

Organs Donation Rate in Mandated Choice Systems

Organ donation systems are highly important for societies. The availability of organs to transplant to people that need them might be the difference between life and death. In the US over 116,000 people are currently waiting for a lifesaving donation, while 18 die each day due to a lack of donors (Health Resources & Services Administration, 2012). Ideally everyone who is healthy and of adult age should voluntarily donate their organs upon death to benefit the rest of the society. This ideal level of altruism is probably not attainable in the real world, but legislative policy can be enacted to encourage people to do so.

Introduction

We are able to see differences between the opt-in and opt-out systems throughout the world. We find that donation rate is highly correlated with the type of system. While opt-in system countries like the US and Germany have very low donor rates around 30% and 12%, respectively, opt-out system countries, such as Austria, Netherlands and Portugal, have very high donor rates ranging 99-100% (Johnson and Goldstein, 2003).

Johnson and Goldstein (2003) analyzes whether the difference between the systems would be due to a default bias or not. In their experiment, they prove in a simulated environment that people will not change the default option for organ donations even if the cost of doing so is minimal. Therefore, they get somewhat similar results to reality as the difference between opt-out and opt-in is extremely significant - the hypothetical donation rate for opt-in system is 42%, while for the opt-out system the rate is 82%. It seems logical that countries would actually want to change system, from opt-in to opt-out, as the latter seems to be far more effective and beneficial. That transition from opt-in systems to opt-out systems is our research interest: What are the policy results of the change in system? Will the donation rate automatically adjust due to the default bias, and if so, how long will it take?

In our opinion, the transition would take some generations until the country fully adjusts to the new system. Let's take the example of an opt-out society that will change to an opt-in system. In such a society, individuals may think that the government wants them to donate organs or even that it is beneficial to donate, as the government usually takes a paternalistic role, adapting its status quo as their own. When changing to an opt-in system: going to a new society status quo, people may take some time to adapt, still believing that it is good to donate organs. Therefore, in the beginning of the transition, we would see a status quo bias dominating, being progressively substituted by the default bias as the time progresses.

However, Roth and Kessler (2012) utilize a different approach while using different opt-in systems. They divided the experiment in two different games and looked to see if the differences between the different incentive models persisted in the second game. At the end of their experiment, they concluded that they do not persist.

Experimental Design

For the experiment, we take most of the design from Roth and Kessler (2012), while applying to opt-in vs. opt-out systems instead. In this game, the decision to donate at the beginning of the

round is equivalent to donate the organs at death. Subjects that are playing the opt-in condition will be asked if they want to donate, while subjects that are playing the opt-out condition will be asked if they do not want to donate their organs upon death. In the experiment, there will be two phases with several rounds each. In each round, the subject will play 10 periods.

The basic interactions of the game are related to the usage of A and B units. Subjects are not told that such units represent the brain and kidneys, respectively to prevent donation for emotional reasons. Such as Roth and Kessler (2012), we provide each subject with one unit A – with 10% chance of failure – and two units B – each with 20% chance of failure. Failure will be decided by a random number generator. At the beginning of each round, each subject is given 2 dollars. At each period within a round, the subject is given an additional dollar, if all his A and both B units are still working properly. This is to simulate an income while the subject is healthy and alive.

When an A unit fails, the subject is out of the game for that round. A unit failure is representative of brain death, and allows the subject to donate their B unit if still working. When a B unit fails, the subject has 5 periods to receive a B unit from a player who has lost their A unit already. If after 5 periods he does not receive a B unit, then he goes out of the game. When a player goes out of the game, he loses 1 dollar and does not earn more money, until the end of the round. When a subject goes out of game, he can only donate the organs to players during the same period in which he goes out of game. However, to represent the psychological issues and other associated costs with donating the units, the subjects will have to pay a small additional amount of money. As in Roth and Kessler (2012), we think that the subjects don't necessarily all have the same (psychological) costs to donate. Thus, in each group half of the subjects will be randomly selected to be high-cost donors and half low-cost donors. While the first pays 0.85 dollars, the second pays 0.45 dollars. The subjects are only told their cost of donation and not told that the cost is different between subjects. To incentivize the subjects, they will be told they will be paid according to their performance in a few randomly chosen rounds.

Some groups will interact in an opt-in system for the first phase and opt-out system for the second, while some will do the opposite. There will be two control groups: one interacting in both phases in an opt-in environment and the second group in an opt-out system also in both phases. Each different condition will have 3 groups of 12 subjects.

The length of the first game will not be the same for all the groups that are switching system. Such is due to the same purpose of our experiment. The longer the length of the first game, the longer we expect the subjects to need to take the same status quo of the new system as their own. Thus, the groups that are changing systems are going to play first either 10, 15 or 20 rounds. The second stage will always have 20 rounds, as we think that the time that it takes for someone to change status quo should be at most the time the same person was exposed to the same system. The control groups will have the same number of rounds of the group with the longest experiment, i.e. 20 rounds in each stage.

Expected Results

With our given sample size we do not expect a large amount of variation that would affect our

results. We believe that the control groups will have a small amount of variation in the beginning of the games, but will quickly stabilize at a given percentage. Without external instruction or knowledge, we expect subjects to maintain their choice to donate or not simply to be consistent. Obviously, the system that subjects are in will affect the donation rate. Subjects in the opt-out system will naturally have a higher donation rate than the subjects in the opt-in system due to the default bias. From current data, we expect our control groups to have donation rates of about 20% and 85% for opt-in and opt-out systems, respectively. In our experimental groups, we expect subjects that transition from opt-in to opt-out to have a higher donation rate by the end of the games than the subjects that transition from opt-out to opt-in. The final donation rates should increase to a level close to the control group donation rates. We also expect that the longer the length of the first game, the longer it will take for the subjects to adapt themselves to the new system of the new game. Therefore we expect the subjects who played the shorter first game more quickly leveled off to their respective donation rates.

Conclusion

From our results, we attempt to predict the length of the transition in terms of donor rates in the United States if a bill was passed, changing the US from an opt-out into an opt-in system. We look to historical examples of the change from opt-in to opt-out. Belgium introduced a soft opt-out system in 1986 and successfully saw donor rates doubling within three years (Kidney Wales Foundation, 2010). We believe we can expect to see similar gains in the US in a slightly longer time frame, due to the relative sizes of the countries. Over the long run, such as at least one generation, we believe that donation rates will be at least 95% in all cases. This will likely happen due to default bias on the part of the new generations, and many people who might have opposed donation in the past will be less vocal or will have passed. Additionally, education about the issue should be able to sufficiently overcome old default biases. The main factor that our experiment did not account for is cultural differences between countries. We see that Sweden has an 85.9% donation rate while Austria has a 99.98% rate (Johnson and Goldstein, 2003). They both operate under an opt-out system, yet they have a rather large gap in donation rates. The difference could be the result of cultural nuances such as unwillingness to think about death and concerns about the actual donation in practice (Buggins, 2008). For example, in Japan a combination of distrust in western medicine and a highly publicized and controversial heart transplant in 1968 created a cultural belief that organ donation was something to be extremely wary about (Wicks, 2000). All countries would greatly benefit from increased organ donation; perfectly usable organs that can be used to save lives are being buried every day. We highly encourage lawmakers to promote awareness and create legislation on this pressing issue.

References

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