121
	P-value						0.011	0.015	0.099	0.109
Business	Marginal Effect						0.246	0.245	0.282	0.274
	Stand. Err.						0.150	0.158	0.172	0.174
	P-value						0.115	0.137	0.116	0.130
Rich	Marginal Effect							0.001	0.027	0.023
	Stand. Err.							0.095	0.094	0.094
	P-value							0.988	0.774	0.807
GPA	Marginal Effect								0.271	0.279
	Stand. Err.								0.092	0.092
	P-value								0.003	0.002
Blood donor	Marginal Effect									0.087
	Stand. Err.									0.090
	P-value									0.351
Number of observations		151	151	151	151	149	143	143	137	137
Chi-Square Value		10.50	4.76	6.07	10.85	10.85	22.67	22.81	30.65	34.15
P-Value		0.033	0.092	0.108	0.054	0.093	0.020	0.029	0.004	0.002
Log-Likelihood		-93.198	-95.973	-94.802	-92.736	-91.158	-82.671	-82.671	-70.794	-70.438
Pseudo R2		0.053	0.025	0.037	0.058	0.060	0.118	0.118	0.202	0.206

Research Question III

I. Nonparametric Tests - Treating Not Available Individuals As If They Had Correctly Responded To The Follow-Up Question

Table 24 - Robustness I - Chi Square Test on the Number of New Donors (**H3a**)

Actual			
	Control	Money	Total
Options A,B,C	31	53	84
Options D,E + Left Blank	74	53	127
Total	105	106	211
Expected			
	Control	Money	Total
Options A,B,C	42	42	84
Options D,E + Left Blank	63	64	127
Total	105	106	211
P-Value:	**0.002**		

Table 25 - Robustness I - Chi Square Test on the Number of New Donors (**H3b**)

Actual			
	Control	Charity	Total
Options A,B,C	31	25	56
Options D,E + Left Blank	74	84	158
Total	105	109	214
expected			
	Control	Charity	Total
Options A,B,C	27	29	56
Options D,E + Left Blank	78	80	158
Total	105	109	214
P-Value:	**0.273**		

II. Regression Analysis - Treating Not Available Individuals As If They Had Correctly Responded To The Follow-Up Question

Table 26 - Research Question 3 - Treating Non-Available(N/A) Individuals as Correctly Responded

Variable		All subjects	Men	Women
Treatment: money	Marginal Effect	0.220	0.173	0.274
	Stand. Err.	0.067	0.088	0.104
	P-value	0.001	0.048	0.007
Treatment: charity	Marginal Effect	-0.065	-0.055	-0.071
	Stand. Err.	0.065	0.087	0.098
	P-value	0.324	0.533	0.479
Age	Marginal Effect	-0.013	-0.009	-0.028
	Stand. Err.	0.006	0.006	0.010
	P-value	0.026	0.131	0.006
Male	Marginal Effect	0.047		
	Stand. Err.	0.054		
	P-value	0.381		
Number of observations		320	184	136
Chi-Square Value		26.54	9.19	18.69
P-Value		<0.001	0.027	<0.001
Log-Likelihood		-193.301	-115.444	-73.926
Pseudo R2		0.068	0.039	0.129

III. Regression Analysis - OLS

Table 27 - Research Question 3 - OLS

Variable		All Subjects
Treatment: money	Coefficient	0.203
	Stand. Err.	0.652
	P-value	0.002
Treatment: charity	Coefficient	-0.042
	Stand. Err.	0.060
	P-value	0.483
Age	Coefficient	-0.013
	Stand. Err.	0.003
	P-value	<0.001
Male	Coefficient	0.034
	Stand. Err.	0.051
	P-value	0.505
Constant	Coefficient	0.562
	Stand. Err	0.085
	P-value	<0.001
Number of observations		320
F-Value		9.85
P-Value		<0.001
R2		0.453

IV. Regression Analysis - Including Covariates

Table 28 - Research Question III - Probit Regression Including Covariates

Variable		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
						Specification				
Money	Marginal Effect	0.203	0.182	0.202	0.202	0.194	0.189	0.189	0.166	0.167
	Stand. Err.	0.067	0.066	0.067	0.067	0.068	0.071	0.071	0.074	0.074
	P-value	0.002	0.005	0.002	0.002	0.004	0.007	0.007	0.022	0.022
Charity	Marginal Effect	-0.054	-0.062	-0.056	-0.050	-0.063	-0.040	-0.037	-0.046	-0.042
	Stand. Err.	0.064	0.065	0.064	0.064	0.065	0.068	0.069	0.071	0.071
	P-value	0.406	0.347	0.395	0.444	0.342	0.556	0.592	0.520	0.558
Age	Marginal Effect	-0.018		-0.017	-0.017	-0.019	-0.016	-0.153	-0.032	-0.033
	Stand. Err.	0.006		0.006	0.006	0.007	0.008	0.008	0.009	0.009
	P-value	0.004		0.005	0.004	0.007	0.049	0.066	0.001	0.001
Male	Marginal Effect	0.039			0.038	0.033	0.057	0.059	0.038	0.038
	Stand. Err.	0.053			0.053	0.054	0.056	0.056	0.059	0.059
	P-value	0.459			0.479	0.536	0.309	0.299	0.526	0.525
Christian	Marginal Effect				0.064	0.065	0.082	0.081	0.080	0.081
	Stand. Err.				0.057	0.058	0.060	0.060	0.061	0.061
	P-value				0.271	0.277	0.189	0.196	0.206	0.196
East	Marginal Effect					-0.018	0.017	0.019	0.059	0.054
	Stand. Err.					0.105	0.109	0.109	0.121	0.120
	P-value					0.862	0.877	0.860	0.615	0.644
Educational	Marginal Effect						0.275	0.284	0.342	0.340
	Stand. Err.						0.149	0.150	0.160	0.161
	P-value						0.061	0.055	0.035	0.037
Philosophical	Marginal Effect						0.273	0.280	0.342	0.343
	Stand. Err.						0.150	0.150	0.159	0.160
	P-value						0.064	0.059	0.033	0.034
Medicine	Marginal Effect						0.111	0.131	0.281	0.294
	Stand. Err.						0.218	0.222	0.234	0.234
	P-value						0.595	0.539	0.223	0.206
Law	Marginal Effect						0.287	0.302	0.318	0.315
	Stand. Err.						0.148	0.148	0.164	0.165
	P-value						0.049	0.040	0.052	0.055
Business	Marginal Effect						0.146	0.158	0.223	0.225
	Stand. Err.						0.118	0.119	0.133	0.134
	P-value						0.220	0.186	0.100	0.100
Rich	Marginal Effect							-0.039	-0.033	-0.037
	Stand. Err.							0.061	0.063	0.063
	P-value							0.526	0.610	0.563
GPA	Marginal Effect								0.086	0.85
	Stand. Err.								0.054	0.054
	P-value								0.111	0.115
Blood donor	Marginal Effect									0.049
	Stand. Err.									0.068
	P-value									0.466
Number of observations		320	320	320	320	312	299	299	281	281
Chi-Square Value		25.78	15.20	24.94	26.54	25.67	26.01	26.58	29.97	30.89
P-Value		<0.001	0.001	<0.001	<0.001	<0.001	0.007	0.009	0.005	0.006
Log-Likelihood		-187.820	-194.818	-188.088	-187.212	-182.869	-172.143	-171.945	-159.938	-159.669
Pseudo R2		0.073	0.038	0.071	0.076	0.076	0.086	0.087	0.110	0.112