Charitable Giving: The Effects of Exogenous and Endogenous Status

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Abstract

Social status can affect charitable giving both exogenously and endogenously. Exogenously, individuals may change their giving behavior *as a result* of being endowed with status. Endogenously, status-seeking individuals may give to charity to *gain* status. We conduct a charitable donation experiment that disentangles the two by varying (a) the social visibility of pre-donation performance and (b) the social visibility of the donation. Performance-visibility exogenously increases status of high-performers while decreasing it for low-performers, whereas donation-visibility enables individuals to endogenously gain status through their contributions. We find that exogenous status significantly increases donations among high performers. By contrast, our evidence of endogenous status-seeking behavior is at best weak.

1 Introduction

The economics literature on charitable giving recognizes that there may be multiple reasons why individuals voluntarily give money to someone in need. For example, donations may be made because individuals derive utility from improving the well-being of someone other than themselves, because the act of giving causes the donor to feel a warm-glow, or because giving influences others' perceptions of the donor (for a review on giving motives see Vesterlund, 2006). Recent research has focused on shedding light on the latter motive for giving. Of particular interest is whether an individual's pro-social behavior is influenced by the degree to which the behavior may be observed by others (see e.g., Andreoni and Bernheim, 2009; Ariely, Bracha and Meier, 2009). This paper contributes to this recent literature by examining how concerns for status may affect charitable giving.

The Merriam-Webster Dictionary defines status as "position or rank in relation to others" and as "relative rank in a hierarchy of prestige" (see Heffetz and Frank, 2008, for a review). The relationship between social status and charitable giving has long been acknowledged. Charitable giving by the social elite is widely publicized, and individuals of high status have historically taken on significant roles both in leading charitable organizations and in contributing to charitable causes. To date however we do not have a clear understanding of how an individual's status influences his or her charitable contribution. To what extent is an individual's donation affected by current status and to what extent is it driven by the quest for additional status? In other words, do high-status individuals give because they have high status or because they want to further improve on their status? This paper disentangles the two causes. It examines the extent to which charitable giving is a consequence of having (exogenous) status, and the extent to which it is an attempt at generating (endogenous) status.[1]

Since status is conferred by society and cannot be directly purchased, the only way to obtain it is through features or actions that are socially visible, or that have socially-visible consequences. For example, if status is a function of income, and income cannot be credibly observed, then *visible* charitable giving may be used to signal income and acquire status. The reason is that it is relatively cheaper for high-ranked individuals to give than it is for low-ranked individuals. Hence, the visibility of alumni contributions makes them a potentially effective means for signaling professional success. The same argument may be made for signaling generosity where more generous types find it less costly to give than less generous types. Thus publicized charitable giving may endogenously generate status, as giving can serve as a credible Spence-type signal of ability, income or generosity.

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[1] We carefully define the terms *exogenous status* and *endogenous status* in section 2 below. Briefly, we use the term exogenous status to refer to status that is given prior to making a donation decision and the term endogenous status to refer to status that is generated through the donation decision.

At the same time, charitable giving may result from status that is exogenous to the giving situation. Thus, successful, wealthy, or famous individuals may be inclined to give *because* of their high status, and not necessarily as an attempt to generate more status.

To examine the effects on charitable giving of exogenous and endogenous status we conduct an experiment where individuals first earn money based on relative performance on a math task, and then are given an opportunity to donate to a child in need through a large national emergency response organization. We examine participants' donations in a 2x2 design where we vary the visibility of relative performance and the visibility of donations. That is, an individual's relative performance is or is not observed by others, and the individual's donation is or is not observed by others. When relative performance is visible, information on whether one is among the top three performers in a group of six participants is public knowledge. When the donation is visible, the exact amount one donated is public knowledge. By varying the visibility of relative performance we alter the exogenous status an individual has prior to donating, and by varying the visibility of donations we vary whether the donation can be used to endogenously acquire status. Thus our design allows us to separately identify the effects of exogenous and endogenous status on charitable giving.

Our results show little evidence that participants in our study use their donations to acquire status. Although we find some evidence consistent with the hypothesis that donation-visibility causes individuals to conform to a donation norm, donation-visibility does not increase average giving. Hence, our evidence of endogenous status acquisition is at best weak.

Exogenous status however plays an important role in determining charitable giving in our study. Endowing individuals with social status, by making their relative performance visible to others in their group, causes donations among high-performers to increase from 20 to 29 percent of earnings. This sizable 47 percent increase in donations is significant both economically and statistically. Interestingly, for low-performers, performance-visibility causes donations to decrease from 27 to 21 percent of earnings, but the effect is not statistically significant.

Our finding that performance-visibility affects donations is remarkable since, in our setting, social status is only implicit, the social group is a small and temporary group of strangers with only very limited interaction, and the recipient is a stranger the donor has never met, will never meet, and who will never learn who the donor was. While it may be argued that the sensitivity to performance-visibility is due to high performers feeling a greater responsibility to give when their performance is observed, it is important to note that the effect of performance-visibility is independent of whether or not the donation is visible. We argue instead that such behavior is consistent with a model in which a change in status is perceived as equivalent to a change in income.

In the next section we discuss the related literature and define exogenous and endogenous status. Section 3 outlines the experimental design and the comparative statics. Section 4 reports on our main findings and section 5 provides a discussion of the results. Section 6 concludes.

2 Background

Our paper examines the extent to which charitable giving is a consequence of having *exogenous status* vs. the extent to which it is an attempt at generating *endogenous status*. In this section we define these two terms, and use them to reclassify some of the past literature related to status.

Within a given choice situation, we use the term exogenous status to refer to status that is conferred on an individual in a manner exogenous to the choice situation, and we use the term endogenous status to refer to status that may be acquired endogenously through certain choices within the choice situation. Hence, status that is based on ancestry, race and gender, as well as past performance, past income, past effort and past success, is considered exogenous in the present (although it could have been endogenously acquired through choices in the past). On the other hand, status that is gained through an action in the choice situation is considered endogenous.

The distinction between exogenous and endogenous status is specific to a given choice situation. A person making a charitable donation in order to be listed on a publicized donor list is endogenously acquiring status. However, when making donation decisions in the present, the status derived from being listed on previous years' donor lists is exogenous. Thus when faced with a choice situation an individual's exogenous status is viewed as the individual's stock of status, while the status that may be endogenously acquired in the choice situation is seen as influencing the flow of status.

Past theoretical, experimental, and empirical studies that examine the relationship between status and giving can all be classified as focusing on either exogenous or endogenous status. Starting with endogenous status, Glazer and Konrad (1996) and Harbaugh (1998a,b) propose models of conspicuous compassion to explain the common practice of publishing contributors' names in clearly defined, rank-ordered categories that are based on donation amounts. These models of endogenous status assume that individuals give to signal their unobservable income. Based on his model, Harbaugh (1998b) provides evidence for "prestige" as a motive in giving among the alumni of a law school, and shows that rank-ordered donation categories increase donations by 25-35 percent. Status can be endogenously achieved in other domains as well, e.g., the job market and the marriage market. Hopkins and Kornienko (2004, 2009) examine behavior in these settings and show that by exerting observable effort one can signal unobserved endowment of ability or wealth. Translating their model to charity-giving is straightforward: a visible donation can be used to signal personal (unobserved) endowment.[2]

The predicted comparative statics from the theories on endogenous status acquisition are consistent with experimental findings from the dictator game. Donation-visibility – a necessary

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[2] For an early conspicuous consumption model that can be translated to a charity-giving context, see Ireland (1994).

condition for endogenous status – has been shown to influence giving in the game. However, visibility may increase giving not only due to status, but among other explanations, it may increase giving as a result of reduced social distance (Hoffman et al, 1996) or as a result of convergence to a social norm of even split (Bohnet and Frey, 1999). The latter view is supported by Andreoni and Bernheim (2009) who propose an even-split-norm model to explain existing experimental results and provide further evidence for their model in a revised dictator game. As direct evidence of endogenous status acquisition, Duffy and Kornienko (2009) show that dictator game giving increases when participants are ranked by how much they give and declines when participants are ranked by how much they keep.

The evidence on endogenous-status acquisition in public good games is mixed. For instance, Rege and Telle (2004) find that giving-visibility significantly increases contributions among strangers, while Gächter and Fehr (1999) find no such effect unless participants got introduced at the beginning of a session. Rege and Telle speculate that the difference might be due to a weaker salience of social exchange in Gächter and Fehr's study, which is partly due to having individual contributions announced by the experimenter instead of by each participant. However, results by Andreoni and Petrie (2004) suggest that this difference cannot account for the different results. They find a positive effect of donation-visibility when information is only displayed on participants' computer screens.

Donation-visibility has also been found to influence giving in the field. Soetevent (2005) compares church giving when the collection basket is open vs. closed. Open baskets allow attendees to see the contribution made by their direct neighbors as well as the total amount already gathered. Soetevent finds that open baskets increase contributions. He argues that the sensitivity to donation-visibility may result from early donations signaling the quality of the cause (e.g., Vesterlund, 2003; and Potters et al., 2005, 2007) or from the social pressure to give being higher when donations are visible. Another explanation is that visible donations make it possible for donors to acquire status through signaling generosity or wealth.

The literature examining the effect of exogenous status on pro-social behavior is more limited. The premise that status is an argument in the individual's utility function, however, is consistent with more than three decades of evidence suggesting that relative ranking may affect individual welfare. Indicators of wellbeing such as overall happiness (Easterlin, 1974), health (Marmot et al., 1991; Marmot, 2004; Cherkas et al., 2006) and job satisfaction (Brown et al., 2008) are strongly correlated with relative position (see Clark, Frijters and Shields, 2008, for a careful and comprehensive review). If relative position, i.e., status, enters the utility function then one implication of this literature is that exogenous changes in status may affect giving behavior in the way that exogenous changes in income do. If a donor views donation to the recipient as a normal good then an increase in status may increase giving while a decrease in status may decrease giving.

The experimental evidence that may shed light on the effect of exogenous status on giving is, again, mixed. In a sequential public good game Kumru and Vesterlund (2009) find that high-

status individuals give more when their contribution is observed by low-status followers. However, in a repeated simultaneous-move public good game Eckel et al. (2009) do not find greater giving by high-status individuals. In a dictator game Willer (2009) finds greater giving by individuals who were manipulated to think others give them high status, but in a public good game Cherry et al. (2005) find that donations decrease when income is determined by individual performance. In a dictator game, Cherry et al. (2002) find that contributions do not depend on whether income is related to performance. However, since neither of the last two studies aims to examine the effects of status, the higher status that may potentially be associated with better performance may not be particularly salient in these studies and may not be the only difference between treatments.

3 Experimental Design

Participants in our experiment are assigned into groups of six. In the experiment's first stage, each individual performs a math task. An individual's performance relative to that of other group members determines her earnings: she gets $35 if she is among the three best performers in her group, and $15 otherwise. Since participants are aware of the earning-determination mechanism, they know that the resulting earning distribution in their group will be ($35, $35, $35, $15, $15, $15). However, they do not know who will get each amount. Once the performance task is over and each participant has been notified of her own relative performance and earning, participants are given the option to donate to a charity.

To examine the effects of exogenous status and endogenous status-seeking, we keep the procedures described above constant while varying (a) the visibility of relative performance and (b) the visibility of donations. The resulting 2x2 design is presented in Table 1.

[Table 1 about here.]

In the "Visible relative performance/earning" conditions (T1 and T2) each group member is informed on the relative performance of each of the other group members. Specifically, prior to donating, participants are informed which members of their group are among the top three performers and which members of their group are not. We say that treatments T1 and T2 introduce performance-visibility. Since participants in all treatments know the earning distribution, performance-visibility adds no new information other than revealing *who* among the group members are the best three performers.

In the "Visible donation" conditions (T1 and T3) each group member is informed on the exact donation amounts of each of the other group members. This information is provided after all

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donation decisions have been made. We say that treatments T1 and T2 introduce donation-visibility.

Importantly, participants are fully aware of the information structure in their treatment. In other words, prior to taking any actions they know whether others will or will not observe their relative performance and/or their donation.

3.1 Comparative Static Predictions

If donations are used to endogenously acquire status, then they are expected to be larger when they are visible than when they are not. This is expected both with and without performance-visibility. In the treatments where relative performance is visible, visible donations may be used as a costly signal of generosity which in turn may generate status. In the treatments where performance is not visible, visible donations may be used to signal generosity and/or relative performance. In particular, a high performer may signal her performance by contributing an amount which exceeds the maximum amount low-performers can give.[3]

Setting the endogenous acquisition of status aside as a motive for giving, consider now the effect an individual's exogenous status endowment may have on giving. Having others observe one's relative performance causes high-performers to experience a boost in status and low-performers to experience a decrease in status. Hence, performance-visibility influences the exogenous status an individual has when making the donation decision. How may this affect giving? An improvement in exogenous status may either be seen as an increase in income or as a direct increase in own utility (e.g., Frank ,1984, 1985; Ellingsen and Johannesson, 2007; see Heffetz and Frank, 2008, for a recent survey). Provided that the donor views "giving to the recipient" as a normal good, this suggests that performance-visibility will increase giving among high-performers while decreasing it among low-performers.

Finally, if charitable giving is influenced by both exogenous status and an attempt to endogenously acquire status, then the predicted comparative statics hold with one exception: the effect of performance-visibility is ambiguous when donations are visible. The reason is that when donations are visible, performance-visibility affects both exogenous status and the ability to endogenously acquire status. In addition to changing exogenous status, performance-visibility removes the need to signal performance through donations and it changes the costs of signaling generosity (see footnote 3). With visible performance, it becomes cheaper for low-performers and more expensive for high-performers to signal generosity through contributions. Thus, when donations are visible, performance-visibility may decrease giving because it is no longer

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[3] Notice that a subject who tries to signal *both* generosity *and* performance (when performance is non-visible but donation is visible) may have to increase her donation twice: first, to signal performance and second, to signal generosity as a high-performer. The latter requires greater donations than those required for signaling generosity as a low-performer, since high-performers earn more.

necessary to signal performance. Alternatively, it may increase giving, as signaling generosity requires greater giving by high-performers.

3.2 Design Considerations

To turn exogenous and endogenous status channels on and off through the visibility of relative performance and donations, our experimental design has to fulfill several criteria. First, participants in a comparison group must be able to identify each other and in some treatments be able to associate identities with actions. Second, the performance task must be such that revealed relative performance confers (exogenous) status. And third, the charity must be one for which donations are considered unambiguously desirable so that they may (a) influence (endogenous) status even when they do not signal performance, and (b) possibly be affected by (exogenous) status. The rest of this subsection explains how our design meets these criteria.

To be able to recognize other group members, individuals were seated in the lab together with their group of six. There were four such groups, denoted A through D, in each session. Members of each group were seated in a cluster of six individual cubicles with three participants facing the other three. At the beginning of the session we asked each group to stand up, so that group members could clearly identify one another. Individuals were identified by ID numbers (1-6), which were posted in front of each individual's cubicle. Both the ID number and the individual were visible to other group members during the session. However, each individual's computer screen was only privately visible. Depending on treatment, the computer displayed information on relative performance and on donations, referring to individuals by their ID number. For example, in the performance-visibility treatments (T1 and T2 in Table 1), each group member's ID number, relative performance and earning were displayed on all six group members' screens prior to making donations. In the donation-visibility treatments (T1 and T3), each group member's ID number and donation were displayed on all six screens after donations were made.

In selecting a task where participants care about relative ranking we opted for an extended version of the addition task of Niederle and Vesterlund (2007). Participants in their study were given five minutes to add up as many sets of five 2-digit numbers as possible. They found that substantial effort was exerted in performing this task and when participants were incentivized to report their expected ranking out of four, the vast majority thought that they were the best. We extended the task's length to ten minutes to strengthen the perceived association between performance and attributes of participants and weaken the possibility that high performance could result from mere luck.

To have a giving environment where donations are considered worthy and desirable, and hence may both generate and be affected by status, we opted to examine giving to a true charity rather than to an experimentally-generated public good. To prevent free riding considerations we could not rely on contributions to preexisting charities. We therefore chose to use 'individualized charities' and followed the procedures of Vesterlund, Wilhelm and Xie (2009), where each participant was paired with a child between 1 and 12 years old whose house has

suffered extensive fire damage. Participants were asked to contribute funds to purchase books for the child they were paired with and were informed that these books would be delivered to the child at the scene of the fire by the American Red Cross of Southwestern Pennsylvania. The participants were told that these books were extremely helpful in helping the child cope with the disaster. They were also informed that neither the American Red Cross nor any other donor provides books to the affected children at the scene of the fire. Using this one-participant-one-recipient matching secured that a participant could not rely on the donation by others. Furthermore with the study being done at the University of Pittsburgh, the donation was for a meaningful cause that benefits people in the campus vicinity. Lastly, the identity of the children was not known to the participants, ruling out the possibility that some know and some do not know the recipient.

3.3 Experimental Procedures

The experiment was conducted at the Pittsburgh Experimental Economics Laboratory (PEEL) at the University of Pittsburgh. Two sessions were conducted for each of the four treatments above (8 sessions in total). Twenty-four undergraduate students participated in each session for a total of 192 participants, of which 45 percent were male. The mean age was 19.6, with age ranging from 18 to 24.

Upon entering the lab, participants were seated in one of four computer station clusters, each consisting of 6 stations. Once all participants were seated the session proceeded as follows. First, instructions were distributed and read out loud, providing time for participants to ask questions. The instructions explained the session procedure, the identifier system, what information participants would receive during the study and who the recipients would be.[4] To assure participants that donations would reach their intended recipients, they were given two forms they could fill out at the end of the study--one requesting a donation receipt from the American Red Cross and another to be filled out if they wished to be present when the donated books were mailed. The two forms were distributed along with the instructions and were collected at the end of the experiment.

Upon completion of the instructions, the experimenter asked participants, one group at a time, to silently stand up to better see the other members of their group. The experimenter reminded participants of the identification system by noting that each of the groups had its own letter, and that the individual identifier numbers at each computer station corresponded to the participant sitting at that station. A few concrete examples of the identification numbers were given in each group.

The ten-minute computerized addition task began after all the groups had stood up to identify the members of their group. Participants could use paper and pencil to solve the problems, but were not allowed to use calculators or any other electronic devices. During the addition task the

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[4] See Appendix I for a copy of the instructions.

time remaining was projected on a big screen in the lab. The experiment was programmed and conducted using the software z-Tree (Fischbacher, 2007). When the ten minutes for the addition task were up, a buzzer sounded and participants had to stop. Each individual was then informed on her screen whether she was "a Best Performer" and earned $35, or "not a Best Performer" and earned $15. Participants were also reminded of the earnings of both "Best Performers" and those who were "not Best Performers." In the visible-performance treatments (T1 and T2), the identifiers of the three "Best" and three "not Best" performers were clearly displayed on the screen. In the non-visible-performance treatments (T3 and T4), participants were reminded that there were three "Best" and three who were "not Best" performers, but no identifier information was provided. This latter reminder was placed in order to keep the salience of the earning distribution constant across treatments.

Having received the above information, each participant was then asked how much she wanted to donate to the child with whom she was matched. Donations could be made in increments of $5 (i.e., $0, $5, $10, etc.) and were not allowed to exceed a participant's earnings from the performance task. Following the donation decision, participants were asked a few questions, some of which elicited beliefs regarding other group members' donations. Two of these questions were incentivized and could increase individual earnings by at most $2.

Next, in the visible-donation treatments (T1 and T3), group members' identifiers and donation amounts were displayed on each participant's screen. This step was skipped in the non-visible-donation treatments (T2 and T4).

Finally, in all four treatments, a summary page listed the participant's own total earning, donation amount, and the difference between the two. Including the incentivized questions, the average individual earning from the study, net of donation, was $19.9, plus an additional $6 show up fee.

4 Findings

To report our results, we first present overall donation patterns. We then proceed to examine the role of endogenous status-acquisition by determining how donation-visibility affects giving. Finally we examine the role of exogenous status by reporting the effect of performance-visibility.

4.1. General results

Participants put in substantial effort during the performance phase of the experiment. The 96 low-performers solved an average of 17.2 problems and the 96 high-performers solved 25.6 problems on average. This level of performance compares closely with that seen in previous

studies.[5] The subsequent charitable donations were substantial. As expected, high-performers, who had greater earnings than low-performers ($35 vs. $15), were more likely to give and donated larger amounts. Donations were made by 86 percent of high-performers and by 54 percent of low-performers, and conditional on donating the average contribution was $9.8 among high-performers and $6.6 among low-performers.

The distributions of contributions are shown by performance level and treatment in eight histograms in Figure 1. Each histogram represents one of the eight cells representing {2 performance levels} × {2 performance-visibility conditions} × {2 donation-visibility conditions}. There are 24 participants in each of the eight cells, and each histogram reports the percentage who donated each of the possible amounts.

[Figure 1 about here.]

Comparing the top row (entitled "High Performers ($35 Earning)") with the bottom row (entitled "Low Performers ($15 Earning)") reveals that across treatments, the likelihood of contributing is higher for high- than for low-performers. This can be seen by comparing the leftmost bar, corresponding to a $0 donation, in each of the four histograms at the top row with the corresponding leftmost bars at the bottom row. While 4.2 to 25.0 percent of high-performers donated nothing, the percent of low-performers who donated nothing is much higher, at 37.5 to 58.3 percent.

On the other extreme of the donation range, very large donations are rare but are not entirely absent. For example, 3 out of 96 high-performers donated their entire earning of $35, and another 3 out of 96 low-performers donated their entire $15. Most participants, however, donated a third or less of their earnings in all four treatments and at both performance levels. In other words, donations above $10 for high-performers and above $5 for low-performers are relatively rare.

4.2 Donation-visibility

In presenting the comparative static predictions we argued that individuals who give to acquire endogenous status will give more when donations are visible than when they are not. This result is expected independently of the visibility of performance. Thus we pool the data across performance-visibility conditions and examine the response to donation-visibility.

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[5] For example Niederle and Vesterlund (2007) find that participants initially solve an average of 10 problems over a five-minute period.

To facilitate comparison between donations of high- and low-performers, we calculate each individual's donation as a share of her earning. The resulting donation shares, which range from 0 to 1, are reported in Figure 2. The figure reports the four mean donation shares corresponding to the four collapsed cells {2 donation-visibility conditions} X {2 performance levels}. With data pooled across performance-visibility conditions we have four cells of 48 participants. The error bars represent standard errors of the mean.

[Figure 2 about here.]

Figure 2 demonstrates that neither performance-type nor donation-visibility affects the average donation share. First, both high- and low-performers donate about a quarter of their earnings. This constant donation share across earnings of $35 and $15 suggests that overall, the average income elasticity of donation in our experiment is close to unity. Second, surprisingly, donations of neither high- nor low-performers change with donation-visibility. The four reported shares are remarkably close, ranging from 0.24 to 0.25, and are well within the standard errors of one another. Thus, donation-visibility does not affect donation shares in either performance level, and we find no evidence—looking at mean donations—that participants use the visibility of donations to improve their status.

One may wonder whether the absence of response in mean donation shares masks changes in other features of the donation distribution. To explore this possibility, we first look at the frequency of non-zero donations by replacing the donation share variable with a dummy which takes a value of 1 if a participant made a non-zero donation and 0 otherwise. While donation shares contain more information than an indicator for donating a positive amount, the latter is a 0/1 variable that is less sensitive to outliers.

Judging from Figure 1 it appears that participants are slightly more likely to give when donations are visible. Indeed, we find that donation-visibility increases the likelihood of contributing from 83.3 to 89.6 percent for high-performers and from 47.9 to 60.4 percent for low-performers. Although neither of these increases is statistically significant, when pooling the data across performance levels donation-visibility increases the likelihood of contributing from 65.6 percent to 75.0 percent, and we can narrowly reject the hypothesis that the likelihood of contributing does not increase when donations are visible (a one-sided test of equality of proportions yields p=0.08; alternative specifications, like a logit regression clustered by group, yield similar results).

If donation-visibility increases the likelihood of donating without affecting average donation amounts, then some participants must increase their donations from zero while others must decrease theirs. This suggests that the variance of donations may be smaller under donation-visibility. Eye-balling Figure 1 indeed reveals that when performance is non-visible (the two leftmost columns), donation visibility makes the donation distribution more compressed at both performance levels. No such effect is seen however when performance is visible. As suggested by the figure, when performance is non-visible, we can reject equality of variance of donations across donation-visibility conditions, for both high- and low-performers (p=0.004 and 0.003,

respectively). However, when performance is visible we cannot reject that variances are independent of donation-visibility for either high- or low-performers (p=0.96 and p=0.60). Perhaps not surprisingly these results are very sensitive to outliers.

To summarize, our results so far show that donation-visibility may increase the likelihood of contributing, but does not affect mean donation shares. Additionally, when performance is non-visible, donation-visibility may compress the donation distribution. Combined, these results do not provide strong evidence of participants using donations to acquire status in a Spence-type signaling context (where theoretical predictions pertain to means). Possibly, however, they provide some evidence consistent with the notion that donation-visibility may cause participants to conform to a specific donation norm (where predictions pertain to variances). We return to this point in our discussion below.

4.3 Performance-visibility

The public announcement of performance causes status to exogenously increase for high-performers and decrease for low-performers. In determining the comparative statics we argued that when donations are not visible this change in status will increase giving for high-performers while decreasing it for low-performers. However when donations are visible, the effect of performance-visibility hinges on whether donations are used for endogenous-status acquisition. Since we find very limited evidence of such behavior, we start by pooling the data across donation-visibility conditions. Figure 3 reports four means of donation shares corresponding to the four collapsed cells {2 performance-visibility conditions} X {2 performance levels}. Each of the four cells represents the donation decisions of 48 subjects.

[Figure 3 about here]

Interestingly, Figure 3 shows that the ranking of donation shares by high- vs. low-performers changes with performance-visibility. When performance is visible the donation shares of high-performers are lower than those of low-performers, although the difference is not statistically significant. This relationship is reversed when performance is observed. Performance-visibility causes a significant increase in the donation shares of high-performers from 0.20 to 0.29 (two-sided t-test p=0.03; Mann-Whitney test p=0.01) while decreasing the donation shares of low-performers from 0.27 to 0.21, with the decrease not being statistically significant. We easily reject the hypothesis that the 47 percent increase in high-performers' donations is indistinguishable from the 24 percent decrease in low-performers' donations. The regression coefficient on the interaction between performance-level and performance-visibility, while controlling for the two separately, is 0.15, and it is distinguishable from zero with p=0.02. We get similar results when clustering by group.

Replacing donation share by a dummy variable indicating non-zero donation does not change our findings. In other words, the effect of performance-visibility is the same when instead of looking at contribution shares, we look at contribution likelihood. Making performance visible increases the likelihood of giving among high-performers from 79.2 percent to 93.7 percent (a

two-sided test of equality of proportions yields p=0.04). At the same time it does not increase the likelihood of giving among low-performers. Although not statistically significant, the latter decreases from 58.3 percent to 50.0 percent. As with donation shares, the regression coefficient on the interaction between performance-level and performance-visibility, while controlling for the two separately, is large (22.9 percent) and statistically significant (p=0.06). Neither clustering by group nor switching to alternative specifications like a logit regression changes the results.

Our examination of performance-visibility has thus far pooled the data across donation-visibility. However, the predicted effect of performance-visibility is only unambiguous when donations are not used to acquire endogenous status. To determine whether our results are sensitive to pooling we therefore test if the response to performance-visibility depends on whether the donation is visible or not. For neither high- nor low-performers can we reject that the response to performance-visibility is independent of donation-visibility. Clustered regressions of donations on a performance-visibility dummy and on a performance-visibility-donation-visibility interaction yields p-values on the interaction term of 0.93 for high-performers and 0.22 for low-performers.

Consistent with the predicted comparative statics, we find that performance-visibility significantly increases both the likelihood that high-performers contribute and the amount they contribute. By contrast low-performers are less likely to give when performance is visible and their donations are smaller, although neither of these decreases is significant.

5 Discussion

The results of our experiment can be summarized as consisting of two main experimental findings. First, we find almost no evidence of participants attempting to generate endogenous status through visible donations. The little evidence we find regarding donation likelihood is statistically weak, and combined with the lack of evidence regarding donation magnitudes it seems less consistent with signaling than with norm-conforming behavior. Second, we find strong, significant, and robust evidence of exogenous status affecting donations. Such exogenous status is endowed on high-performers and is detracted from low-performers when performance is made visible.

In the present section we discuss these two main findings and try to put them in context.

5.1 Donation-visibility

We start with the surprising finding of little to no evidence of endogenous status-seeking behavior in our experiment. This finding, namely that donations were not systematically higher under visible than under non-visible donations, can be explained in several ways.

First, consider the role of donations as signals of high-performance. Visible donations may play this role when an individual's performance is not observed by others. Note however that the effect of donation-visibility depends on whether, absent donation-visibility, high-performers

already donate an amount that exceeds the amount low-performers are willing to make to (falsely) signal that they are high-performers. That is, donation-visibility need not change donations for there to be a separating equilibrium between high- and low-performers.

As discussed above, our data suggest that average earning elasticity of donations is close to unity in both the visible- and non-visible-donation conditions. Since in our data donations are on average around a quarter of $35 and of $15, respectively, it is not implausible that they constitute a separating equilibrium as they are.

Second, consider donations' role as signals of generosity. In the context of a Spence-like model, our weak evidence of signaling (when performance is visible) are somewhat of a puzzle. An explanation may be related to the finding that other-regarding behavior decreases when experimental earnings are heterogeneous and performance based (Cherry, 2001; Cherry, Frykblom and Shogren, 2002; Cherry, Kroll and Shogren, 2005). Alternatively, status may decrease rather than increase with the donation level. For example, Dufenberg and Muren (2006) find that subjects in a dictator game give *less* when receiving their payment on stage while hundreds of other students are clapping and cheering, than when receiving their payment in private.

Third, related to the above, status-seeking may not be the only reason donation-visibility may change behavior. Concerns for norms or alternative considerations that assign importance to others' opinions (through reputation, shame, image, social rewards, etc.) may not be distinguishable from each other in our data, and may lead to opposing changes in behavior.

Finally, as discussed in Section 2, it is important to recall that the effect of donation-visibility may depend on the social distance between participants. While in some experiments contributions to a public good increased when they were made visible even among strangers (Andreoni and Petrie, 2004; Rege and Telle, 2004), in other experiments they increased only when combined with minimal social familiarity (Gachter and Fehr, 1999).[6]

The only effect we seem to find of donation visibility is that when performance is not visible, donation-visibility causes a more compressed donation-distribution. While this may be consistent with publicly observable compliance with norms (e.g., Bernheim, 1994; Andreoni and Bernheim, 2009) it is interesting to note that such norm compliance evidence is only found in our data when performance is not observed. A possible explanation may be that norm adherence is weaker when performance is observed (e.g., Cherry, 2001; Cherry, Frykholm and Shogren, 2002)

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[6] In our experiment, almost all participants were complete strangers. When allocating them into groups, participants who seemed to know each other were asked to switch groups. In an exit survey, we asked participants "How many members of your group do you know?". Out of 192 participants, 171 answered "0", 20 answered "1", and 1 answered "5". Among the 21 who did not answer "0", the replies of 4 were not consistent with the replies of other participants in their group (assuming `knowing someone' is a symmetric relation).

5.2 Performance-visibility

Our finding that performance-visibility increases donations among high-performers while decreasing them among low-performers (with the latter effect not statistically significant) is consistent with a model of exogenous status, where donations are a normal good and additional status acts like additional income.[7] In such a model, an endowment of status could affect behavior in ways similar to an endowment of wealth or income, and exogenous status shocks may have effects similar to those of exogenous income shocks. With donation as a normal good (i.e., with the income elasticity of donations being positive), social endowments of status may lead to greater donations. In the rest of this section, we outline a simple illustrative example that demonstrates this point.

Assume an individual's utility function is given by $u = (1-\beta)\log(c+s)+\beta\log(d)$, where c is the individual's own consumption, s is her exogenous status, and d is the donation recipient's consumption. This Cobb-Douglas utility combines the assumptions that donation is a normal good and that status is perfectly substitutable with own consumption. The budget constraint is $c+s+d = e+s$, where e represents monetary earning. The exogeneity of status is manifest in this budget constraint: status consumed is just status awarded. The solution to the consumer problem resembles the familiar solution, only here individuals donate a constant share of their combined earning-and-status budget: $d=\beta(e+s)$.

This illustrative example is consistent with our findings in that it predicts that at a given level of monetary earning, donations will increase with status (and decrease when status is detracted). Moreover, this example predicts that at a given level of status, increases in donations will be a constant share of increases in monetary earning. Under the assumption that when performance is non-visible all group members are endowed with the same level of status, this prediction is consistent with our findings as well.[8]

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[7] Several psychological explanations, while differing in focus, may be interpreted as the underlying behavioral foundations of the same model of exogenous status and donations. Among these explanations are that status, like monetary income, increases one's sense of responsibility to the community, one's gratefulness to society, or just one's general feeling of happiness, luck, fortune, etc. For example, Isen (2008, p. 558) summarizes evidence suggesting that *all else equal*, increased positive affect may lead to increased helping, generosity and responsibility. Again, notice that since in our experiment performance-visibility only changes whether participants know which group members are high- and low-performers, we can rule out that performance-visibility increases positive affect—or any other feeling—through anything other than relative status.

[8] Our design does not allow us to determine whether behavior would be different if public information on relative performance were announced *after* the donation decision (along with donation information) rather than prior to it. It would be interesting to know if an anticipated exogenous future change in status has an effect similar to that of an exogenous change in status that has already occurred.

6 Conclusion

Our primary finding in this paper is that a public announcement of one's relative performance and earning has a large and significant positive effect on the subsequent charitable donations of high-performers. Furthermore, the effect of the performance announcement is found to be similar whether donations are visible or not. In our experiment the only channel through which such an announcement can affect behavior is social status. Since we control for all other information, the announcement of performance merely reveals the identities of high- and low-performers. We therefore argue that the change in behavior results from the exogenous change in status that is associated with the announcement of individual performance.[9] In contrast to previous studies we find little evidence that donation-visibility influences giving.

Taken together, our results suggest that when thinking about individuals' preferences for social status as drivers of charitable donations and, more generally, as drivers of pro-social behavior, focusing on endogenous status-acquisition alone may not be enough. As discussed above, however, much of the recent literature on charitable giving focuses on this motive for giving, along with its close relatives—signaling, norms, image, shame and, in general, social rewards and punishments. As a result, this strand of the literature is focused on determining the effect of donation-visibility on pro-social behavior. Our findings suggest that such focus may only tell part of the story. Another important part may relate to the effects of exogenous endowments of status. Indeed the reason we do not find evidence of endogenous-status acquisition may be that participants feel that they have already distinguished themselves through their performance – be it public or not.

That said, one should remember that our evidence, intriguing as it is, only provides one data point. It would be of interest to explore whether a limited effect of endogenous-status acquisition can be replicated in other environments where participants differ in their exogenous endowments of status. Another challenge to future research is to understand the interactions between endogenous and exogenous status. If, as we find in this paper, exogenous status may be an important driver of behavior, then focusing on models that emphasize both endogenous and exogenous status may generate new insights and predictions.[10]

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[9] Since individual performance and earning are perfectly correlated in our experiment, we are silent on whether status results from the former, the latter, or a combination of both.

[10] As a first small step in this direction, we explore (in work in progress) the interactions between our subjects' giving and their beliefs regarding other subjects' giving. Beliefs regarding others' behavior are expected to play a central role in any model that combines endogenous and exogenous status.

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Appendix I: Instructions

Welcome

Thank you for agreeing to participate in our study on decision making. In this study you are asked to perform a calculation task. The money you earn in this task depends on your performance relative to the performance of others in your group. Once you have earned money from the calculation task, you will have the opportunity to donate some of your money to a child in need. That is, you will each be paired with a child and we will ask you to decide how much of your earnings to keep for yourself, and how much to donate to the child. Your payment from the study will be your earnings from the calculation task, minus your donation, plus a $6 show up fee. Note that you cannot donate your show up fee. The study should take less than an hour. At the end you will be paid your total payment in private and in cash.

For this study you will be put in a group of six people. There are four groups in the room: A, B, C, and D. Before we begin, we will ask you and your group members to stand up such that you get familiar with your group. We ask that you do not speak to each other, or communicate in any other way during the study. We also ask that you do not discuss the procedures and details of the study, including your performance or donation amount, with others (including your group members) outside this room. If at any point you have questions please raise your hand, and one of us will come to answer you in person.

Your Identity and Information

Your name will never be revealed during the course of the study. We will use the number at your computer station as your ID number. Your number will be either 1, 2, 3, 4, 5, or 6. Your group letter along with your ID number are the identifier we use when paying for your participation in the study.

During the study, [T1: we will tell you how much each member of your group earned, and how much each member donated to the child he or she is paired with]. [T2: we will tell you how much each member of your group earned, but we will not tell you how much each member donated to the child he or she is paired with] [T3: we will tell you how much each member of your group donated to the child he or she is paired with, but we will not tell you how much each member earned] [T4: we will not tell you how much each member of your group earned, nor will we tell you how much each member donated to the child he or she is paired with].

[T1, T2, T3: When we provide your information to the other group members we will use your ID number to refer to you, and when we provide you information on the other members of your group we will use their ID numbers to refer to them].

Calculation Tasks

In the calculation task you are asked to calculate the sum of five randomly chosen two-digit numbers. You will be given 10 minutes to calculate the correct sum of a series of these

problems. A buzzer will sound at the end of the 10 minutes. You cannot use a calculator to determine the sum of numbers, but are welcome to use the provided pencil and paper.
To submit an answer, simply click on the submit button with your mouse. When you enter an answer the computer will immediately tell you whether your answer is correct or not. Your answers to the problems are anonymous.

The computer will count the number of problems you solve correctly during the 10 minutes. Your count of correct answers does not decrease if you provide an incorrect answer to a problem.

When the 10 minutes are up, the computer will inform you how many problems you solved correctly. The system will then compare your performance with that of the rest of the members in your group, and will determine whether you are among the best three performers in your group of six. We will refer to these best three performers as "Best Performers." Your earnings from the calculation task depend on whether you are among the Best Performers or not. The Best Performers will each earn $35 from the calculation task while those who are not among the Best Performers each will earn $15. You will find out whether you are among the Best Performers immediately after all six members of your group have completed the 10-minutes calculation task.

Donation

As mentioned, you and the other members of your group will each have the opportunity to donate part of your earnings to a child in need. Each group member is paired with a different child in Southwestern Pennsylvania (Allegheny, Washington, Greene, and Fayette Counties). All of these children are between 1 and 12 years old, and their family home has suffered extensive fire damage. Most or all of their family's possessions have been lost. The sum of money donated by you will be spent to purchase books for the child you are paired with. The American Red Cross will give the books to the child you are paired with immediately after the child has been affected by a severe fire.

As soon as a fire is reported in Southwestern Pennsylvania, the American Red Cross is contacted and volunteers are dispatched to the site. They help the affected families find temporary shelter, provide them with clothing, a meal, and give them a comfort bag with essential toiletries. Each day an average of one family in Southwestern Pennsylvania experiences a severe fire. These families depend on the American Red Cross for emergency help to cope with the sudden loss of their home and belongings. Unfortunately the American Red Cross only has funds to provide these families with the bare essentials, and they do not provide any "comfort" items for the children of the affected families.

We have joined the American Red Cross of Southwestern PA to collect funds to buy books for the affected children. The child you are paired with will receive books of a value that equals your donation. If you do not contribute anything, the child will not receive any books. Each person in this study is paired with a different child. Neither the American Red Cross nor any other donors provide books to the child at the scene of the fire. In explaining why the American Red Cross is seeking this type of support, their Director of Emergency Services, Michael Adametz states "Children's needs are often overlooked in the immediate aftermath of a disaster because

everyone is concerned primarily with putting the fire out, reaching safety, and finding shelter, food and clothing... just the basics of life. So many times, I've seen children just sitting on the curb with no one to talk to about what's happening... for this reason I've found trauma recovery experts in the community to work with us to train our volunteer responders in how to address children's needs at the scene of a disaster... being able to give the children fun and distracting books will provide a great bridge for our volunteers to connect with kids and get them talking about what they've experienced."

Once you have completed the calculation task you will have the opportunity to use your earnings from the task to help out the child you are paired with. For administrative purposes donations must be made in increments of $5, i.e., $0, $5, $10, $15, etc.

Immediately after the study, we will order books corresponding to the amount that you donate. Please let us know if you are interested in being present when we order the books, or when we drop them off at the American Red Cross. If you wish to receive a receipt from the American Red Cross for your donation, you will need to fill out the acknowledgment form on the next page. Note however that by doing so you will relinquish your anonymity. If you wish to remain anonymous, leave the acknowledgment form blank.

Information You and Others Will Receive

As explained above, at the end of the calculation task you will be told how many problems you answered correctly, and whether you are among the Best Performers in your group of six. This information will appear on your screen, and you are asked not to share it with anyone else.

[T1: In addition, we will tell you and the other group members how much each specific group member (including yourself) earned in the calculation task. Thus all group members will be informed how much each of the other group members earned and who the Best Performers are.

Moreover, after the donation decisions, we will tell you and the other group members how much each specific member (including you) decided to donate to the child he or she is paired with. Thus all group members will know how much each of the other group members donated.]

[T2: In addition, we will tell you and the other group members how much each specific group member (including yourself) earned in the calculation task. Thus all group members will be informed how much each of the other group members earned and who the Best Performers are.

However, after the donation decisions, we will not tell you or the other group members how much each specific member decided to donate to the child he or she is paired with. Thus no group member will know how much each of the other group members donated.]

[T3: Note that we will not tell you or the other group members how much each specific group member earned in the calculation task. Thus no group member will be informed how much each of the other group members earned or who the Best Performers are.

However, after the donation decisions, we will tell you and the other group members how much each specific member (including you) decided to donate to the child he or she is paired with. Thus all group members will know how much each of the other group members donated.]

[T4: Note that we will not tell you or the other group members how much each specific group member earned in the calculation task. Thus no group member will be informed how much each of the other group members earned or who the Best Performers are.

Moreover, after the donation decisions, we will not tell you or the other group members how much each specific member decided to donate to the child he or she is paired with. Thus no group member will know how much each of the other group members donated.]

If you have any questions, please raise your hand now and one of us will come to your seat to answer your question. You are reminded to please not discuss any details regarding your or others' performance or donation with anyone during or after the study.

Before we begin, we will ask each group at a time to please stand up such that each participant will get familiar with his or her group members. Please do not talk or communicate, just stand up so you can see each other.

We will begin momentarily.

Group _____   ID Number _____

Acknowledgment form

Please send a receipt for my contribution of books with the value of $_____ (to be filled out by the assistant)

My address is   Name_____
                                 Address_____
                                 City_____
                                 State_____
                                 Zip_____

Please note that you relinquish your anonymity by filling out this form

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If you would like to be present for the purchase or the delivery of the books please provide us with your email and we will contact you when we order the books and deliver them to the American Red Cross.

                                 Name_____
                                 Email_____

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Table 1: 2 × 2 design treatment names

	Non-visible relative performance/earning	Visible relative performance/earning
Non-visible donation	T4	T2
Visible donation	T3	T1

Figure 1: Donation distribution by treatment and by performance
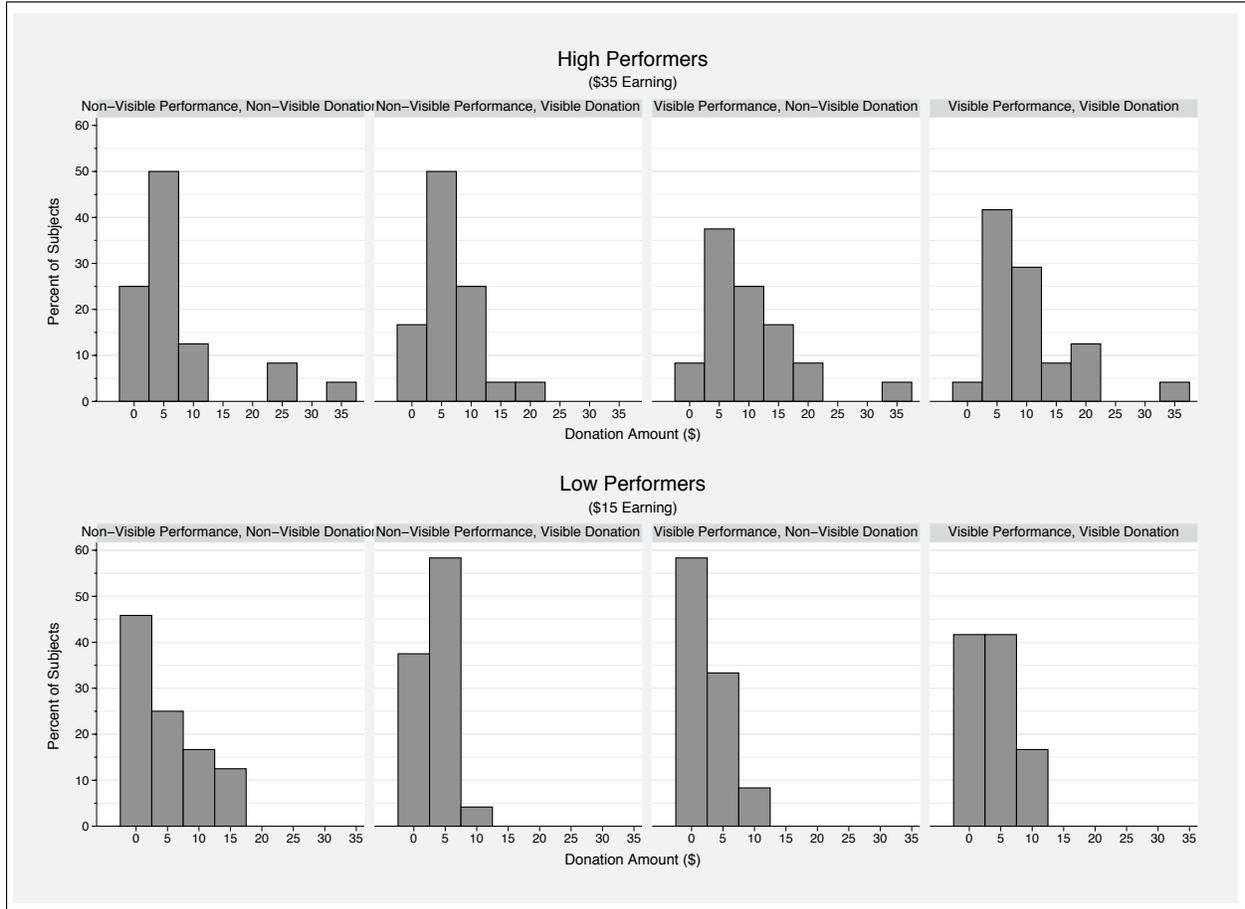
Figure 2: Share donated by performance and by donation-visibility

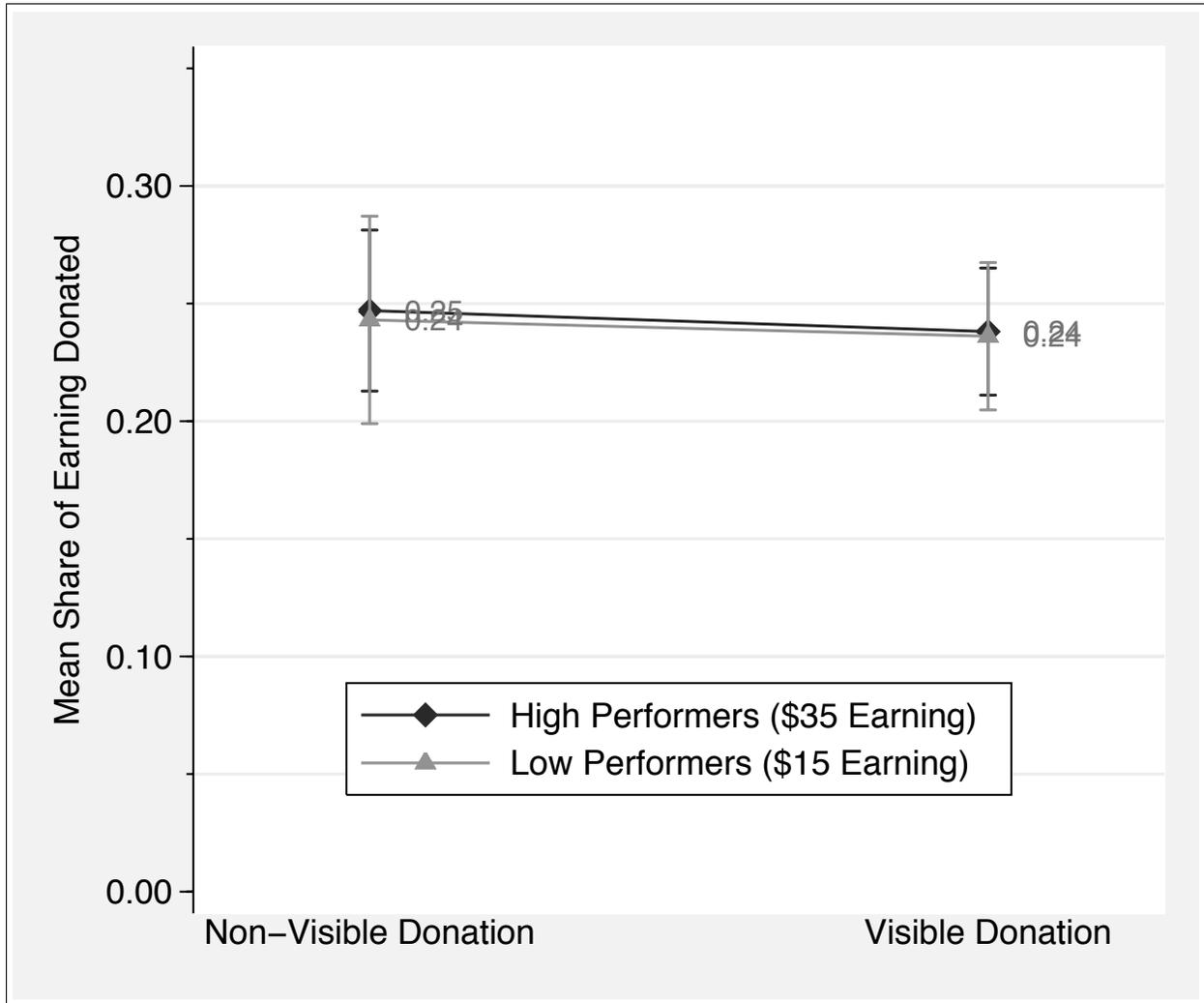High Performers ($35 Earning)
Low Performers ($15 Earning)

Figure 3: Share donated by performance and by performance-visibility