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# Do all material incentives for pro-social activities backfire? The response to cash and non-cash incentives for blood donations

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ABSTRACT

A number of experimental studies have documented that financial rewards discourage the performance of altruistic activities because they conflict with intrinsic altruistic motivations. However, it is unclear whether this is evidence of a generalized aversion to rewards or, rather, an aversion to receiving specific material prizes, such as cash. We conducted a randomized-controlled experiment, through a survey administered to 467 blood donors in an Italian town, and found that donors are not reluctant to receive compensation in general; a substantial share of respondents declared that they would stop being donors if given 10 Euros in *cash*, but we do not find such effects when a *voucher* of the same nominal value is offered instead. The aversion to direct cash payments is particularly marked among women, but does not emerge among individuals who have only recently become donors. All of our findings are robust to regression analyses. Implications for research and public policy are discussed.



## 1. Introduction

A large body of scholarly work, in both Psychology and Economics, has tackled the question of whether altruistic behavior can be further stimulated by providing individuals with extrinsic rewards. Standard economic theory would predict that any additional incentive for a given activity would increase an individual's willingness to perform that activity. However, research in Psychology as well as recent economic models claim that incentives might not work so simply in the case of activities individuals already perform because of intrinsic motivation, such as charitable giving, volunteering, or donating blood. The provision of extrinsic rewards beyond the intrinsic drive to perform these activities could, in fact, undermine the intrinsic benefit or, equivalently, increase the cost of these activities, thus leading to a reduction of their supply (Titmuss, 1971; Deci, 1975; Bénabou & Tirole, 2003, 2006).

A number of experimental studies have tested for the presence of such "crowding out" effects of extrinsic incentives for altruistic activities,[1] generally finding results consistent with the "crowding out" hypothesis. In the vast majority of these stud-

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[1] See, among others, Deci (1975), Howden Chapman, Carter, and Woods (1996), Frey and Oberholzer-Gee (1997), Gneezy and Rustichini (2000), Mellstrom and Johannesson (2008).

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ies, however, only one specific type of material reward is offered: cash money.[2] This raises the question of whether it is the *type* of material reward, rather than the presence of some explicit incentive in general, that makes potential contributors uncomfortable and less willing to perform an altruistic activity.

Existing literature, including Heyman and Ariely (2004), and Kube, Marechal, and Puppe (2008), provides some evidence that different types of rewards of the same nominal value elicit different responses. However, these studies have considered activities with no direct pro-social content or motives.[3] In these papers, in-kind payments for these activities lead to higher effort choices compared to paying with cash, and the cash payment appears to be ineffective or even counterproductive in stimulating extra effort (especially if the amount of cash is very small). One explanation that has been advanced for this finding is that a payment in kind might be perceived by the participant as a type of gift-giving or relationship-developing act as opposed to a pure market interaction, thus making individuals more likely to exert great effort (Heyman & Ariely, 2004; Ariely, Bracha, & Meier, 2009). Interestingly, similar evidence exists in the context of individuals' willingness to behave dishonestly. Experimental studies show that individuals are more likely to engage in moderate amounts of dishonest practices when the benefit of doing so is in the form of non-cash returns. A mechanism that might be at work in these cases is one of "self-concept maintenance" (Mazar, On, & Ariely, 2008). Individuals might be judging themselves as less "greedy" (a characteristic that might have, to one's self or to society, a negative connotation) if they perform an activity without direct monetary remuneration, while still possibly enjoying some other form of reward that might not have the same negative connotation. Similarly, when stealing money directly, or cheating in order to receive plain cash, people have a hard time justifying (to themselves, first) their actions. With other forms of payment, the individual may be able to rationalize and justify his or her behavior.

To our knowledge, no study has directly contrasted the effects of value-equivalent rewards, in cash and in kind, on pro-social activities.[4] In this paper, we set out to study the response to different forms of extrinsic rewards for the performance of a specific pro-social activity: blood donation. We chose to focus on blood donations because this is a notable example of a critically important pro-social activity for which demand exceeds supply. Blood transfusions are required in such critical situations as massive blood loss due to trauma, blood replacement during surgical interventions, the treatment of premature babies, several types of cancer, and blood-related diseases. In recent years, the demand for blood has increased dramatically, due to, among other causes, an aging population and new medical and surgical procedures, such as organ transplants. However, even though many individuals are eligible to donate blood and numerous awareness campaigns are run to promote its importance, only a small percentage of eligible individuals (between 5% and 10%) donate blood in the western world and even fewer do so in developing countries. As a consequence, blood supply shortages (as defined by the supply of blood being below what is necessary for three days) have become the norm rather than the exception (Di Rado, 2004; Hemobiotech, 2008; Oakley, 1996). Given these alarming shortages, "pure" altruism is apparently not enough to guarantee a steady supply of blood. It is, therefore, important, from a public policy point of view, to assess whether some kind of extrinsic incentive would help increase blood donations.

Some empirical studies that address this question precisely in the context of blood donation appear consistent with the impact of incentives depending on the type of extrinsic rewards, rather than with donors' general aversion to being rewarded in any way for their service. Surveys and experiments that have been conducted in New Zealand and Sweden, for instance, show that some donors may be averse to the presence of cash rewards (Howden Chapman et al., 1996; Mellstrom & Johannesson, 2008). On the other hand, some studies have documented that material incentives that are "steps removed" from direct cash, such as lottery tickets, in-kind or symbolic rewards, and the possibility of taking a paid leave of absence, have a positive impact on blood donations (Goette & Stutzer, 2008, Lacetera & Macis, 2008a, 2008b, Lacetera, Macis, & Slonim, 2009).

These studies, however, consider either only cash awards, or only non-cash incentives, and these have been of different values and in different contexts, which makes direct comparison quite problematic. A controlled environment where agents are treated with value-equivalent, cash or in-kind rewards would be required in order to address this issue. This is what we set forth to do in the present paper. Specifically, we set up a randomized-controlled experiment through a survey instrument administered to 467 Italian blood donors, to test their reaction to different hypothetical rewards of the same cash value: direct cash (10 Euros) and a voucher for the purchase of some goods of the same nominal value. Respondents were randomly assigned to one of two different versions of a survey, one containing a 10-Euro cash proposal, and the other proposing a 10-Euro voucher, and they all were asked how their donation behavior would change in response of these rewards. The use of hypothetical scenarios rather than actual payments is dictated by laws that prohibit offering cash rewards to blood donors in most countries, including Italy. Previous studies on people's willingness to accept payments for certain actions or decisions have used similar techniques (a notable example is Frey & Oberholzer-Gee (1997)). We focus on an actual population of blood donors rather than a random sample from the general population because the "crowding out" hypothesis applies to

[2] One exception is Falk (2007), who, however, considered only non-cash rewards. Interestingly, Falk finds *positive* responses to non-cash gifts, especially when larger in value.

[3] For example, Heyman and Ariely (2004) consider such activities as moving sofas into vans, dragging computerized balls across computer screens, and solving arithmetic puzzles.

[4] A partial exception is represented by Neckermann and Frey (2008), who study the impact of awards accompanied by cash payments and gifts on the provision of public goods within a firm. Interestingly, and in contrast to what we find below, they find that awards accompanied by cash rewards, especially if sufficiently high, are most effective.

individuals who choose to engage in pro-social behavior even in the absence of material rewards (i.e., individuals who are intrinsically motivated).[5]

The "motivational crowding out" hypothesis, in its conventional form, would predict that donors are opposed to any form of payment. For instance, in Bénabou and Tirole (2006) framework, any extrinsic reward would create doubts as to whether the individuals are engaging in a pro-social act because they are truly altruistic or just to receive the reward. If, instead, donors are not averse to any form of payment but have a specific aversion to direct cash payments, then we should observe a negative response to cash payments, but not to in-kind payments. The attitude toward in-kind payments may be neutral compared to the status quo of no reward and as found in some of the previously cited papers; or it can even be positive (e.g., leading donors to pledge to more frequent donations). Finally, from the perspective of "standard" economic theory, a payment in cash is never less preferable to an in-kind payment of the same dollar value (see, e.g., Waldfogel, 1993).

We find that although the majority of donors declare that their donation behavior would not be affected by either cash or voucher payments of the defined amount (10 Euros), there is a large difference in the percentage of donors who declare they would *stop* donating between the "cash" and "voucher" treatments. While only 3.5 percent of those who were proposed a 10-Euro voucher responded that they would stop donating, about 13 percent of those who were offered 10 Euros in cash declared that they would stop donating. This difference is strongly statistically significant, and robust to a series of controls in regression analyses and alternative specifications. Thus, donors do not seem to display a general aversion to material incentives, but many show a marked aversion to cash payments. Interestingly, the two answers most frequently given by respondents, in both the cash and voucher scenarios, are that they would keep the same donation frequency, and that they would no longer be donors. Our interpretation of this finding is that donors seem to react to the question in one of two ways: either they will remain donors, or they will discontinue donation. It appears, therefore, that receiving an in-kind reward does not seem in conflict with being a donor whereas receiving cash, at least for a non-negligible share of the respondents, is not consistent with being a blood donor.[6]

We also explore whether the relative aversion to cash payments correlates with some donor characteristics. One issue of interest is whether female donors respond differently than do male donors. Research from a number of fields suggests that gender differences exist, for example, in attitudes toward competition, cooperation, and risk taking, and attempts have been made to separate the biological and environmental determinants of these differences (see Croson & Gneezy (2009) for a survey). Recent studies have also analyzed whether males and females differ in their attitudes toward charitable activities and other pro-social behaviors (Andreoni & Vesterlund, 2001; Mellstrom & Johannesson, 2008; Piper & Schnepf, 2007). In particular, the experiment in Sweden by Mellstrom and Johannesson (2008) found that women are reluctant to become blood donors if money is offered to them whereas no such effect was found for males. Interestingly, in our study, we also find large gender differences. In fact, female donors are almost twice as likely to declare that they would stop donating or donate less often compared to male donors; the gender difference is much smaller for the in-kind payment, however.

Another dimension that we explored is the issue of whether individuals who became donors only recently respond differently compared to individuals who have been donors for longer. This is potentially interesting because, if a generalized aversion to rewards as opposed to the status quo of no rewards were present, one would expect this aversion to be more pronounced among donors with a longer exposure to the traditional, no-reward regime. Consistent with this prior, we find that both male and female respondents who became donors recently respond less negatively to cash payments.

The remainder of this paper is organized as follows. In Section 2, we describe the institutional background, the experimental design, the participants, and the resulting data. In Section 3, we present our findings. In Section 4, we discuss our findings, and we conclude with the implications of our work for policies aimed at increasing blood donations and charitable contributions in general.

## 2. Institutional background and data

### 2.1. Blood donation in Italy and in the Town

The data used in this study originate from a questionnaire distributed to blood donors in an Italian town ("The Town" hereinafter)[7] located in the Center-North part of the country. Before describing the data and our methods, we report on the blood donation system in Italy and in The Town. Blood donation in Italy is organized through blood banks, which are run by voluntary donor associations. These associations have a central headquarters as well as town-level units. In order to donate blood, an individual is required to become a member of one of these associations. The three major associations, which are present in different parts of the country and do not compete with one another, are *Associazione Volontari Italiani del Sangue* (AVIS), with about 1.1 million members in 2007, *Federazione Italiana delle Associazioni Donatori di Sangue* (FIDAS), with about 400,000

[5] Lazear, Malmendier, and Weber (2009) show that choosing subjects randomly, and "forcing" them to engage in situations that they would not choose to engage in the real world often biases the findings of experimental studies.

[6] We thank a referee for motivating us to discuss this intriguing finding.

[7] In order to protect the privacy of the donors in our database, we have agreed to keep the name of The Town (as well as any other identifying information) confidential. The demographic, social, and economic characteristics of The Town's population are highly representative of the overall Italian urban population. Statistics comparing the Town with other Italian towns under a number of socio-economic characteristics are available upon request.

members (Caligaris, 2007), and *Fratres* (150,000 members in 2000).[8] Since, the affiliation is to a local unit of the national associations, blood donors predominantly donate in the town where "their" unit is located. In The Town, blood donation is managed by the largest blood donor association, AVIS, and aphereses of either whole blood or blood's components (plasma, platelets) are performed at The Town's public hospital, Monday through Saturday from 8 to 11 a.m. The waiting time for a donation varies, and is typically comprised between 10 and 30 min. Part of the wait is due to the requirement of donors to fill in and sign a consent form regarding their health status. The donation of blood and blood components is entirely gratuitous. Cash payments to donors are not allowed, and the association does not give any promotion items.[9]

### 2.2. Survey design, participants, and data

A survey was constructed in collaboration with the local AVIS office, and was proposed to all donors presenting between August 1, 2007 and October 31, 2007. The questionnaire was administered by the personnel of the Transfusion Unit, who also handled the informed consent forms. The survey was completely anonymous and participation was voluntary.

The survey was presented by AVIS as a way for their local chapter to better understand their donors' characteristics, as well as behaviors and attitudes about blood donation. A first set of questions concerned demographic and general attitudes and characteristics, such as age range, gender, education, and religiosity. A second set of questions concerned donation habits, including how long the respondent had been a donor, the frequency of donations, and whether the respondent donated with others and had other donors in his/her family. An additional set of questions inquired as to how the respondents came to know about the AVIS activity, and a final set of questions elicited donors' opinions on what AVIS can do to increase its donors' pool and donations. All questions were multiple choice. A copy of the questionnaire is available from the Authors upon request. The survey took between 5 and 10 min to be completed. Given the standard waiting time reported above, responding to the survey did not add any major inconvenience to the donors.

Within this survey structure, we had authorization from AVIS to add one question regarding attitudes toward the presence of material incentives as a reward for blood donors. Specifically, the respondents were randomly assigned to one of two versions of the additional question. One version asked: "If each donor were to be given 10 Euros at each donation, you would donate…"; the other version asked: "If each donor were to be given a 10-Euro voucher to purchase books or food, at each donation, you would donate…", and the same set of (mutually exclusive) answers was provided: *1. I would donate less often than I currently do; 2. I would donate as often as I currently do; 3. I would donate more often than I currently do; 4. I would no longer be a blood donor.*[10] Through this research design, our objective was to assess whether cash-equivalent rewards generate the same behavioral response (or at least the same reaction) among participants, or if, instead, the type of reward, holding its value constant, affects the responses. The assignment to one of the two treatments was random, and neither the respondents nor the personnel proposing and distributing the survey were informed or aware of the presence of the two treatments.

This design shares some features with vignette studies (Opp, 2002; Rossi & Nock, 1982; see, in particular, Neckermann & Frey (2008) for an application to Economics research), in that it presents the subjects with a realistic (albeit only hypothetical) scenario, and asks them how they would respond to it.[11] There are, however, some differences from a typical vignette study design. First, we modified only one element of the situation. Second, we propose only one situation to each respondent, a design that does not allow us to control for individual fixed effects. The relatively large number of respondents should help to average out individual unobservable characteristics that might bias the results. Also, the fact that only one version of the hypothetical treatment was offered to each participant should reduce concerns about respondents being prompted to give different answers to different versions of the focal question. Furthermore, the treatment question was part of a longer survey, and this mitigates the concerns that respondents would immediately focus on the question of interest and introduce biases.

Finally, in order to evaluate potential biases to the answers to our hypothetical questions, such as a social desirability bias (which in turn, might depend on the particular type of the hypothesized payment), we examine the answers given to another question in the survey, which asked respondents to assess how effective payments would be to elicit donations in the general population. We report on the analysis of this further question and the responses in the discussion section below.

A total of 490 donors answered our questionnaires, giving a response rate between 55 and 65 percent.[12] We discarded 23 questionnaires, which were missing most of the information; thus we were left with 467 respondents with valid answers.

[8] Blood donations run through blood banks and volunteer donor associations (which have been present since the 1920s) have become the official blood donation and collection system in Italy, after a brief period, following the end of World War II, when the Red Cross played a prominent role. Similar blood-bank systems exist in other countries, such as Denmark, Greece, Norway, Portugal, and Spain. In the UK, France, and Ireland, by contrast, the organization of blood donation is run by the State. The Red Cross, finally, is the dominant organization that manages blood donation in such countries as Belgium, The Netherlands, Germany, and the US. In the US, however, the system is more heterogeneous and competitive, comprising the Red Cross, blood banks, and hospitals directly managing blood donations.

[9] Donors who are employees, however, have, by law, the right to a one-day leave of absence on the day they donate (Lacetera & Macis, 2008a).

[10] This is the exact wording of the questions and multiple choice answers, in Italian: (A) "Cash" version of the question:" Se fossero dati 10 Euro ad ogni donatore per ogni donazione, ti recheresti a donare: 1. Meno spesso che adesso; 2. Lo stesso numero di volte; 3. Piu' spesso che adesso; 4. Smetterei di essere donatore." (B) "Voucher" version: "Se fosse dato un buono del valore di 10 Euro ad ogni donatore per ogni donazione, da spendere per l'acquisto di cibo o di libri, ti recheresti a donare: 1. Meno spesso che adesso; 2. Lo stesso numero di volte; 3. Piu' spesso che adesso; 4. Smetterei di essere donatore."

[11] The use of a survey, which was distributed to the donors as they waited to donate, as opposed to a laboratory experiment, also adds an element of realism to the focal question. A controlled laboratory experiment would be too removed from the situation of interest (Neckermann & Frey, 2008).

[12] To preserve the anonymity of The Town, we cannot reveal the exact number of donors presenting in the period of interest, therefore, we cannot report the exact response rate and provide only a range.

**Table 1**
Descriptive statistics of the sample population and the universe of blood donors in The Town. Data are reported as both percentages and numbers of valid answers. Answers to some of the questions were sometimes missing. The demographic information on the respondents comes from the answers to the survey. The AVIS chapter of The Town kindly provided the information on the whole population of donors in year 2007 (data are reported only in percentage terms for confidentiality reasons).

| Variable | Entire sample | | Treatment | | | | All donors in the Town |
|---|---|---|---|---|---|---|---|
| | | | Voucher | | Cash | | |
| | % | *N* | % | *N* | % | *N* | |
| *Treatment* | | | | | | | |
| Cash | 44.97 | 210 | | | | | |
| Voucher | 55.03 | 257 | | | | | |
| Female | 26.1 | 119 | 28.17 | 71 | 23.53 | 48 | 30.8 |
| Male | 73.9 | 337 | 71.83 | 181 | 76.47 | 156 | 69.2 |
| *Age* | | | | | | | |
| 18–39 | 15.54 | 71 | 17.79 | 45 | 12.75 | 26 | 15.96 |
| 30–39 | 27.79 | 127 | 25.3 | 64 | 30.88 | 63 | 32.29 |
| 40–49 | 34.57 | 158 | 35.97 | 91 | 32.84 | 67 | 30.79 |
| 50–65 | 22.10 | 101 | 20.95 | 53 | 23.53 | 48 | 20.96 |
| *Donor since* | | | | | | | |
| Less than 1 Year | 12.64 | 58 | 11.55 | 29 | 13.94 | 29 | 13.69 |
| 1–2 Years | 9.15 | 42 | 11.16 | 28 | 6.73 | 14 | 8.46 |
| 2–4 Years | 13.94 | 64 | 15.94 | 40 | 11.54 | 24 | 13.43 |
| 4–10 Years | 25.71 | 118 | 21.91 | 55 | 30.29 | 63 | 30.24 |
| Over 10 Years | 38.56 | 177 | 39.44 | 99 | 37.5 | 78 | 34.19 |
| *Education* | | | | | | | |
| Less than High School | 23.80 | 109 | 25.30 | 64 | 21.95 | 45 | NA |
| High School | 54.15 | 248 | 55.73 | 141 | 52.20 | 107 | NA |
| College or Higher | 22.05 | 101 | 18.97 | 48 | 25.85 | 53 | NA |
| *Religion* | | | | | | | |
| Atheist/agnostic | 10.96 | 50 | 11.11 | 28 | 10.78 | 22 | NA |
| Catholic, observant | 32.89 | 150 | 36.11 | 91 | 28.92 | 59 | NA |
| Catholic, non-observant | 55.26 | 252 | 51.19 | 129 | 60.29 | 123 | NA |
| Non-Catholic | 0.88 | 4 | 1.59 | 4 | 0.00 | 0 | NA |

Descriptive statistics are provided in Table 1. The median respondent was male, aged 40–49, had a high-school diploma, and had been a donor for at least 4 years. Table 1 confirms that the donors' observable characteristics – gender, age, and seniority as donors – do not differ substantially between treatment groups; also, comparison with the last column in the table shows that the sample is well representative of the whole population of donors in The Town.[13]

## 3. Findings

### 3.1. Descriptive analyses

Fig. 1 reports the distribution of the answers to the key question "If each donor were to be given X at each donation, you would donate..." by the type of reward X (i.e., 10 Euros cash or a 10-Euro voucher). Even though, in both cases, a large majority of donors declare their donation behavior would not be affected, there is a striking difference in the fraction of donors who declare they would *stop* donating between the "cash" and "voucher" groups. Among those who were assigned a questionnaire with the "voucher" question, only 3.5 percent responded that they would stop being blood donors compared to 12.9 percent of those who were assigned the "cash" version of that question.

In Figs. 2 and 3, we investigate whether some donor characteristics, namely gender and experience (length of time) as blood donors, are systematically correlated with the differential response to the cash and the voucher reward.

In Fig. 2, we see that, although the fraction of donors who would donate less or stop donating in response to a cash incentive is higher than in response to a voucher of the same nominal value for both males and females, a marked gender difference emerges in response to the "cash" incentive, with 20.8% of female donors declaring that they would reduce or stop donating if offered cash compared to 10.9% of males.

Fig. 3 documents the extent to which attitudes toward different types of material incentives to blood donation differ between respondents who have become donors in the past 12 months (we call them "new donors") and respondents who have been donors for a longer period of time. The columns, again, report the percentage of respondents who declared that they would donate less often or stop being donors in response to the presence of a particular reward. Fig. 3 clearly indicates that

[13] The AVIS chapter of The Town kindly provided the data for the last column of Table 1.

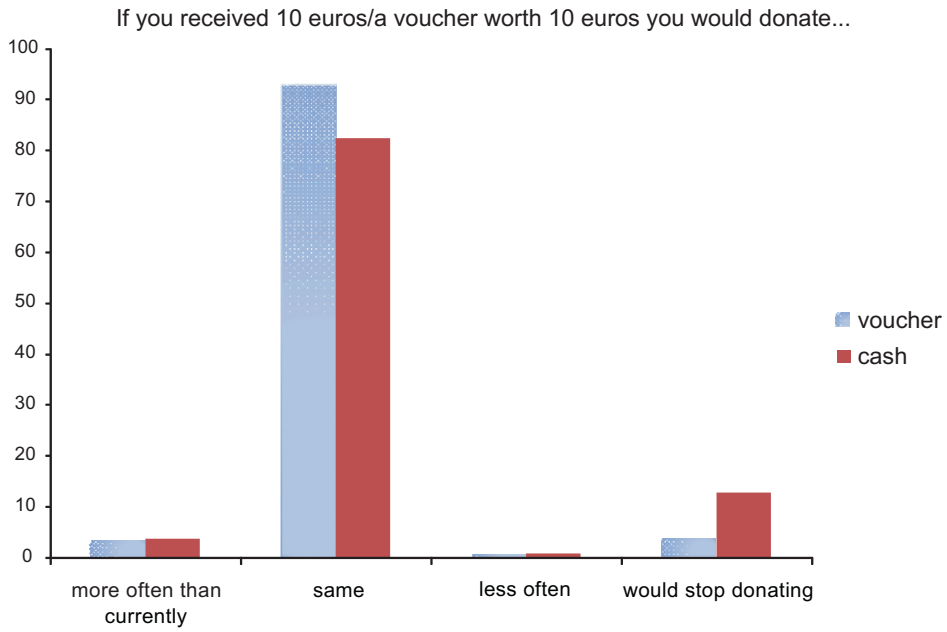


**Fig. 1.** Distribution of responses to the "hypothetical payment" question, by type of payment.

more experienced donors are substantially more averse to cash payments compared to respondents who have become donors only recently.

In the next subsection, we verify whether these results are robust to regression analysis.

### 3.2. Regression analyses

The regression analyses reported in Table 2 corroborate the findings just described. In our regressions, the dependent variable is equal to 1 if a donor responded "I would stop donating" or "I would donate less" to the treatment question, and 0 otherwise. We report results from both Linear probability models (columns 1–5) and Probit models (columns 6–10; in this case, marginal effects are reported). The results are quite insensitive to the specification adopted.

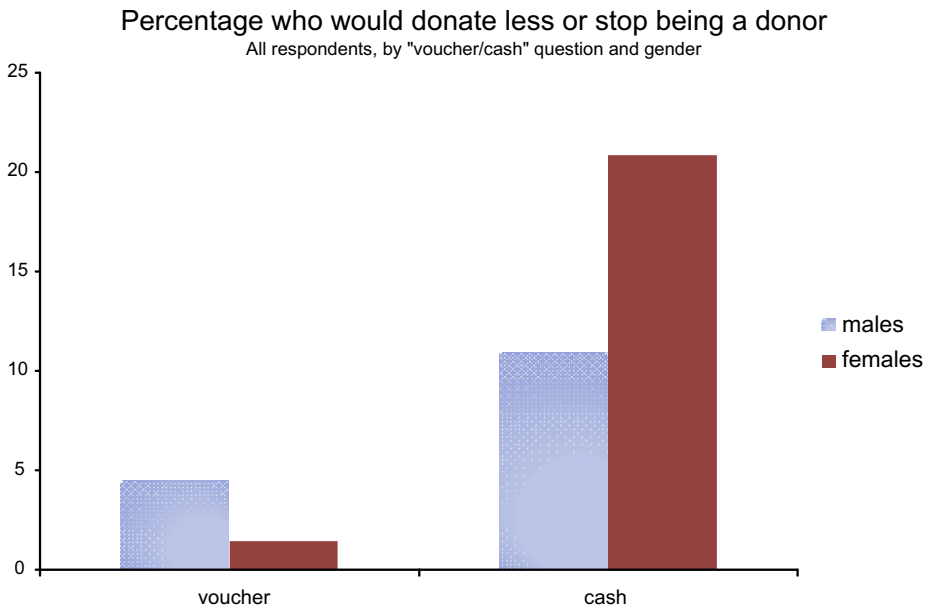


**Fig. 2.** Percentage of males and females responding they would stop being donors or would donate less often, by type of payment.

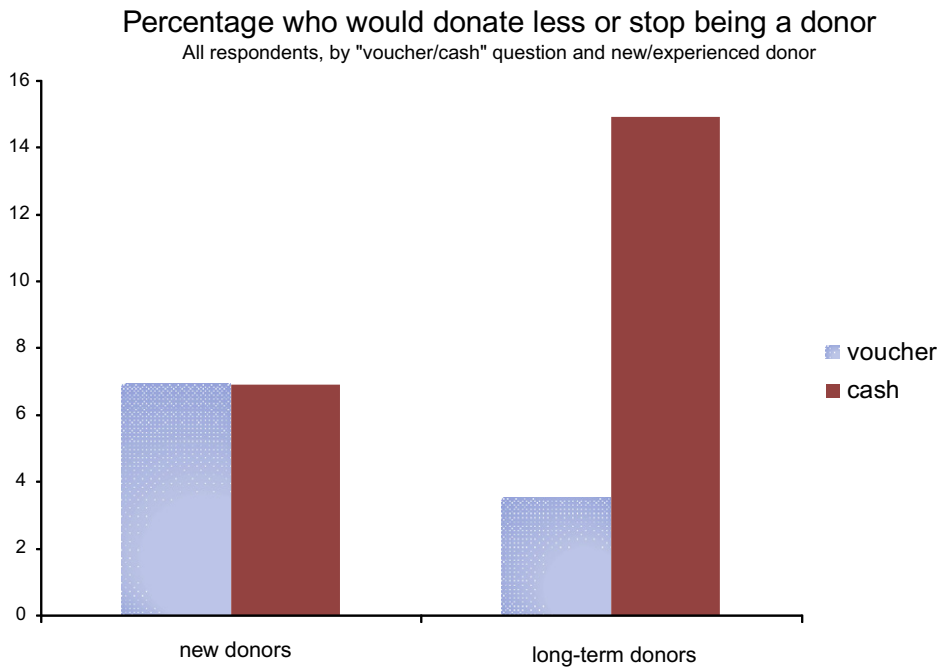


**Fig. 3.** Percentage of respondents who would stop being donors or would donate less often, by type of payment and seniority as blood donors. "New donors" are respondents who became blood donors less than one year prior to the survey. Conversely, "long-term" donors have been blood donors for longer than one year.

**Table 2**
Regression analysis. The table reports parameter estimates from Linear probability regressions as well as Probits. For the probit regressions: marginal effects are reported; the *t*-statistics refer to the original parameter estimates, and the $R^2$ is a pseudo $R^2$. *T*-statistics based on robust standard errors are reported in parentheses. *Denotes significance at 10 percent, **at 5 percent, and ***at 1 percent level.

| | Dependent variable = 1 if individual would donate less often or stop if given voucher/cash | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Linear probability | | | | | Probit (marginal effects) | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Cash | 0.0992*** | 0.0983*** | 0.0785** | 0.0789** | 0.0478 | 0.0992*** | 0.0967*** | 0.0732*** | 0.0684*** | 0.0068 |
| | (3.71) | (3.62) | (2.55) | (2.55) | (0.88) | (3.76) | (3.67) | (2.59) | (2.62) | (1.00) |
| Female | | 0.026 | −0.034 | −0.030 | −0.028 | | 0.020 | −0.054 | −0.047 | −0.007 |
| | | (0.87) | (−1.50) | (−1.28) | (−1.18) | | (0.73) | (−1.17) | (−1.07) | (−1.27) |
| New Donor | | −0.020 | 0.044 | 0.0515 | 0.0468 | | −0.0123 | 0.0696 | 0.0847 | 0.0179 |
| | | (0.53) | (−0.88) | (−1.04) | (−0.95) | | (0.34) | (−1.09) | (−1.32) | (−1.35) |
| Female ∗ Cash | | | 0.148** | 0.150** | 0.154** | | | 0.219** | 0.228** | 0.064** |
| | | | (2.17) | (2.18) | (2.25) | | | (2.01) | (2.05) | (2.28) |
| (New Donor) ∗ Cash | | | −0.140* | −0.144** | −0.124* | | | −0.151* | −0.159** | −0.028* |
| | | | (1.93) | (1.98) | (1.72) | | | (1.84) | (2.04) | (1.81) |
| College degree | | | | −0.042 | 0.014 | | | | −0.030 | 0.007 |
| | | | | (−1.52) | (0.42) | | | | (−1.20) | (0.84) |
| College ∗ Cash | | | | | −0.110** | | | | | −0.007* |
| | | | | | (−2.01) | | | | | (−1.81) |
| Age > 40 | | | | 0.037 | 0.005 | | | | 0.034 | 0.002 |
| | | | | (1.48) | (0.2) | | | | (1.63) | (0.37) |
| (Age > 40) ∗ Cash | | | | | 0.073 | | | | | 0.006 |
| | | | | | (1.37) | | | | | (0.72) |
| Catholic | | | | −0.0403* | −0.0561*** | | | | −0.0434** | −0.220*** |
| | | | | (−1.70) | (−2.89) | | | | (−2.15) | (−21.4) |
| Catholic ∗ Cash | | | | | 0.036 | | | | | 0.978 |
| | | | | | (0.67) | | | | | (0.000) |
| Constant | 0.039*** | 0.031** | 0.040*** | 0.039 | 0.0527** | | | | | |
| | (3.22) | (1.98) | (2.78) | (1.64) | (2.13) | | | | | |
| Observed prob. of dep. var = 1 | | | | | | 0.084 | 0.079 | 0.079 | 0.079 | 0.079 |
| Observations | 467 | 456 | 456 | 456 | 456 | 467 | 456 | 456 | 456 | 456 |
| $R^2$ | 0.030 | 0.030 | 0.050 | 0.070 | 0.080 | 0.056 | 0.061 | 0.090 | 0.122 | 0.152 |

In columns 1 (and 6), the dependent variable is regressed only on a "cash" dummy variable, which is equal to 1 if the respondent was exposed to the cash treatment and equal to 0 if he/she was exposed to the value-equivalent voucher treatment. The coefficient on this dummy, therefore, indicates the average difference in the likelihood of donating less frequently or ceasing to be a donor if a cash reward is offered, as opposed to an in-kind reward. In column 1, the coefficient estimate on the cash dummy is positive and statistically significant at the 1% level. Its magnitude indicates that the likelihood that a respondent declared he/she would stop donating or reduce donations was 10 percentage points higher among respondents who had been exposed to the cash treatment compared to those who had been exposed to the voucher treatment. Given the "baseline" percentage of donors who would donate less frequently or stop donating if an in-kind reward were to be offered, the percentage for those exposed to the cash treatment was about four times as large. In columns 2 (and 7), we add controls for the respondent's gender, and for whether the respondent has been a donor for less than one year. The coefficient on the cash dummy was unchanged in both magnitude and statistical significance, and the coefficients on the additional controls do not appear to be statistically significant. The picture changes, however, in columns 3 (and 8), where we add interaction terms for cash*female, and for cash*(recent donor). The coefficient on the cash dummy is reduced in magnitude (from 0.098 to 0.078) but statistically significant at the 5% level. The coefficient on the cash*female interaction term is positive, large in magnitude, and statistically significant at the 5% level, confirming that females respond more negatively to cash payments than do males. This finding is in line with the recent research cited above that found gender differences across a number of behaviors and attitudes, including attitudes toward pro-social activities; but it also qualifies these findings as being due, at least in part, to the nature of the extrinsic reward and not just to the existence of extrinsic rewards per se. The interaction term between the cash dummy and the "new donor" dummy is negative, large in magnitude, and statistically significant at the 10% level. We see this result as being consistent with our prior that donors who have only a very short exposure to the default condition of no reward should be more amenable to receive the reward.

In columns 4 (and 9), we add three further controls: a dummy variable for donors older than 40, a dummy for donors who have a college degree, and a dummy for donors who are practicing Catholics; in columns 5 (and 10), we include interaction terms of these dummies with the cash dummy. All of our previous results are robust to the inclusion of these additional controls. Moreover, we can see from columns 5 (and 10) that donors who have a college degree appear to respond less negatively to cash payments relative to donors with lower educational attainment. If education can be taken as a proxy for income (a variable about which we have no information), then this result might suggest that, ceteris paribus, the negative reaction to cash is stronger among those donors for whom a reward of 10 Euros has a higher value. Therefore, the more salient or higher the reward, if expressed in cash, the more negative the response. Interestingly, this is in contrast with the previously cited studies on the effect of cash and in-kind rewards for activities with no direct prosocial content. For example, Heyman and Ariely (2004) find that the negative response to cash is reduced or disappear for higher cash values. Finally, practicing Catholics appear to be less reluctant to receive rewards, either in kind or in cash.

## 4. Discussion and conclusions

The "crowding out" hypothesis, in its conventional version, implies that any form of reward that is not intrinsic to performing a particular prosocial activity has the potential to destroy the motivations for that activity. This view has practical policy implications. For example, recent proposals to reward live organ donors (e.g., of kidneys or bone marrow) have met with widespread aversion even when suggesting in-kind or targeted rewards such as scholarships (Becker & Elías, 2007). The findings of this study, however, indicate that donors are not averse to *any* form of reward for their prosocial actions, but, specifically, a substantial fraction declare reluctance to receive *cash*. This is consistent with rewards in kind identifying a relationship as gift-giving as opposed to a pure market interaction (Heyman & Ariely, 2004), and it is also consistent with the idea of "self-concept maintenance" (Mazar et al., 2008), according to which individuals might regard themselves as less "greedy" if they do not receive cash for their participation in activity although they may still enjoy some other, less socially taboo reward.

One issue in the interpretation of our findings is common to all studies that propose hypothetical scenarios to their participants: the responses given by the subjects might not correspond to what they would do if actually faced with those scenarios in reality. In particular, it is possible that the patterns that we uncovered reflect the respondents' beliefs about what is normative (i.e., how they ought to behave when presented with cash versus vouchers) rather than their true beliefs about their own behavior (i.e., what they would actually do).[14] Specifically, the prohibition against using cash to solicit blood donations in Italy raises the possibility that those who were exposed to the cash treatment were responding on the basis of their normative beliefs. Further, donors might engage in "strategic" answering. One can imagine, for instance, that intrinsically motivated individuals might find it unnecessary, wasteful, or immoral to pay donors for their blood. Hence, they might say that they would stop being donors for strategic reasons (i.e., they might just be afraid that AVIS is considering such a payment system in case many people endorse it) despite the fact that the presence of a payment might not affect their donating behavior at all. Again, just like with the social desirability bias, strategic answering might be more pronounced in the cash treatment than in the voucher treatment.[15]

[14] See, e.g., Miller and Ratner (1998). Their paper presents experimental evidence indicating that beliefs about self-interest often deviate from actual behavior. In particular, the respondents in Miller and Ratner's experiments tend to overestimate the power of self-interest in the population.

[15] We thank the referees for pointing us to these additional issues.

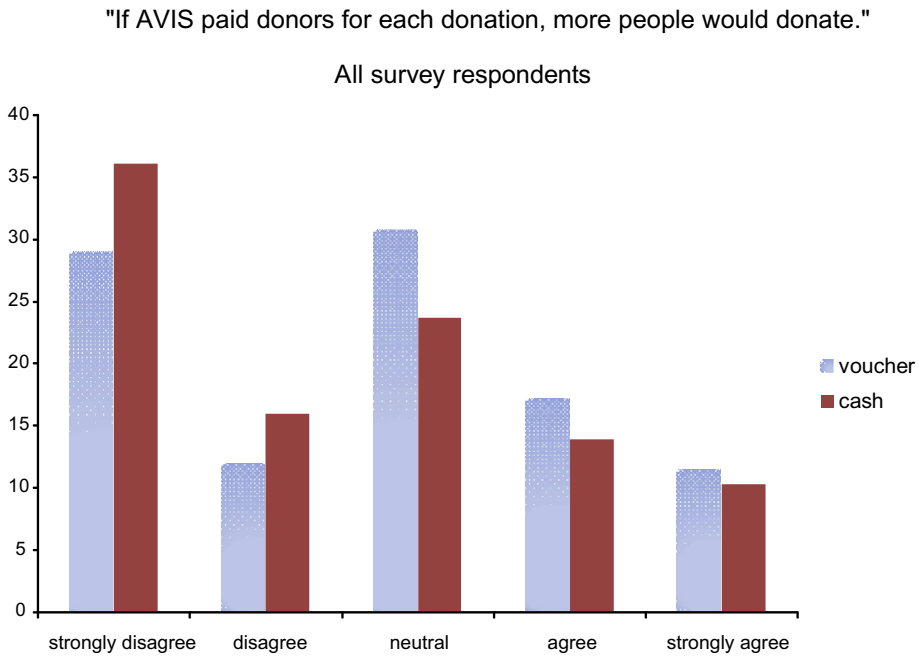


**Fig. 4.** Distribution of answers to the question "If AVIS paid donors for each donations, more people would donate", by treatment group. All respondents.

Even though one cannot fully rule out that actual behavior might differ from responses to hypothetical scenarios, this concern was lessened in our setting by at least two aspects of our design. First, each respondent was proposed only one version of the hypothetical treatment, which should reduce concerns about respondents being prompted to give different answers to different versions of the focal question.[16] Second, our focal treatment question was part of a longer survey, and this mitigates the concern that respondents would immediately focus on the question of interest and introduce biases.

Most importantly, we can investigate this issue further by examining the answers to another question in the survey, which asked respondents to assess how effective payments would be in eliciting donations from the general population. In fact, indirect questioning" has been employed frequently to address concerns of social desirability bias (see, e.g., Fisher, 1993; Heyman & Ariely, 2004). The question, which was the same across both treatment regimes, was in the form of a sentence that read: "If AVIS paid donors for each donation, more people would donate." The donors were asked to rate this sentence from 1 ("strongly disagree") to 5 ("strongly agree").[17] Respondents revealed a high degree of consistency. Fig. 4 shows that, first of all, there are no systematic differences in the distribution of answers for people who were treated with the hypothetical cash and in-kind payment.[18] Second, Fig. 5 reveals that the vast majority of donors who showed aversion to the hypothesis of receiving a reward also showed a general disagreement about the effectiveness of these rewards on the overall population; but, again, this is true irrespective of the kind of reward that had been proposed. These additional findings make us confident that, at the very least, any potential bias is similar across treatment regimes so that even though the *levels* of the responses might be off, the *differences* are not.

In light of our findings, such policies as the prohibition of direct monetary compensation to blood donors would appear appropriate. Charitable organizations and policymakers who are interested in stimulating pro-social behavior, however, might want to consider incentivizing those activities with rewards that are a "step-removed" from cash. Some organizations such as the American Red Cross do make use of a variety of items (T-shirts, mugs, coupons, etc.) to reward donors, and recent research has found these incentives to be quite effective at increasing donations (Lacetera et al., 2009). Note that, in the present study, we find that even in the case of in-kind rewards, the vast majority of donors declare that they would not donate more often then they currently do. We do not see our results as being necessarily in contrast with the findings that material (non-cash) incentives increase donations. In fact, Lacetera et al. (2009) studied blood donations in a different context, the United States, where donor attitudes may be different because, among other things, of the increasing presence of private blood banks that pay donors for their blood products, whereas in Italy AVIS faces no such competition. Replication studies in other countries will allow for further comparisons along these lines. Further, the present study focuses on differences

[16] In particular, this leaves less room to think "strategically" about the answers in a way that is different between the cash and the in-kind treatment.

[17] This question, moreover, was fairly "distant" from our focal question in the survey, and was part of a series of questions in a different section and format, because it required that the participants express the level of agreement with a sentence, rather than expressing a particular behavioral response.

[18] A Kolmogorov–Smirnov test of the difference in the distributions confirms that the differences are not statistically significant.

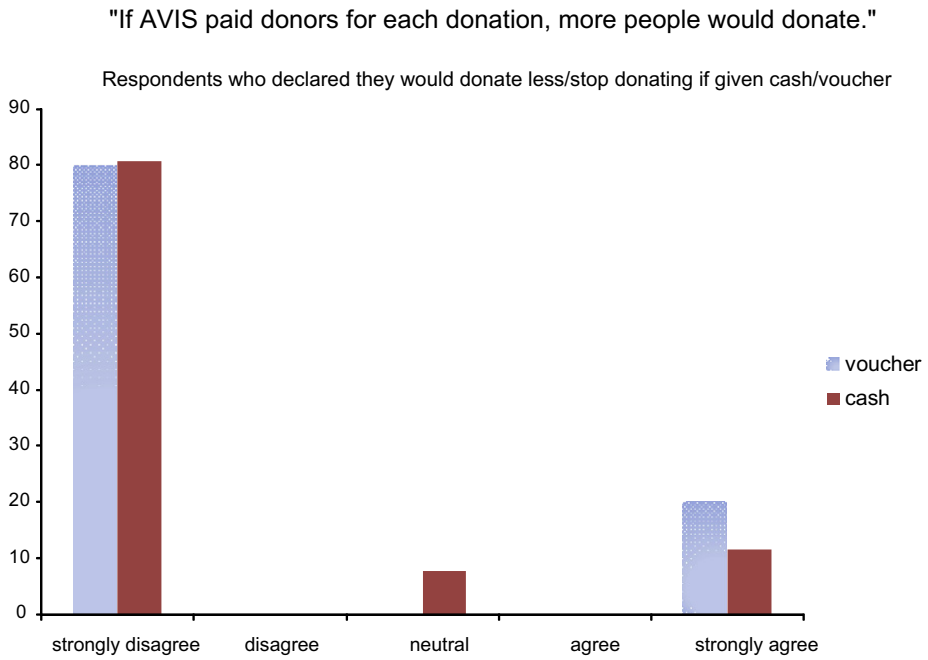


**Fig. 5.** Distribution of answers to the question "If AVIS paid donors for each donations, more people would donate", by treatment group. Respondents who declared they would stop donating or donate less if given cash/voucher.

between cash and in-kind rewards, rather than on the absolute levels of individuals' responses to those incentives. In this study, we have kept constant the nominal value of the reward (10 Euros) and varied its nature. The studies that find that in-kind rewards are effective in stimulating blood donations, such as has been shown by Lacetera et al. (2009), exploit variation in the value of the item given to the donors and show that the positive response is particularly strong for items of greater value.[19]

Finally, here we have analyzed existing blood donors (i.e., individuals who have already shown intrinsic motivation to perform altruistic acts). Our choice was naturally dictated by our research question of whether intrinsically motivated individuals react differently to cash or in-kind rewards. In addition to stimulating donations from existing donors, however, another potential source of blood is represented by new donors. Indeed, we see the question of how individuals who are not intrinsically motivated would respond to cash or in-kind incentives as an interesting avenue for future research.

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[19] Moreover, Lacetera et al. (2009) measure the effect of temporary incentives, whereas the wording of the question in the survey used in the present study suggested a permanent change in policy, and responses to permanent changes might be different than responses to one-time incentives.

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