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**GENEROSITY AND WEALTH:  
EXPERIMENTAL EVIDENCE FROM BOGOTÁ  
STRATIFICATION**

By

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# Generosity and Wealth: Experimental Evidence from Bogotá Stratification\*

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## Abstract

This paper combines laboratory experiments with a unique feature of the city of Bogotá to uncover the relationship between generosity and wealth. Bogotá is divided by law into six socio-economic strata which are close proxies of household wealth and income. We recruit subjects from different strata and run a series of double-blind dictator games where the recipient is the NGO *Techo-Colombia*, which builds transitional housing for homeless families. We identify the stratum of each subject anonymously and blindly, and match their donations with their stratum. In a first experiment we provide a fixed endowment to all participants and find that donations are significantly increasing with wealth. However, in a second experiment, we show that this is not because the rich are intrinsically more generous, but because the experimental endowment has lower real value for them. With endowments that are equivalent to their daily expenditures, the rich, the middle-class and the poor give a similar proportion of their stratum-equivalent endowment. Moreover, we find that the motivation to donate is similar across strata, where the generosity act is explained mainly by warm-glow rather than pure altruism.

**JEL:** C91; D31; D64.

**Keywords:** Charitable giving; Social stratification; Inequality; Social Preferences; Dictator game.

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# 1 Introduction

In recent decades, the world has experienced a remarkable increase in income inequality (Alvaredo et al., 2018) leading to social conflict and political and economic unrest (Esteban and Ray, 2011). This is particularly evident in the Middle East, Sub-Saharan Africa and South America, where inequality is also combined with a large part of the population living under extreme poverty. The state capacity in these countries is too weak to cope with the increasing relative deprivation (Besley and Persson, 2014), and even the welfare states in more developed countries are struggling to meet the needs of those falling into poverty. The poor are relying more and more on the generosity of those who have more resources. But, are those with more resources intrinsically more generous towards the poor?

There are two opposite arguments concerning the answer to this question. On the one hand, the rich may *behave* more generously than the poor, not necessarily because they are intrinsically different, but because their circumstances allow them to act more generously. The poor face higher difficulties in their lives so they have reasons to prioritize their own needs over the needs of others. On the other hand, the poor have also reasons to *behave* more generous than the poor, because they are more dependent on others to achieve their desired life outcomes (Piff et al., 2010). This is particularly relevant when the others are even poorer, as they may feel closer to their sufferings, be more cognizant of their social environment and consider the most needy as part of their in-group.

The empirical evidence on the direction of the association between wealth and generosity is mixed and not yet conclusive. Some studies find no relationship at all (Andreoni and Vesterlund, 2001; Andreoni, 2006; Vesterlund, 2006) or find an U-shaped relation between income and giving (Auten et al., 2000; Andreoni, 2006). Others document a positive relationship between socio-economic status and altruism (e.g. Deckers et al. (2017)) and charitable giving and wealth (e.g. Eckel et al. (2007); Andreoni and Payne (2013); Schervish and Havens (2003)). However, there is also evidence that the rich act less charitable (Auten et al., 2002), that are less helpful (Piff et al., 2010), less compassionate (Kraus et al., 2012) and evade more taxes (Cox, 1984; Christian, 1994; Wang and Murnighan, 2014). The evidence is even less conclusive when one looks at differences across countries. The top twenty most charitable countries are equally divided between developed and developing nations such as Kenya, Myanmar, Haiti, Nigeria, Liberia and Sierra Leone (World Giving Index, 2018).

The inconclusiveness of the evidence can be (partly) explained by the challenges to measure generosity and wealth. The existing empirical evidence originates from two distinctive and complementary research approaches. One line of research relies on self-reported data of income and giving from tax forms or independent surveys.<sup>1</sup> While this approach can

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<sup>1</sup>For instance, Andreoni and Payne (2013) look at tax returns filed in Canada by individuals that reside in urban areas, and report a positive relationship between tax receipted gifts by neighborhood income group. Also, evidence from United Kingdom shows that those in the highest socioeconomic group report giving

exploit valuable information from large datasets, the data on wealth and donations are self-reported, and as such, they are subject to reporting biases. Further, even in the absence of reporting bias, it is difficult to identify genuine generosity across socio-economic classes using these datasets, as differential tax incentives, information, unobserved beliefs and motivations may confound with unobserved pure preferences for giving.<sup>2</sup>

To overcome these limitations, some scholars have relied on data of income and giving originated in controlled laboratory experiments. In these experiments, subjects earn their money by performing a real effort task, and they are asked to donate a portion of their earnings to other participants in the experiment (Erkal et al., 2011) or a charity of their choice (Tonin and Vlassopoulos, 2017). The evidence here is also mixed. Erkal et al. (2011) find an inverted-U-shaped relationship between lab earnings and giving, while Tonin and Vlassopoulos (2017) find no relationship. While this approach is able to circumvent the problems of non-experimental data, it cannot capture giving behaviour among people of different wealth. Regardless of the procedure used in a laboratory experiment to induce an income distribution, the resulting position of any given participant does not necessarily represent her/his position in the actual income distribution outside the lab.

We propose a design that overcomes many of these empirical challenges. We conduct a series of experiments in a highly unequal society that allow us to observe, in a controlled environment, giving behaviour, intrinsic generosity and motivations to give of people belonging to different socio-economic status. Our experimental design takes advantage of a particular feature of the city of Bogotá. Since 1994, the city is divided in six well defined strata (stratum 1 being the poorest and 6 the richest). The utility tariffs that each household has to pay depend on the strata in which the residence is located. Because of this feature, Bogotá residents self-select into neighbourhoods belonging to a stratum which is in accordance to their wealth, and the real state market adjusts accordingly. This creates a segregation by law based on residents' wealth. This segregation at city level occurs in a country with stubbornly high income inequality. According to the World Bank (2016), Colombia is the fourth most unequal country in the world, after South Africa, Haiti and Honduras.<sup>3</sup>

We exploit this unique feature of the city to conduct a laboratory experiment that sheds light on the relationship between wealth and generosity overcoming the potential measurement errors in previous studies. We recruited students from different socio-economic strata in Bogotá to play double-blinded dictator games where the recipient was the charity

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the largest average donations, and overall these individuals account for 51 per cent of the total value of all donations made. However, it appears that it is actually those in the lower layers of the income distribution that give a larger proportion of what they have (CAF, 2015).

<sup>2</sup>For example, tax incentives to donate are different across income sections. Wealthier people have more incentives to avoid paying taxes and more opportunities to hide income. They may also be better informed about the charity, be more concerned about their self-image (particularly if they know they are observed when donating) or may have better access to donation points (e.g. internet).

<sup>3</sup>Source: World Bank. 2016. Poverty and Shared Prosperity 2016: Taking on Inequality. Washington, DC: World Bank. doi:10.1596/978-1-4648-0958-3.

*Techo*, an NGO that builds temporary houses for people who live in shelters. These are people who are excluded from the stratification system, they are the poorest in the wealth distribution. We designed a protocol that, despite its double-blinded feature, allowed us to anonymously identify donations and motivation to donate from people belonging to different socio-economic strata. We elicited the socio-economic stratum of each participant at the recruitment stage, by requesting the applicant to fill in a short on-line survey reporting the socio-economic stratum they belong to (stratum 1 to 6) together with a series of other socio-demographic characteristics.<sup>4</sup> We randomly selected applicants from each strata and invited them to the laboratory.

We ran three laboratory experiments. In Experiment 1 we gave a fixed endowment of COP 20.000 (about US\$10 at the time of the experiment) to all subjects, regardless of their strata. Participants had to decide which share of this endowment to keep for themselves and which share to donate to *Techo*. The amount donated had to be placed in an envelope marked inside with a tiny hidden dot of a color that allowed us to identify, anonymously, the stratum of the participant after the experiment when opening the donation envelopes.

Results from the first experiment show that the amount donated monotonically increase with strata.<sup>5</sup> Participants from higher socio-economic strata donate a higher proportion of their experimental endowments than those belonging to lower strata. This positive socio-economic strata gradient in donations is not explained by differences in beliefs about the causes of poverty or by differential strata information about the charity.

While Experiment 1 allows us to identify actual donations to a real charity across people from different strata under a double blind procedure, we can not conclude that the rich are intrinsically more generous than the poor, because the real value of the fix US\$10 endowment differs across strata. In other words, the rich may donate a higher proportion of US\$10 not because they are intrinsically more generous, but because it is less costly for them to do so.

To control for this potential confounding, we ran a second experiment that allows us to observe donations per stratum with an endowment representative of the opportunity cost of each stratum. Specifically, we used three different endowments US\$10, US\$18 and US\$25, which are equivalent to the per capita daily expenditure of households in stratum 2, 4 and 6, respectively. The rest of the experimental protocol of Experiment 2 was the same as in Experiment 1, with the difference that participants made three decisions, one for each of the three endowments, which were handed in separately and in random order. After all decision were made and envelopes sealed, each participant rolled a dice to determine the decision that would be paid out.

Results of Experiment 2 are striking. We observe no difference across strata in giving behaviour when we look at donations with the stratum-equivalent endowment. This holds

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<sup>4</sup>Asking for socio-economic strata is a very common procedure in Colombia. Everyone knows their own strata and have no incentives to lie about it, particularly in a pre-experiment questionnaire.

<sup>5</sup>This is at odds with Erkal et al. (2011) who find that U-shaped relationship between experimental earnings and giving in the lab, and is consistent with Tonin and Vlassopoulos (2017).

when we control for information about the charity, personal characteristics and beliefs. This coupled with the result from Experiment 1, shows first that people are equally intrinsically generous with the most needy, regardless of their socioeconomic background. Second, the differences in generosity observed in Experiment 1 seem to be only driven by differences in the marginal utility of money across strata, the rich having lower marginal utility than the poor for a given endowment.

In a third experiment (Experiment 3), we study whether the rich and the poor differ in their motivations to give. While they are indistinguishable in terms of giving behaviour, they may still have different motivations to donate. We focus on two key motivations highlighted in the literature: warm-glow and pure altruism. To identify these motivations, we ran Experiment 3, which replicates Experiment 2 procedures, with the only twist that we match donations at a 1:1 matching rate, following Karlan and List (2007). That is, every dollar that the participant gave was matched by us, so that *Techo* received doubled the amount donated by the participant. When compared behaviour in Experiment 2 (without matching) and Experiment 3 (with matching), we observe no significant differences within each socio-economic stratum, which suggests that the generosity observed across all strata is mainly motivated by warm glow, instead of pure altruism.

Finally, to shed further light into plausible different reasons to donate across strata, we look at participants' beliefs about the origins of wealth. We find that these beliefs are similar across strata, with the exception that people from stratum 3 (middle class) hold more meritocratic beliefs. In comparison to other participants, those from stratum 3 agree more with the statement that help is not needed to be successful in life. This highlights an interesting distinguishable feature of middle-class participants. They are equally generous with the most needy despite they are less likely to believe they need help.

Overall, our experimental design allowed us to uncover the association between wealth with giving behaviour, generosity and motivations to give in a way that overcomes existing concerns regarding measurement and observability. We observe that people from different socioeconomic background are not only equally intrinsically generous with the most needy, but they also share similar motivations to give and perceptions about meritocracy and what it is needed to succeed in life.

Our paper contributes to different strands of the literature. It directly adds to the literature studying the relationship between wealth with charitable giving (see Andreoni and Payne (2013) for an excellent review). The novel combination of laboratory experiment with the stratification of Bogotá provides a unique setting to circumvent some limitations of the existing research. First, in our design there is no tax incentives to donate (Feldstein et al., 1976), since the donor was not given a certificate for his/her donation. Second, by working with a charity that is well known across strata we control, by design, for any possible information asymmetries across strata. Third, given the double-blind feature of our design, donations are completely anonymous and we rule out, also by design, differential self-image

motivations or audience effects to donate (Andreoni and Bernheim, 2009; Andreoni and Rao, 2011; Andreoni and Petrie, 2004; DellaVigna et al., 2012) that may exist. Fourth, by looking at donations of students from different strata which study in the same place, we rule out potential confounders across strata regarding different transaction or opportunity cost to donate (Huck and Rasul, 2011). Finally, by using an objective proxy of wealth, we eliminate the measurement biases of self-reported data (Bekkers and Wiepking, 2011).

More broadly, our paper contributes to the literature that studies the association between wealth and pro-social behavior. In a related paper, Piff et al. (2010) implement a series of dictator games with students from an Ivy League University in USA. They find that students of lower SES are more altruistic than those of higher SES. We depart from this study in many ways. First, unlike us, they use only a fixed amount of money as endowment (US\$10) or partial course credit in exchange for participation, so they cannot account for differences in the marginal utility of money across SES, as we do in Experiment 2. Second, the recipient of the donations in their study is an anonymous student seated in a different room, instead of a real NGO. Third, they proxy SES by directly asking students for their subjective perceptions of socioeconomic rank.<sup>6</sup> Hence, the information on SES they use is not only relative, but subjective. Instead, we use an arguably more objective measure. Finally, they do not study strata differences in the motivations to give, as we do in Experiment 3. ? use also data from USA and show that the relationship between generosity and income is moderated by economic inequality. Higher income individuals are less generous than poorer individuals only if they reside in a USA state with comparatively large economic inequality. Recently, Schmukle et al. (2019) replicated the study of ? using a larger dataset and find no evidence of economic inequality moderating the association between social class and generosity. Our results complement Schmukle et al. (2019) as we also find, with a completely different design and sample, no differences in generosity across individuals from difference socio-economic strata within a highly unequal society.

Additionally, this study contributes to a recently emerging literature studying charitable giving by the poor specially in less-developed countries. For example, Adena et al. (2019) study charitable giving among poor micro-entrepreneurs customers of a microfinance company in Kyrgyzstan. They find substantially higher price elasticity in their sample of poor micro-entrepreneurs than what it is found in previous studies based on Western and richer samples. Our design allows us to compare the price sensitivity to matching across people from different strata participating in the same experiment. Unlike Adena et al. (2019), we find no different price sensitivity across strata.

A relevant, related and complementary work is that of Andreoni et al. (2017), who designed an innovative field experiment in which they misdeliver envelopes with money or bank transfer cards to rich and poor households in a Dutch city, and study whether these

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<sup>6</sup>In one of their studies they prime participants' perceptions of their relative socioeconomic rank and they use this for their identification of a causal effect of SES on pro-social behavior.



households differ in the rate in which they return the envelopes to an unknown sender. Their focus is more on whether the poor or rich are more likely to return money that does not belong to them, while ours is about charitable giving to help the most needy. Both studies, however, highlight the importance of identifying social class differences in attitudes, and not only in observed behaviour. Like us, they also find that accounting for differences in the marginal utility of money and financial pressure across SES is paramount for identifying differences in pro-social attitudes. In their experiment, the authors find that the rich behave more pro-socially simply because the value of the money in the envelope for them is lower. Their conclusions are strikingly similar to ours, using an orthogonal method, with a very different sample population and looking at a different pro-social behavior.

The rest of the article proceeds as follows. Section 2 presents the institutional context that allows us to identify the socio-economic status of participants of the experiment, and introduces the partner NGO. Section 3 describes the sample, experimental design and results and Section 4 concludes and discusses the implications of our results for the understanding of giving behavior.

## 2 Institutional Context

### 2.1 Bogotá Stratification System

Bogotá is divided into six socioeconomic strata distributed all over the city.<sup>7</sup> The socioeconomic stratification is a classification of real estate properties that was made into law in year 1994 with the aim to identify areas of similar economic capacity in order to allow cross-subsidies in utility bills from the upper layers to the lower ones. Each stratum is, by law and *de facto*, sharply different from each other in many socioeconomic dimensions. This makes Bogotá unique for the identification of households' income and wealth. Figure 1 shows data of household income and expenditure per stratum from a representative survey of residents of Bogotá (Gallego et al., 2015). The figure illustrates the strong positive correlation between income and strata, and how income and expenditure differ significantly across strata.

On top of the unique feature of the city stratification by law, Colombia and Bogotá are particularly interesting for the study of charitable giving because of the high income inequality present in both, the country and city. According to The World Bank's estimates, based on the Gini coefficient for the year 2016, Colombia was the fourth most unequal country in the world, and has the most unequal income distribution within South America. Income inequality is also high within Bogotá, where 51% of the population live in strata 1 and 2, while less than 5% live in strata 5 and 6. Figures 7 and 8 show a random picture of Stratum 1 and 6 that gives a visual illustration of the sharp differences across these strata.

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<sup>7</sup>See the map of Bogotá in Figure 6 for the strata distribution across the city.

## 2.2 The Charity

We partnered with *Techo-Colombia*, with the aim to better understand the giving behaviour of Bogotá residents from different strata. *Techo* (which means *roof* in Spanish) is a youth led non-profit organization present in Latin America and the Caribbean. Through the joint work of families living in extreme poverty with young volunteers, *Techo* seeks to reduce the struggles of poverty by building houses for the poorest marginalized sections of the population. Since its beginnings in 1997 in Chile, followed by El Salvador and Perú, *Techo* expanded rapidly, currently operating in 19 countries across Latin America.

The approach of *Techo* is participatory. All of the families that live in slums and that would like to work with *Techo* can benefit from, propose, and partake in the programs of the work model that the organization offers. The families get involved from the first moment that *Techo* intervenes. The activities with *Techo* start from the social detection and assigning of transitional houses, then by the establishment of social inclusion programs and joint management solutions for their needs. Additionally, the family is responsible for 10% of the cost of the house.

*Techo* volunteers are all younger than 30 years old. All the volunteer recruitment campaigns are conducted in universities. To date *Techo-Colombia* has coordinated the development of over 4,190 houses across Colombia for the poorest marginalized sections of the population.

## 3 Method and Analysis

### 3.1 Sample

Students from two major universities in Bogotá, Colombia (University of Rosario and University of Los Andes) were recruited via e-mail to participate in a laboratory experiment on decision-making. Those interested in participating had to complete an online questionnaire stating the stratum they lived in, among other personal characteristics such as place and date of birth, major, year and semester they were at the moment of the experiment.<sup>8</sup> Table 1 shows the distribution of the sample recruited across strata by experiment. In total 463 subjects participated in the study, 288 from University of Rosario and 175 from University of Los Andes.

After the experiment, participants filled in a questionnaire aimed at gathering further information about their household socio-economic characteristics, wealth, individual perception about general success in life and previous interaction with the charity.<sup>9</sup> Table 2

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<sup>8</sup>It is important to note that for any Colombian citizen it is natural to report the stratum of their household. Strata is a feature commonly asked in many daily life instances, i.e. when applying to a university or for a loan, opening a bank account, etc.

<sup>9</sup>The English version of the questionnaire can be found in the Appendix C. The original (Spanish) version can be provided upon request.

reports, by class, summary statistics of a selection of these questions for the pooled sample.<sup>10</sup> As can be seen from the table, participants do not differ significantly on age, gender, major and employment conditions across classes. Naturally, they differ on dimensions that are correlated with income and wealth. For example, parental education is lower for lower classes and mothers in middle class are more likely to be employed than mothers in high class. Students from low and middle class are more likely to report to hold a scholarship or a loan to finance their studies, while students from high class are more likely to report that their parents are the ones paying their tuition.

We also ask participants about the number of real-estate properties and the number of cars owned by their family. High class participants are more likely to report that their family has two or more properties, while almost 90% of the lower class participants report that their family has one property or less. Finally, the number of cars owned by the family of a high class participant is significantly higher than the cars reported by the other participants. All these differences confirm that the sharp socio-economic differences across strata are present in our sample.

### 3.2 Experimental Design

We ran three between-subject independent experiments, all of which are variations of double-blinded dictator games with *Techo-Colombia* as recipient. In all three experiments, on entering the laboratory, each participant would receive the following material: an endowment of money in bank notes of small denomination, as many blank papers (of the size of the notes) as notes in the monetary endowment, one envelope marked with a letter **M** (for mine), and one envelope marked with a **D** (for donation). This last envelope was marked inside with a hidden tiny dot of a given color, each color representing a different stratum - i.e. there were six colors, one per stratum. This part of the design is crucial, since the color code allowed us to identify the stratum of the participant when opening the donation envelopes after the experimental session.

Once all participants were at their desks, instructions were distributed, together with a letter providing basic information about the charity (e.g. the charity's main goal, number of houses built in the past, etc).<sup>11</sup> Instructions were also read aloud. The only task participants had to do was to distribute the money and the pieces of blank paper between the two envelopes. To guarantee that no one could guess the amount of the donation from the look of the envelope, both envelopes had to contain the same number of pieces of paper. The money intended to be donated to the charity had to be inside the envelope marked with the letter D, which had the colored dot inside. The money to be kept for themselves had to be inside the envelope marked with the letter M.<sup>12</sup> Additionally, the instructions specified that

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<sup>10</sup>Strata are grouped into classes in the following way: lower class, stratum 1 and 2; middle class, stratum 3 and 4 and high class, stratum 5 and 6.

<sup>11</sup>Figure 9 in Appendix shows the flyer participants received.

<sup>12</sup>This was the only payment of the experiment. We did not pay show-up fee and there were no other

the charity was informed about the experimental procedure, so that envelopes containing money and blank papers were expected. This was done to alleviate potential feelings of guilt or any type of uneasiness from putting blank papers in the donation envelope.

After every participant closed both envelopes and put away the one meant for themselves, we distributed a questionnaire which had to be completed and put into an additional blank envelope. Each participant had to attach the donation envelope to the envelope with the filled in questionnaire and place them into the donation box as they walked out of the laboratory. This procedure allows us to collect personal characteristics information without disrupting the double blind feature of our experimental design. These general procedures are slightly modified for each experiment, as we will explain in the corresponding sub-sections below.

### 3.3 Experiment 1: Charitable Donations with a Fixed Endowment

In Experiment 1, when entering the laboratory, all participants received one identical fixed endowment, regardless of their stratum. Specifically, each participant received ten COP 2.000 notes (equivalent to 1 US\$ at the time of the experiment), ten blank papers of the size of the notes, the D envelope with the color mark inside, according to her/his pre-registered stratum, and the M additional envelope.

#### 3.3.1 Results

In total, 210 subjects participated in this experiment.<sup>13</sup> The average amount donated to *Techo* was 3.17 US\$. Figure 2 shows the proportion donated by stratum. Note that the proportion donated increases monotonically with the stratum. However, the Kruskal-Wallis test suggests that the amount donated does not differ significantly by strata ( $\chi^2 = 7.551$ , with 4 d.f., p-value = 0.1095), though it does differ across class ( $\chi^2 = 5.233$ , with 2 d.f., p-value = 0.0731).

We now turn to the regression analysis, where we make use of the data collected in the post experimental questionnaire as control to gain precision in the estimates. We ran three regression specifications. First, using Ordinary Least Squares, we estimate:

$$Donation_i = \alpha + \beta Strata_i + \mathbf{X}_{1i}'\gamma_1 + \mathbf{X}_{2i}'\gamma_2 + \mathbf{X}_{3i}'\gamma_3 + \varepsilon_i \quad (1)$$

where *Donation* is the proportion of the fixed endowment donated to the charity, *Strata* is a categorical value, taking the value of the stratum where the donor lives according to the Colombian law (recall that the highest strata is 6 and the lowest- in our sample- is 2). We consider three different sets of controls, that we add sequentially:  $\mathbf{X}_{1i}$  is a set of sociodemographic controls that include age, university, major, and a dummy variable that

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experiments as part of the same session.

<sup>13</sup>As shown in Table 1, there was only one participant from stratum 1, therefore we excluded this participant from the analysis based on strata, but include him/her in the analysis based on what we call “class”.

takes value 1 for those subjects taking economic related majors;  $\mathbf{X}_{2i}$  is the set that considers the previous relationship that the individual had with the charity. Since the charity involves only people under 30 years old and recruits volunteers at universities, this set of controls is important. Having been involved with the charity in the past or in the present could affect the contributions to the charity during the experiment, and this could vary across strata. This set of controls includes dummy variables to identify whether the individual has previously donated to the charity, had volunteer in the charity and the subjective rating of the social contribution of the charity in a scale from 1 to 5. Finally,  $\mathbf{X}_{3i}$  is a set of controls that relate to the individual’s perceptions about the causes of poverty.<sup>14</sup>

Results, shown in the first four columns of Table 3, suggest that the proportion of the fixed endowment donated to the charity is positively and significantly correlated to the strata of the donor. The coefficient is stable in magnitude and in significance level, even when we progressively add the sets of controls as already explained.

Next, we explore this association by stratum. Instead of using the variable *Strata*, we include a dummy variable for each stratum, with stratum 6 as the missing category. We estimate the following equation:

$$\begin{aligned}
 Donation_i = & \alpha + \beta_1 Stratum\ 2_i + \beta_2 Stratum\ 3_i + \beta_3 Stratum\ 4_i + \beta_4 Stratum\ 5_i + \quad (2) \\
 & + \mathbf{X}_{1i}'\gamma_1 + \mathbf{X}_{2i}'\gamma_2 + \mathbf{X}_{3i}'\gamma_3 + \varepsilon_i
 \end{aligned}$$

Results of this set of regressions are reported in columns 5 to 8 of Table 3. Again, we present results with no controls first, and then we sequentially add the different sets of controls. In column 5 we observe that subjects from stratum 2 to 4 donate a significantly lower proportion of their endowment than subjects from stratum 6. The magnitude and significance level of the coefficient is larger the lower the strata. Subjects from stratum 4 donate, on average, 11% less than subjects from stratum 6, while those from stratum 3 donate on average US\$ 14% less than those from stratum 6. However, as we add the different sets of controls, the only result that remains significant is that subjects from stratum 2 donate significantly lower proportion than those from stratum 4, 5 and 6. On average they donate US\$ 19% less than those from stratum 6.

Finally, in the third set of regressions (columns 9 to 12) we explore differences by class, taking the upper class as the benchmark. This final set of regressions groups strata into 3 categories: Lower Class (strata 1 and 2), Middle Class (strata 3 and 4) and Upper Class (strata 5 and 6). We do this because these categories are recognized worldwide, so it simplifies the analysis for the reader who is not familiar with the Colombian stratification system. It is worth noting that we group strata into class categories in the same way that

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<sup>14</sup>Inevitably, as we add controls, we lose observations. Given that our post-experiment survey was in pen and paper, we could not prevent participants to leave some fields empty.

Colombians do. For this last set of regressions, we estimate the following equation:

$$Donation_i = \alpha + \beta_1 Low\ Class_i + \beta_2 Middle\ Class_i + \mathbf{X}_{1i}'\gamma_1 + \mathbf{X}_{2i}'\gamma_2 + \mathbf{X}_{3i}'\gamma_3 + \varepsilon_i \quad (3)$$

The last four columns of Table 3 present the results for this set of regressions, showing similar results than before. The class that on average donates the least is the lower class. Participants from lower class donate on average 16 percentage points less than a high class participant, which represents 63% decrease with respect to the average donation of a participant from the higher class and a 52% decrease with respect to the middle class. These differences are significant at the 5% and 10% level respectively. Additionally, there is no significant difference in the average donation of high and middle class. Taken together, these results suggest that wealth and generosity are positively correlated. Participants with higher wealth levels behave more generously towards those who are at the bottom of the income distribution, though this result is not strictly monotonic.

While results of Experiment 1 are informative, its design does not account for the differential marginal utility of money that exists across people from different socio-economic strata. That is, if we want to infer from this experiment that the rich are intrinsically more generous than the poor, we need to assume that the opportunity cost of giving a proportion of the fixed endowment is the same for all participants from different socio-economic strata. However, at the time of the experiment, the 10 US\$ endowment provided in the laboratory was equal to the daily per capita expenditure of the average Bogotanian household from stratum 2, while for the average individual in stratum 6, the 10 US\$ endowment was only about 35% of the daily expenditure.<sup>15</sup> Therefore, the forgone utility of a 3 dollar donation, is not the same for a participant from stratum 2 than for a participant from stratum 6. In order to study if and how the difference in marginal utility of money can account for the differences in charitable giving across strata observed in Experiment 1, we implemented a second experiment which we describe below.

### 3.4 Experiment 2: Charitable Giving with Relevant Endowment

Experiment 2 uses the same protocol as Experiment 1, with a twist that allows us to observe participants giving behavior with an endowment that is equivalent to the average daily expenditure of their stratum and, at the same time, treating participants equally regardless their socioeconomic status. Specifically, in Experiment 2, each participant received (in random order) three different endowments: 20.000 COP (equivalent to 10 US\$), 36.000

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<sup>15</sup>These figures are based on a representative survey of Bogotá households. To obtain figures that are meaningful for our sample of students, we only considered households that report having at least one member studying in a private university. From the amount of monthly expenditure declared, we subtract the amounts declared for university fees, rent, health insurance, and other categories of fixed expenditures. By doing this, we intend to approximate to the daily pocket money.

COP (equivalent to 18 US\$) and 50.000 COP (equivalent to 25 US\$). These amounts match the daily expenditure of an average person living in strata 2, 4 and 6, respectively. Each participant was asked to make three (contingent) donation decisions, one for each endowment. All donations were directed to the same charity and under the same double blind protocol used in Experiment 1.

In order to correct the potential bias due to differences in marginal utility of money plausibly present in Experiment 1, we are only interested in the decision that the participant makes under the endowment that corresponds to the average daily expenditure of the stratum he/she belongs to. That is, the relevant decision for a participant living in stratum 1 or 2, is the amount donated out of the 10 US\$ endowment. Similarly, the relevant decision of a participant from stratum 3 or 4 is the amount donated out of the 16 US\$ endowment, and the one for someone living in stratum 5 or 6 is the amount donated from the 25 US\$ endowment. To achieve this, we needed all the three decisions made by each participant to be independent from each other, so only one decision was randomly chosen to be paid out at the end of the sessions. Additionally, participants were handed in all the materials for each of the donation decisions separately and in random order. Only when they have finished distributing the money between the two different envelopes and had sealed both envelopes for the endowment received in the first place, they were handed in the individual instructions and material for the second one, and so on.

Since we had to keep track of the decision that each participant had already made and the ones remaining, when a participant entered the laboratory, we checked her/his name in the list (where the stratum was color coded) and wrote next to her name the desk number she had chosen to sit. Then, we marked the donation envelopes (that had the color code inside, as in Experiment 1) with her seat number. Once all subjects had made all three decisions, a research assistant went to each desk and each subject independently rolled a die. If the result of the dice roll was a 1 or a 2, then that subject was paid out the decision corresponding to the 10 US\$ endowment, if the result was a 3 or a 4, then the decision paid out was the one corresponding to the 18 US\$ endowment and if it was a 5 or a 6, then the decision paid out was the one of the 25 US\$ endowment. This procedure was clearly explained in the general instructions before any donation decision was made.

Once the decision to be paid out was determined, the assistant collected the four envelopes of the decisions corresponding to the other endowments. After all subjects had rolled the die, the session proceeded as in the last part of Experiment 1: subjects put away the envelope marked with the letter M, they received and completed the post-experiment questionnaire, placed the questionnaire in a separate envelope, attached it to the donation envelope and placed both envelopes into the donation box as they walked out of the laboratory. This procedure implements a double blind dictator game under the strategy method design, controlling for potential hedging and order effects.

### 3.4.1 Results

Overall, 166 students at the two universities participated in Experiment 2.<sup>16</sup> For this experiment, the outcome of interest is constructed as follows: for participants living in strata 1 and 2, we take the donation decision made with the 10 US\$ endowment; for participants in strata 3 and 4, we take the donation decision made with 18 US\$ endowment and for participants in strata 5 and 6, we take the donation decision made with 25 US\$ endowment. Each donation decision is normalized by the size of the respective endowment, to make decisions comparable across strata. Thus, the outcome variable for Experiment 2 is the proportion of the relevant endowment that the participant decided to donate.

The average donation as a proportion of the relevant endowment is 0.31, very similar to that in Experiment 1, which was 0.32. However, in contrast with what we observed in Experiment 1, in Experiment 2 there is no significant difference in the average proportional donation of the relevant endowment by stratum (see Figure 3) (Kruskal-Wallis test:  $\chi^2=4.042$  with 4 degrees of freedom, p-value=0.400). The regression analysis presented in Table 4 confirms this result. We estimated equations 1, 2 and 3, as we did for Experiment 1, but considering only donation decision for the stratum-equivalent endowment. These results clearly show that donation behavior does not differ significantly across strata, regardless of how we specify the variable strata and the addition of any set of controls. We take this as evidence that once the differential marginal utility of money is accounted for, participants are equally generous towards the most needy.

### 3.4.2 Robustness

As a robustness check, in this subsection we test whether participants in Experiment 1 and 2 are indistinguishable with respect to their donation behavior with 10 US\$ endowments. Before turning to the data analysis, we would like to note a few differences between both decisions that are due to the experimental procedures. First, participants in Experiment 2 made contingent decisions for three different endowments, while in Experiment 1 they only made one decision with a 10 US\$ endowment. This potentially introduces the *hot vs. cold* bias. The multiple but contingent decisions in Experiment 2, also introduce potential order effect. While we control for order effects by randomizing the order of the endowments at the individual level, we did not record the order in which each individual received the endowments, so we have no data to test for order effects. Hence, if we find differences in behavior regarding the 10 US\$ endowment, we can not rule out that those are due to order effects.

The average amount donated in Experiment 1 was 3.18 US\$, while the average donation out of the 10 US\$ endowment in Experiment 2 amounts to 3.06 US\$. The difference is not statistically significant (t-statistic = 0.4114, p-value 0.681). Figure 4 compares the

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<sup>16</sup>Note that for stratum 1, we had only one observation, so we drop it for the analysis involving strata, and we include it in the analysis regarding socioeconomic class.



average donation (for the 10 US\$ endowment) by stratum for both experiments. As it can be seen, averages do not differ within each stratum either. Table 5 shows the t-test results for the difference between averages for each stratum. Table 6 reports results for the same regressions as in Table 3 but for the donation decision for the 10 US\$ endowment for the Experiment 2 sample. This is the most stringent replication test. Results do not fully replicate Experiment 1, but due to the differences in the procedures already discussed, this was not unexpected.

As an extra and final test, we ran an OLS regression pooling Experiment 1 and Experiment 2 samples, the dependent variable is the individual donation out of the 10 US\$ endowment and the independent variables are strata, a dummy that takes value 1 if the individual was in Experiment 2 and 0 otherwise, and the interaction between the *Experiment* dummy and strata. The regression includes all sets of controls. Results in Table 7 suggest a significant and positive relationship of the donated amount and strata, while the coefficient for Experiment is not significant, as well as the interaction between strata and Experiment. We take this as evidence that, when making a charitable donation with the 10 US\$ endowment, participants in Experiment 2 behave similarly as participants in Experiment 1.

### 3.5 Experiment 3: Charitable Giving with Relevant Endowment and Matching

While Experiment 1 and 2 allow us to identify the degree of generosity across people from different socioeconomic strata, they do not shed any light on the motives behind the observed behavior. One could imagine that due to social distance, the motivation to help the most needy might differ. While people from lower and middle classes might be more empathic and donate out of pure altruism, those in the upper class might do so driven by warm glow.

In order to disentangle these two plausible motivations, we ran a third experiment with the same experimental design as in Experiment 2, but matching the donations made by participants at a matching rate of 1:1. That is, participants were informed that for each dollar donated to the charity, the charity would receive another dollar from Universidad del Rosario.<sup>17</sup> In the presence of matching, a purely altruistic individual should decrease donations to the charity, while someone motivated by warm glow may or may not increase donations. In Karlan and List (2007), the authors use the same matching rate to ask for charitable donations of 50,000 previous donors and they find that the presence of matching increased donations. More importantly, they find that the matching ratio of 1:1 does not lead to different results than higher ratios (1:2 and 1:3).

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<sup>17</sup>We did not find any institution willing to perform as the matching institution, so we used the research budget from the researcher affiliated to Universidad del Rosario to match the donations. For this reason, we decided to run Experiment 3 only at this university.

### 3.5.1 Results

A total of 87 students participated in Experiment 3. On average, participants donated 28% of their relevant endowment, not very different from Experiment 2. Figure 5 shows the average donation as a proportion of the relevant endowment by stratum. The Kruskal-Wallis test cannot reject that the average proportional donation is the same across the considered strata ( $\chi^2 = 3.657$ , d.f.=3, p-value = 0.301).

In order to identify the motives driving charitable giving within each stratum, we compare the average donation (as a proportion of the relevant endowment) under non-matching (Experiment 2) and matching (Experiment 3) protocols. If participants of stratum  $i$  are driven by pure altruism, the average donation for that stratum under the matching has to be significantly lower than the average donation under the non-matching protocol. If that is not the case, then we can infer that donations are driven by some degree of warm glow. Table 8 shows the results of the test comparing donations under both protocols for each stratum. None of the differences in the mean donation are significant. We interpret this as suggestive evidence that people from different socioeconomic strata are not only equally generous towards the most needy, but that their motivation to give is also similar. The generous act towards the underprivileged seems to be driven by warm glow, rather than by pure altruism.

### 3.6 Beliefs Across Strata

We have seen that the generosity to help the most needy does not differ between the rich and the poor, once we account for the real value of the opportunity cost of giving. In this section we explore whether the perception about the origins of individual wealth differ across strata. The answer to this question can shed further light on the motivations guiding the generosity of people from different socioeconomic background.

To obtain information about individual perception regarding the origins of individual wealth, we included the following two questions to the post-experimental questionnaire. We ask *“Do you think that it is possible to be a successful person without the help of anyone or you think that, to become a successful person, it is necessary to have a group of people helping each-other”* and *“In your opinion, which of these is the main reason for a person to be poor? The person did not put enough effort or the person did not have enough luck (mark only one possible reason).”*

We pool the data of the three experiments and regress these two variables on the strata dummies using two different specifications, with and without controls (gender, age, economist and previous experience with Techo). Regression results are reported in Tables 9 and 10. We find that these perceptions are similar across strata, with the only exception that participants from stratum 3 believe more than those in stratum 2, 5 and 6 in the statement that it is possible to be a successful person without the help of others. This, suggest some interesting distinguishable feature of middle-class participants. They are equally

generous towards the most needy despite their perception that a person does not need help from others to succeed in life.

## 4 Conclusion

The aim of this paper is to contribute to the understanding of the relationship between wealth and the genuine generosity to help a person who is at the very bottom of the wealth distribution. Are those in the upper part of the wealth distribution more generous than those who are at the bottom? Understanding this relationship is important for at least two reasons. First, without this information, it is not possible to evaluate the impact of different tax policies on charitable giving (Andreoni, 1990). Second, this information will help the NGOs to target their donation campaigns more efficiently.

The empirical evidence on the relationship between generosity and wealth was so far not conclusive, mostly due to measurement error and self-reported problems. To address these issues, this paper takes advantage of a unique feature of Colombian cities: a law which divides the city in six different socio-economic strata, assigned to each household by its geographical location. By tracking the participant's strata, we are able to identify, anonymously and at the individual level, their actual socio-economic status. This provides a novel contribution to the literature, which has so far relied either on artificially induced wealth distributions in the laboratory or on self-reported data from surveys or tax declaration forms.

We combined this novel feature of the city with three controlled laboratory experiments. Our experimental design allows us to disentangle two important aspects of generosity across strata. First, we can tease out giving behaviour from intrinsic generosity across people from different socio-economic strata, as we manipulate the opportunity cost of giving. This already highlights the importance of identifying whether preferences instead of pure behaviour differ among social classes. Second, we can study whether there exist differences in the motivation to give across people from different socio-economic status.

We find three key results. When we consider donations with a fixed endowment, we find that donations to the most vulnerable monotonically increase with wealth. Participants from the highest socio-economic stratum donate on average between 15% and 20% more than those from the lowest socioeconomic stratum. This positive income gradient in donations is not explained by differences in beliefs or information across strata. However, the findings in Experiment 2 suggests that this positive relationship does not reflect a genuine difference of generosity across wealth segments, but it simply reflects differences in the opportunity cost of giving. When we keep the opportunity cost to give constant across strata, we find no difference in donations. All, rich, middle-class and poor are equally generous with the most vulnerable. Moreover, Experiment 3 suggests that the generosity is equally driven across all socio-economic strata by warm glow, rather than pure altruism.

Most of our knowledge on philanthropy behaviour comes from the United States. However, according to the World Giving Index 2014, only five of the countries in the Top 20 are members of the G20. This paper does not only provide novel evidence on the wealth-generosity gradient, but it offers a first step towards the understanding of charitable giving behavior within less developed and highly unequal countries.

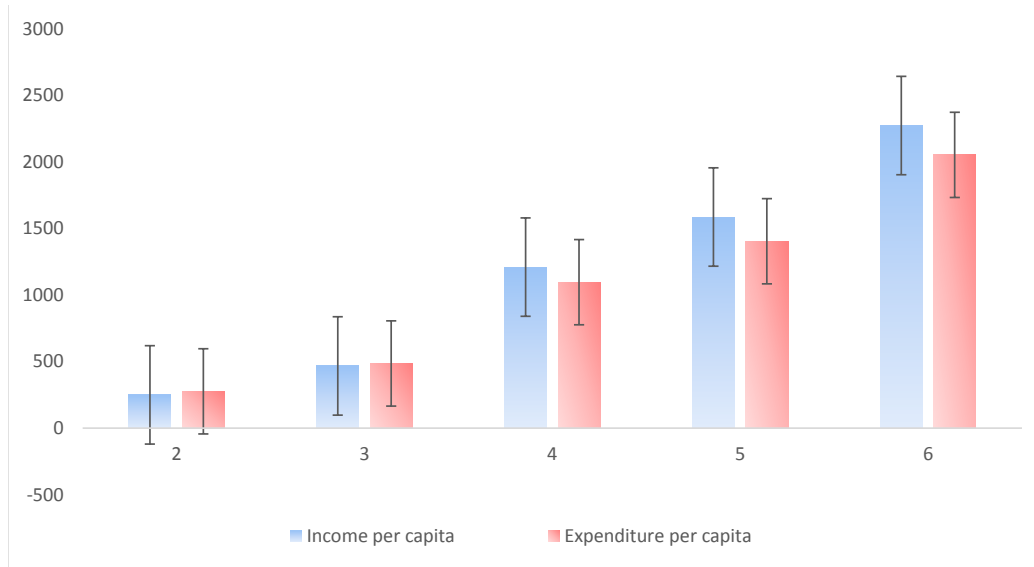
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## Figures

Figure 1: Income and Expenditure by Stratum



Source: This figure shows monthly income and expenditure in COL pesos across different strata. The data was retrieved from a representative survey in Bogotá (2011) by Gallego et al. (2015)

Figure 2: Proportion of 10 US\$ Endowment Donated by Stratum:  
Experiment 1

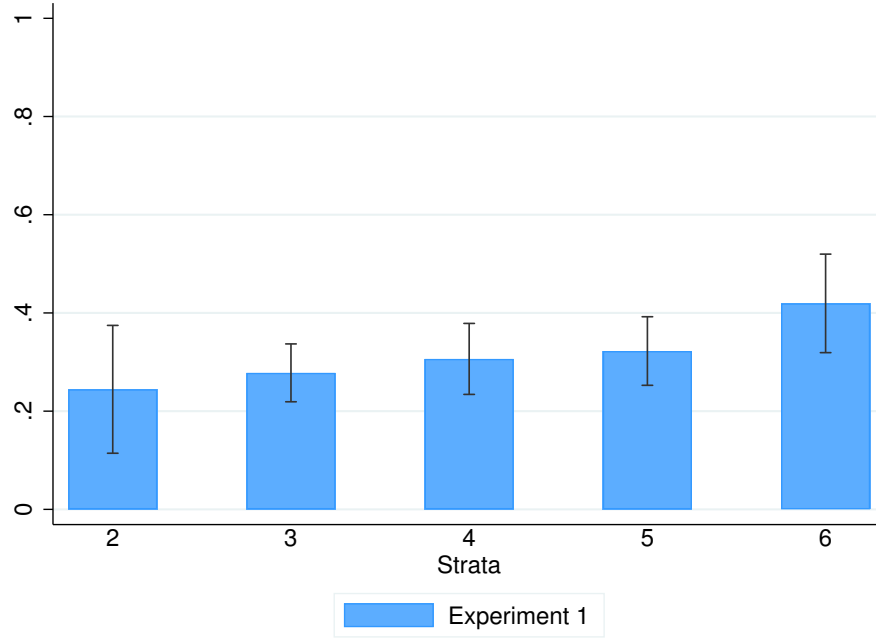


Figure 3: Proportion of Stratum-Equivalent Endowment Donated by Stratum:  
Experiment 2

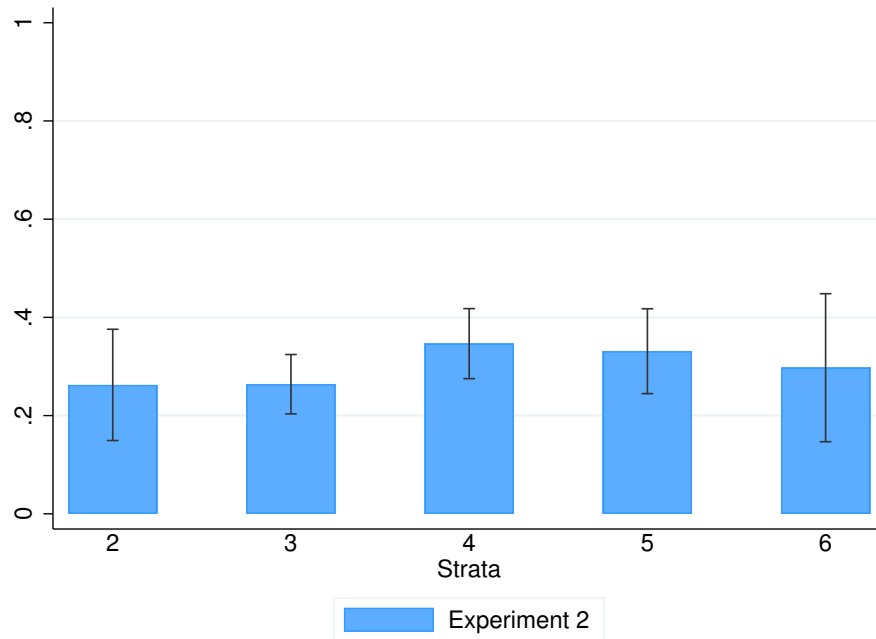




Figure 4: Proportion of 10 US\$ Donated by Stratum:  
Experiment 1 vs Experiment 2

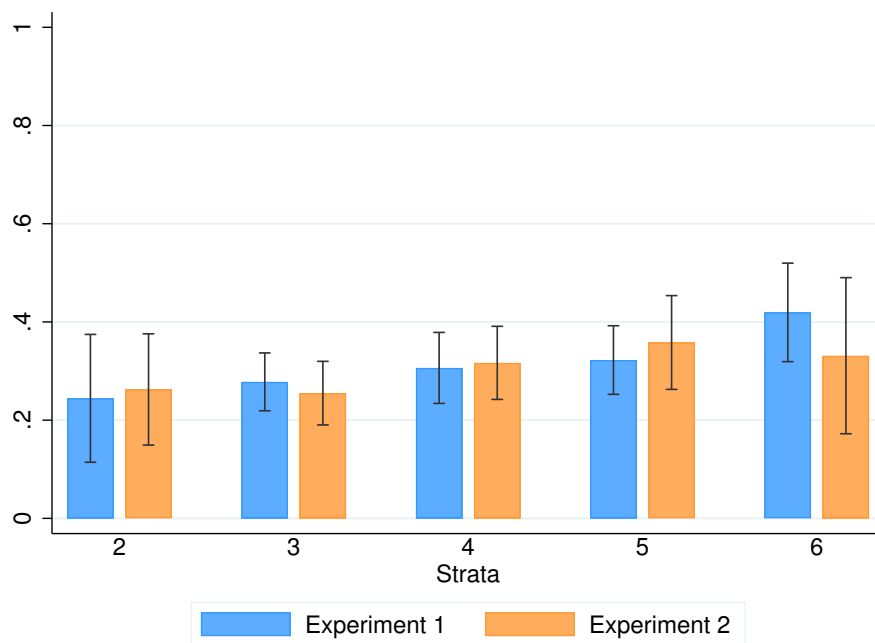
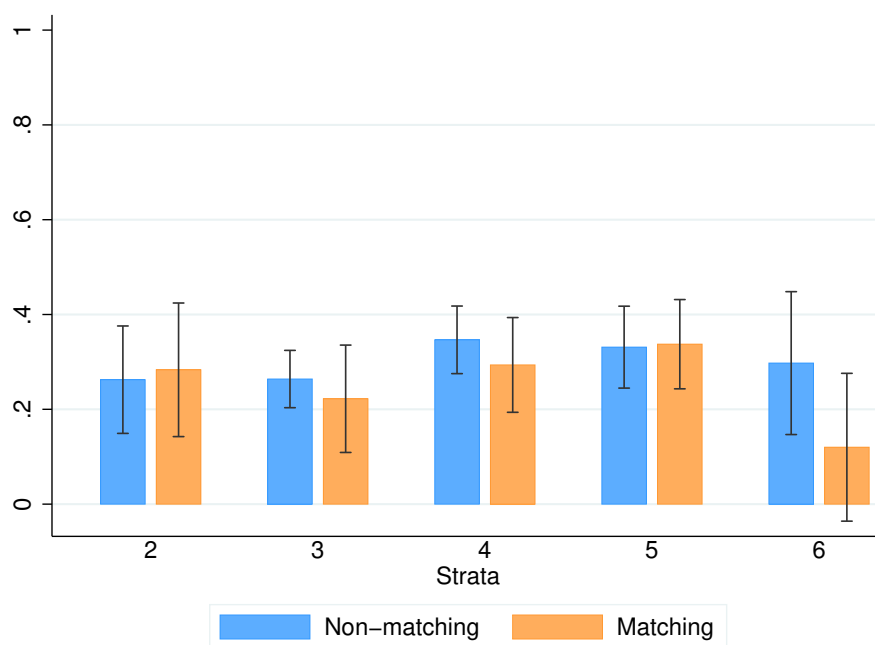


Figure 5: Proportion of Stratum-Equivalent Endowment Donated by Stratum:  
Non-matching vs Matching



# Tables

Table 1: Sample Size by Stratum

Stratum	1	2	3	4	5	6
Experiment 1	1	18	50	47	58	36
Experiment 2	1	24	40	42	43	16
Experiment 3	2	18	19	21	23	4

*Notes:* This table shows the number of participants in each experiment, per stratum.

Table 2: Sample Characteristics across Socioeconomic Class

	Socio-economic class			Difference between classes		
	Poor	Middle	Rich	Poor–Middle	Middle–Rich	Poor–Rich
<i>Panel A: Individual characteristics</i>						
Gender (1=female) <sup>a</sup>	0.45 (0.50)	0.56 (0.50)	0.43 (0.50)	-0.10 (0.07)	0.12** (0.05)	0.02 (0.07)
Age	20.47 (2.82)	20.55 (2.32)	20.73 (1.78)	-0.08 (0.35)	-0.17 (0.21)	-0.26 (0.30)
Currently working (1=yes) <sup>a</sup>	0.14 (0.35)	0.19 (0.39)	0.25 (0.43)	-0.05 (0.05)	-0.06* (0.04)	-0.11 (0.06)
Major (=1 econ. related) <sup>a</sup>	0.33 (0.47)	0.42 (0.49)	0.44 (0.50)	-0.09 (0.07)	-0.02 (0.05)	-0.12 (0.07)
<i>Panel B: Socio-economic characteristics</i>						
Father's education <sup>a</sup>	2.54 (1.09)	3.12 (1.12)	3.65 (1.31)	-0.58*** (0.16)	-0.53*** (0.12)	-1.11*** (0.18)
Mother's education <sup>a</sup>	2.59 (1.04)	2.96 (1.02)	3.38 (1.18)	-0.38*** (0.15)	-0.41*** (0.11)	-0.79*** (0.17)
Father employed (1=yes) <sup>a</sup>	0.72 (0.45)	0.78 (0.41)	0.81 (0.40)	-0.06 (0.06)	-0.02 (0.04)	-0.09* (0.06)
Mother employed (1=yes) <sup>a</sup>	0.77 (0.43)	0.73 (0.45)	0.64 (0.48)	0.04 (0.06)	0.09* (0.05)	0.13* (0.07)
Origins of funds for studies <sup>a</sup>	4.24 (2.58)	5.41 (2.41)	6.43 (2.03)	-1.17*** (0.35)	-1.02*** (0.23)	-2.19*** (0.32)
Property owners <sup>a</sup>	0.97 (0.85)	1.59 (1.01)	2.01 (1.02)	-0.62*** (0.14)	-0.41*** (0.10)	-1.04*** (0.14)
Car owners <sup>a</sup>	0.64 (0.74)	1.17 (0.92)	1.87 (1.79)	-0.53*** (0.13)	-0.70*** (0.14)	-1.23*** (0.23)

*Notes:* Standard errors in parentheses. Definition of variables: **Gender** and **Age** and are self-explanatory. **Currently working:** Answer to the question: *Are you currently working?* (1=Yes 0=No). **Major:** Answer to the question: *What is your major o study?* (1=Economics, Business, Finance 0=Rest of social sciences). **Funding:** Answer to the question: *How do you finance your studies?* (1=full scholarship, 2=partial scholarship, 3= work, 4=government loan, 5=private loan, 6=mixed, 7=family loan and 8=funds come exclusively from family). **Property/car owners:** Answer to the question: *Are your parents owners of a real state property/car?* (0=no, 1= one house/car, 2= two houses/cars, 3= three or more houses/cars). <sup>a</sup> test of difference between distributions using  $\chi$  (Pearson-Chi2) test because variable is dichotomous. The rest of the mean differences are checked using the **t-test**. \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

Table 3: OLS Regressions for Donation as a Proportion of Endowment:  
Experiment 1

Dependent variable:	Proportion of Endowment donated to <i>Techo</i>											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Strata	0.039*** (0.015)	0.032** (0.016)	0.035** (0.016)	0.039** (0.018)								
Stratum 2					-0.175** (0.078)	-0.154* (0.081)	-0.199*** (0.072)	-0.193** (0.079)				
Stratum 3					-0.141** (0.057)	-0.119* (0.061)	-0.096 (0.062)	-0.104 (0.070)				
Stratum 4					-0.113* (0.061)	-0.092 (0.064)	-0.107* (0.062)	-0.072 (0.071)				
Stratum 5					-0.097 (0.060)	-0.089 (0.061)	-0.081 (0.060)	-0.053 (0.066)				
Lower class									-0.115* (0.067)	-0.098 (0.070)	-0.148** (0.062)	-0.160** (0.068)
Middle class									-0.068* (0.037)	-0.049 (0.041)	-0.051 (0.041)	-0.054 (0.046)
Constant	0.155** (0.061)	0.224 (0.200)	-0.044 (0.226)	0.100 (0.244)	0.419*** (0.049)	0.458** (0.206)	0.182 (0.255)	0.346 (0.274)	0.360*** (0.029)	0.372* (0.197)	0.100 (0.233)	0.256 (0.247)
Individual characteristics		✓	✓	✓		✓	✓	✓		✓	✓	✓
Participation in <i>Techo</i>			✓	✓			✓	✓			✓	✓
Beliefs				✓				✓				✓
Observations	209	209	195	180	209	209	195	180	209	209	195	180
R-squared	0.034	0.048	0.119	0.164	0.041	0.053	0.128	0.167	0.024	0.040	0.117	0.161
<i>p-val H<sub>0</sub> on equality of coefficients associated</i>												
$H_0$ : Stratum 2 = Stratum 3									0.17			
$H_0$ : Stratum 2 = Stratum 4									0.07			
$H_0$ : Stratum 2 = Stratum 5									0.05			
$H_0$ : Stratum 3 = Stratum 4									0.51			
$H_0$ : Stratum 3 = Stratum 5									0.33			
$H_0$ : Stratum 4 = Stratum 5									0.74			
$H_0$ : Poor class = Middle class												0.08

Notes: This table shows results from OLS regressions on the proportion of endowment donated in Experiment 1. The dependent variable is the proportion of the fixed endowment donated to Techo. *Strata* is a categorical value from 2 to 6 representing the stratum where the donor lives. We consider three different sets of controls, that we add sequentially: *Individual characteristics* includes age, university, major, and a dummy variable that takes value 1 for those subjects taking economic related majors. *Participation in Techo* includes dummy variables to identify whether the donor has previously donated to Techo, had volunteer in the charity and the subjective rating of the social contribution of Techo in a scale from 1 to 5. *Beliefs* is a set of controls that relate to the donor's perceptions about the causes of poverty. Lower Class (strata 1 and 2), Middle Class (strata 3 and 4) and Upper Class (strata 5 and 6). The last rows show the p-values of the t-tests comparing regression coefficients across strata and classes. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4: OLS Regressions for Donation as a Proportion of Stratum-equivalent Endowment:  
Experiment 2

Dependent variable:	Proportion of relevant endowment donated to <i>Techo</i>											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Strata	0.019 (0.017)	0.015 (0.016)	0.014 (0.018)	0.014 (0.019)								
Stratum 2					-0.035 (0.088)	-0.030 (0.081)	-0.032 (0.091)	-0.033 (0.090)				
Stratum 3					-0.034 (0.076)	-0.020 (0.070)	-0.044 (0.071)	-0.058 (0.072)				
Stratum 4					0.049 (0.078)	0.060 (0.075)	0.048 (0.074)	0.024 (0.073)				
Stratum 5					0.034 (0.082)	0.028 (0.077)	0.002 (0.080)	-0.003 (0.078)				
Poor class									-0.060 (0.065)	-0.050 (0.061)	-0.033 (0.076)	-0.030 (0.076)
Middle class									-0.016 (0.043)	0.000 (0.043)	0.007 (0.045)	-0.007 (0.046)
Constant	0.231*** (0.066)	-0.029 (0.178)	-0.308 (0.246)	-0.297 (0.271)	0.298*** (0.070)	0.022 (0.201)	-0.242 (0.251)	-0.213 (0.278)	0.322*** (0.036)	0.042 (0.194)	-0.261 (0.253)	-0.242 (0.279)
Individual characteristics		✓	✓	✓		✓	✓	✓		✓	✓	✓
Participation in <i>Techo</i>			✓	✓			✓	✓			✓	✓
Beliefs				✓				✓				✓
Observations	165	165	142	137	165	165	142	137	165	165	142	137
R-squared	0.009	0.085	0.111	0.122	0.022	0.099	0.126	0.132	0.006	0.085	0.109	0.119
<i>p-val H<sub>0</sub> on equality of coefficients associated</i>												
$H_0$ : Stratum 2 = Stratum 3									0.72			
$H_0$ : Stratum 2 = Stratum 4									0.47			
$H_0$ : Stratum 2 = Stratum 5									0.73			
$H_0$ : Stratum 3 = Stratum 4									0.11			
$H_0$ : Stratum 3 = Stratum 5									0.32			
$H_0$ : Stratum 4 = Stratum 5									0.66			
$H_0$ : Poor class = Middle class												0.84

*Notes:* This table shows results from OLS regressions on the proportion of stratum-equivalent endowment donated in Experiment 2. The dependent variable is the proportion of the stratum-equivalent endowment donated to Techo. The stratum 1-2 equivalent endowment is 10 US\$, the stratum 3-4 equivalent endowment is 18 US\$ and the stratum 5-6 equivalent endowment is 25 US\$. *Strata* is a categorical value from 2 to 6 representing the stratum where the donor lives. We consider three different sets of controls, that we add sequentially: *Individual characteristics* includes age, university, major, and a dummy variable that takes value 1 for those subjects taking economic related majors. *Participation in Techo* includes dummy variables to identify whether the donor has previously donated to Techo, had volunteer in the charity and the subjective rating of the social contribution of Techo in a scale from 1 to 5. *Beliefs* is a set of controls that relate to the donor's perceptions about the causes of poverty. Lower Class (strata 1 and 2), Middle Class (strata 3 and 4) and Upper Class (strata 5 and 6). The last rows show the p-values of the t-tests comparing regression coefficients across strata and classes. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5: Replication Test - Donations with 10US\$ Endowment in Experiments 1 and 2

	Experiment 1	Experiment 2	<i>p</i> -value
Full sample	0.318 (0.257)	0.307 (0.262)	0.5952
Stratum 2	0.244 (0.262)	0.262 (0.268)	0.8261
Stratum 3	0.278 (0.207)	0.255 (0.2025)	0.5339
Stratum 4	0.306 (0.246)	0.317 (0.239)	0.7113
Stratum 5	0.322 (0.266)	0.358 (0.310)	0.7656
Stratum 6	0.419 (0.296)	0.331 (0.298)	0.3076

*Notes:* This table shows the *p*-values of the t-tests comparing the proportion of 10 US\$ donated in Experiment 1 and Experiment 2. The first row compares the average proportion donated by the full sample across experiments. The following rows compare the average proportion donated by participants of each stratum across experiments

Table 6: Replication Test - OLS Regressions with 10 US\$ Endowments in Experiment 2

Dependent variable:	Amount donated to <i>Techo</i>											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Strata	0.030*	0.025	0.024	0.025								
	(0.018)	(0.017)	(0.019)	(0.020)								
Stratum 2					-0.069	-0.063	-0.071	-0.071				
					(0.091)	(0.082)	(0.094)	(0.095)				
Stratum 3					-0.076	-0.063	-0.085	-0.094				
					(0.080)	(0.073)	(0.074)	(0.078)				
Stratum 4					-0.015	-0.005	-0.020	-0.038				
					(0.082)	(0.078)	(0.078)	(0.081)				
Stratum 5					0.027	0.021	-0.008	-0.007				
					(0.087)	(0.079)	(0.084)	(0.085)				
Poor class									-0.088	-0.077	-0.065	-0.066
									(0.067)	(0.063)	(0.077)	(0.078)
Middle class									-0.064	-0.049	-0.042	-0.055
									(0.047)	(0.047)	(0.049)	(0.052)
Constant	0.190***	-0.051	-0.285	-0.289	0.331***	0.070	-0.139	-0.126	0.351***	0.084	-0.154	-0.147
	(0.068)	(0.187)	(0.259)	(0.275)	(0.073)	(0.204)	(0.263)	(0.282)	(0.040)	(0.197)	(0.261)	(0.279)
Individual characteristics		✓	✓	✓		✓	✓	✓		✓	✓	✓
Participation in <i>Techo</i>			✓	✓			✓	✓			✓	✓
Beliefs				✓				✓				✓
Observations	165	165	142	137	165	165	142	137	165	165	142	137
R-squared	0.019	0.092	0.115	0.123	0.025	0.096	0.119	0.126	0.017	0.090	0.111	0.121

Notes: This table shows results from OLS regressions on the proportion of 10 US\$ endowment donated in Experiment 2. See notes in Tables 3 and 4 for a description of the independent variables. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 7: Replication Test - OLS Regression with 10 US\$ - Data from Exp 1 and Exp 2

Donation as Proportion of Endowment	
Strata	0.054* (0.030)
Experiment	0.055 (0.066)
Strata $\times$ Experiment	-0.017 (0.015)
Constant	-0.029 (0.244)
Controls (all)	✓
Observations	307
R-squared	0.095

*Notes:* This table shows results from an OLS regression on donations with 10 US\$ endowments. The analysis uses pooled data from Experiment 1 and Experiment 2. The independent variables are *Strata*, *Experiment*=1 if participant was in Experiment 2 and 0 otherwise, and the interaction between the *Experiment* dummy and *Strata*. The regression includes all sets of controls described in Tables 3, 4 and 6. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 8: Donations with Stratum-equivalent Endowment - Non-matching vs Matching

	Experiment 2	Experiment 3	<i>p</i> -value
Stratum 2	0.263 (0.268)	0.283 (0.283)	0.8092
Stratum 3	0.264 (0.189)	0.222 (0.235)	0.4679
Stratum 4	0.346 (0.229)	0.294 (0.219)	0.3841
Stratum 5	0.331 (0.281)	0.337 (0.218)	0.9266
Stratum 6	0.298 (0.283)	0.120 (0.098)	0.6552

This table presents the proportion of the stratum-equivalent endowment donated in experiment 2 and experiment 3, by stratum. It also presents the *p*-values from t-tests comparing these proportions.



Table 9: Probit Regressions on Beliefs about Cause of Poverty:  
Effort vs Luck

Dependent variable	Not Enough Effort	
	(1)	(2)
Stratum 2	0.026 (0.095)	-0.013 (0.102)
Stratum 3	-0.078 (0.084)	-0.071 (0.089)
Stratum 4	-0.025 (0.084)	-0.046 (0.088)
Stratum 5	-0.059 (0.082)	-0.091 (0.085)
Controls (all)		✓
Observations	429	386
<i>p-val <math>H_0</math> on equality of coefficients</i>		
$H_0$ : Stratum 2 = Stratum 3	0.21	0.53
$H_0$ : Stratum 2 = Stratum 4	0.54	0.72
$H_0$ : Stratum 2 = Stratum 5	0.30	0.38
$H_0$ : Stratum 3 = Stratum 4	0.44	0.75
$H_0$ : Stratum 3 = Stratum 5	0.78	0.78
$H_0$ : Stratum 4 = Stratum 5	0.61	0.53

*Notes:* This table shows Probit regressions on beliefs about the role of effort versus luck to be poor. The analysis uses pooled data on beliefs from the three experiments. The exact question is *In your opinion, which of these is the main reason for a person to be poor? The person did not put enough effort or the person did not have enough luck (mark only one possible reason)*. The dependent variable is a dummy equal to 1 if the participant believes people are poor because they did not put enough effort and is equal to 0 if the participant believes people are poor because they were unlucky. Column 1 does not include controls and Column 2 includes controls (gender, age, economist=1 and previous experience with Techo). The table also shows the p-values of pairwise comparison of regression coefficients using t-test. .

Table 10: Probit Regressions on Beliefs about Cause of Poverty:  
Success Alone vs Help

Dependent variable	Success Alone	
	(1)	(2)
Stratum 2	0.000 (0.089)	0.013 (0.099)
Stratum 3	0.142* (0.081)	0.162* (0.089)
Stratum 4	0.122 (0.081)	0.136 (0.086)
Stratum 5	0.032 (0.078)	0.033 (0.083)
Controls (all)		✓
Observations	451	407
<i>p-val <math>H_0</math> on equality of coefficients</i>		
$H_0$ : Stratum 2 = Stratum 3	0.08	0.10
$H_0$ : Stratum 2 = Stratum 4	0.13	0.16
$H_0$ : Stratum 2 = Stratum 5	0.68	0.81
$H_0$ : Stratum 3 = Stratum 4	0.76	0.72
$H_0$ : Stratum 3 = Stratum 5	0.09	0.07
$H_0$ : Stratum 4 = Stratum 5	0.16	0.12

*Notes:* This table shows Probit regressions on beliefs about the role of effort versus luck to be poor. The analysis uses pooled data on beliefs from the three experiments. The exact question is *In your opinion, do you think it is possible to be a successful person without the help of anyone or you think that, to become a successful person, it is necessary to have a group of people helping each-other.* The dependent variable is a dummy equal to 1 if the participant believes that people do not need help to be successful. Column 1 does not include controls and Column 2 includes controls (gender, age, economist=1 and previous experience with Techo). The table also shows the p-values of pairwise comparison of regression coefficients using t-test.

# Appendix

## A Tables

Table 11: Sample Characteristics across Socioeconomic Classes:  
Experiment 1

	Socio-economic class			Difference between classes		
	Poor	Middle	Rich	Poor–Middle	Middle–Rich	Poor–Rich
Panel A: <i>Individual characteristics</i>						
Gender (1=female) <sup>a</sup>	0.47 (0.51)	0.58 (0.47)	0.47 (0.50)	-0.10 (0.12)	0.11 (0.07)	0.01 (0.13)
Age	21 (1.94)	20.78 (1.97)	20.61 (1.47)	0.22 (0.49)	0.18 (0.25)	0.39 (0.39)
Currently working (1=yes) <sup>a</sup>	0.10 (0.31)	0.21 (0.41)	0.26 (0.44)	-0.10 (0.10)	-0.06 (0.06)	-0.16 (0.11)
Major (=1 econ. related) <sup>a</sup>	0.37 (0.49)	0.48 (0.50)	0.58 (0.49)	-0.12 (0.13)	-0.10 (0.07)	-0.22* (0.12)
Panel B: <i>Socio-economic characteristics</i>						
Father's education <sup>a</sup>	2.47 (0.51)	3.06 (0.97)	3.72 (1.24)	-0.59*** (0.23)	-0.66*** (0.16)	-1.25*** (0.29)
Mother's education <sup>a</sup>	2.58 (0.77)	2.91 (0.99)	3.42 (1.11)	-0.33 (0.24)	-0.52*** (0.15)	-0.85*** (0.27)
Father employed (1=yes) <sup>a</sup>	0.84 (0.37)	0.79 (0.41)	0.80 (0.40)	0.05 (0.10)	-0.00 (0.06)	0.04 (0.10)
Mother employed (1=yes) <sup>a</sup>	0.79 (0.42)	0.78 (0.41)	0.61 (0.49)	0.01 (0.10)	0.18*** (0.06)	0.18 (0.12)
Origins of funds for studies <sup>a</sup>	3.42 (2.17)	5.47 (2.33)	6.55 (1.81)	-2.05*** (0.58)	-1.08** (0.30)	-3.13*** (0.47)
Property owners <sup>a</sup>	0.63 (0.83)	1.42 (0.97)	2.05 (1.01)	-0.79*** (0.24)	-0.63*** (0.14)	-1.42*** (0.25)
Car owners <sup>a</sup>	0.79 (0.92)	1.07 (0.90)	2.05 (2.28)	-0.28 (0.23)	-0.98*** (0.25)	-1.26*** (0.53)

*Notes:* Standard errors in parentheses. Definition of variables: **Gender** and **Age** and are self-explanatory. **Currently working:** Answer to the question: *Are you currently working?* (1=Yes 0=No). **Major:** Answer to the question: *What is your major o study?* (1=Economics, Business, Finance 0=Rest of social sciences). **Funding:** Answer to the question: *How do you finance your studies?* (1=full scholarship, 2=partial scholarship, 3= work, 4=government loan, 5=private loan, 6=mixed, 7=family loan and 8=funds come exclusively from family). **Property/car owners:** Answer to the question: *Are your parents owners of a real state property/car?* (0=no, 1= one house/car, 2= two houses/cars, 3= three or more houses/cars). <sup>a</sup> test of difference between distributions using  $\chi$  (Pearson-Chi2) test because variable is dichotomous. The rest of the mean differences are checked using the **t-test**. \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

Table 12: Sample Characteristics across Socioeconomic Classes:  
Experiment 2

	Socio-economic class			Difference between classes		
	Poor	Middle	Rich	Poor–Middle	Middle–Rich	Poor–Rich
Panel A: <i>Individual characteristics</i>						
Gender (1=female) <sup>a</sup>	0.44 (0.51)	0.50 (0.50)	0.34 (0.48)	-0.06 (0.12)	0.16* (0.08)	0.10 (0.12)
Age	20.32 (2.32)	20.35 (2.65)	20.66 (2.00)	-0.03 (0.59)	-0.31 (0.41)	-0.34 (0.50)
Currently working (1=yes) <sup>a</sup>	0.16 (0.37)	0.19 (0.40)	0.20 (0.41)	-0.35 (0.09)	-0.01 (0.07)	-0.04 (0.09)
Major (=1 econ. related) <sup>a</sup>	0.32 (0.48)	0.35 (0.48)	0.27 (0.45)	-0.34 (0.11)	0.08 (0.08)	0.05 (0.11)
Panel B: <i>Socio-economic characteristics</i>						
Father's education <sup>a</sup>	2.63 (1.28)	3.12 (1.23)	3.59 (1.50)	-0.50 (0.29)	-0.46*** (0.23)	-0.96*** (0.35)
Mother's education <sup>a</sup>	2.67 (1.31)	3.00 (1.00)	3.10 (1.23)	-0.33*** (0.25)	-0.10 (0.19)	-0.43*** (0.30)
Father employed (1=yes) <sup>a</sup>	0.64 (0.49)	0.71 (0.46)	0.81 (0.39)	0.07 (0.11)	-0.11 (0.07)	-0.17* (0.10)
Mother employed (1=yes) <sup>a</sup>	0.68 (0.48)	0.71 (0.46)	0.66 (0.48)	0.03 (0.11)	0.05 (0.08)	0.02 (0.11)
Origins of funds for studies <sup>a</sup>	4.50 (2.70)	5.04 (2.61)	6.24 (2.46)	-0.54 (0.61)	-1.20*** (0.43)	-1.74** (0.61)
Property owners <sup>a</sup>	1.16 (0.85)	1.69 (1.06)	2.90 (1.06)	-0.53 (0.23)	-0.20 (0.18)	-0.74** (0.24)
Car owners <sup>a</sup>	0.72 (0.74)	1.22 (0.93)	1.66 (1.09)	-0.50 (0.20)	-0.44** (0.17)	-0.94*** (0.24)

*Notes:* Standard errors in parentheses. Definition of variables: **Gender** and **Age** and are self-explanatory. **Currently working:** Answer to the question: *Are you currently working?* (1=Yes 0=No). **Major:** Answer to the question: *What is your major o study?* (1=Economics, Business, Finance 0=Rest of social sciences). **Funding:** Answer to the question: *How do you finance your studies?* (1=full scholarship, 2=partial scholarship, 3= work, 4=government loan, 5=private loan, 6=mixed, 7=family loan and 8=funds come exclusively from family). **Property/car owners:** Answer to the question: *Are your parents owners of a real state property/car?* (0=no, 1= one house/car, 2= two houses/cars, 3= three or more houses/cars). <sup>a</sup> test of difference between distributions using  $\chi$  (Pearson-Chi2) test because variable is dichotomous. The rest of the mean differences are checked using the **t-test**. \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

Table 13: Sample Characteristics across Socioeconomic Classes:  
Experiment 3

	Socio-economic class			Difference between classes		
	Poor	Middle	Rich	Poor–Middle	Middle–Rich	Poor–Rich
Panel A: <i>Individual characteristics</i>						
Gender (1=female) <sup>a</sup>	0.45 (0.51)	0.63 (0.49)	0.52 (0.51)	-0.17 (0.14)	0.11 (0.12)	-0.07 (0.15)
Age	20.15 (3.95)	20.40 (2.39)	21.30 (2.16)	-0.25 (0.82)	-0.90 (0.57)	-1.15 (0.90)
Currently working (1=yes) <sup>a</sup>	0.15 (0.37)	0.13 (0.33)	0.30 (0.47)	0.03 (0.09)	-0.17 (0.10)	-0.15 (0.13)
Major (=1 econ. related) <sup>a</sup>	0.30 (0.47)	0.43 (0.50)	0.33 (0.48)	-0.13 (0.13)	0.09 (0.12)	0.03 (0.14)
Panel B: <i>Socio-economic characteristics</i>						
Father's education <sup>a</sup>	2.50 (1.28)	3.22 (1.23)	3.52 (1.12)	-0.73 (0.34)	-0.29 (0.30)	-1.02 (0.35)
Mother's education <sup>a</sup>	2.50 (1.94)	3.02 (1.16)	3.81 (1.21)	-0.53 (0.30)	-0.80 (0.29)	-1.31 (0.33)
Father employed (1=yes) <sup>a</sup>	0.70 (0.47)	0.90 (0.30)	0.81 (0.40)	-0.20 (0.10)	0.09 (0.08)	-0.11 (0.13)
Mother employed (1=yes) <sup>a</sup>	0.85 (0.37)	0.63 (0.49)	0.70 (0.47)	0.23 (0.12)	-0.08 (0.12)	0.15 (0.13)
Origins of funds for studies <sup>a</sup>	4.70 (2.72)	6.00 (2.12)	6.41 (1.71)	-1.30 (0.64)	-0.41 (0.49)	-1.71 (0.65)
Property owners <sup>a</sup>	1.05 (0.83)	1.80 (0.97)	2.07 (0.99)	-0.75 (0.25)	-0.27 (0.24)	-1.02 (0.27)
Car owners <sup>a</sup>	0.40 (0.50)	1.33 (0.92)	1.70 (0.78)	-0.93 (0.22)	-0.38 (0.24)	-1.30 (0.20)

Notes: Standard errors in parentheses. Definition of variables: **Gender** and **Age** and are self-explanatory. **Currently working**: Answer to the question: *Are you currently working?* (1=Yes 0=No). **Major**: Answer to the question: *What is your major o study?* (1=Economics, Business, Finance 0=Rest of social sciences). **Funding**: Answer to the question: *How do you finance your studies?* (1=full scholarship, 2=partial scholarship, 3= work, 4=government loan, 5=private loan, 6=mixed, 7=family loan and 8=funds come exclusively from family). **Property/car owners**: Answer to the question: *Are your parents owners of a real state property/car?* (0=no, 1= one house/car, 2= two houses/cars, 3= three or more houses/cars). <sup>a</sup> test of difference between distributions using  $\chi$  (Pearson-Chi2) test because variable is dichotomous. The rest of the mean differences are checked using the **t-test**. \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

## B Images

Figure 6: Distribution of Bogotá by Socioeconomic Strata

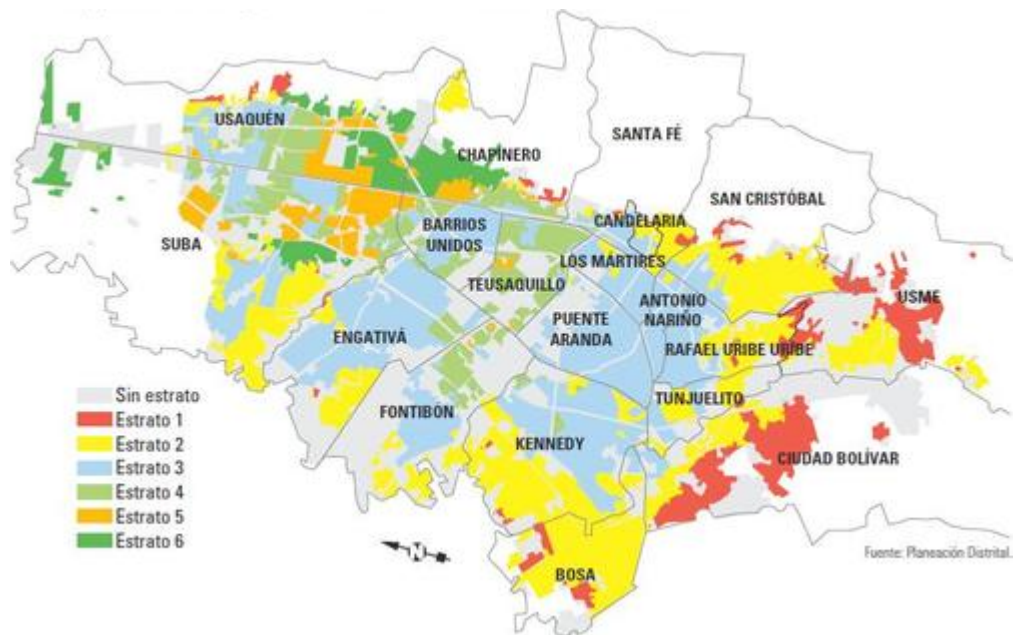


Figure 7: Stratum 1

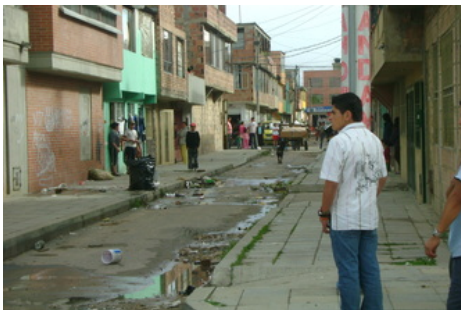


Figure 8: Stratum 6



Figure 9: Flyer Distributed to Participants



#### TÚ PUEDES CAMBIAR LA REALIDAD DE MUCHAS FAMILIAS

Miles de familias en Bogotá viven en la extrema pobreza. En TECHO trabajamos con estas familias con el fin de superar esa situación de pobreza, a través de la **construcción de viviendas de emergencia y la ejecución de planes de acompañamiento y desarrollo comunitario**. Estos proyectos requieren una fuerte inversión económica.

Hasta el día de hoy y gracias al aporte de personas como tú, hemos construido más de 3.330 viviendas en Colombia e implementado nuestros programas de desarrollo en más de 20 comunidades. Pero todavía hay miles de familias que necesitan de nuestra ayuda.

#### TE INVITAMOS A SUMARTE A ESTE GRAN SUEÑO

¿CÓMO PUEDES COLABORAR?

Depositando tu donación en la urna en la entrada de la sala.  
**¡Tu aporte, por mínimo que sea, ayuda!**

#### TU AYUDA TRANSFORMA UN TECHO EN REALIDAD ¡GRACIAS!

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Oficina en Bogotá: 2853057 / L-V 10am-7pm / Cra. 17#32ª-34, Teusaquillo

## C Post-Experimental Questionnaire

To conclude with today's study, we are going to ask you if you could complete the following survey consisting of two questionnaires. We need your honest answers. All your answers are anonymous. That is, we cannot identify your answers with you. In addition, the data will be used exclusively for academic purposes.

### QUESTIONNAIRE A

- 1- Date:
- 2- Start time of the experiment:
- 3- Age:
- 4- City and country of birth:
- 5- Gender: Female Male
- 6- Current program in the university:

For next questions, indicate with a circle the correct answer. Sometimes there may be more than one answer.

- 7- You currently live with:
- Your mother
  - Your father
  - Your brother(s)/sister(s)
  - Alone
  - Share housing with other people

- 8- When did you move to your current address?
- I always lived in this home
  - I moved to this address to start my studies
  - I moved to my current address xxx year(s) ago.

- 9- Are your parents owners of any property?
- Yes, they own a property.
  - Yes, they own more than one property
  - No, they do not own property

- 10- Do your parents own a car?
- Yes, they own a car.
  - Yes, they own two cars.
  - Yes, they own more than two cars.
  - No, they do not own a car.

- 11- What is the highest level of education your father achieved?
- Primary.
  - High school.
  - University degree.
  - Masters degree.
  - Doctoral degree.



12- What is the highest level of education your mother achieved?

Primary.  
High school.  
University degree.  
Master degree.  
Doctoral degree.

13- What is your father's current occupational status?

Work full time.  
Work part time.  
Currently He doesn't have a paid job.  
He is retired.

14- What is your mother's current occupational status?

Work full time.  
Work part time.  
Currently, she doesn't have a paid job.  
She is retired.

15- How do you fund your studies?

Partial scholarship.  
Total scholarship.  
Bank loan.  
ICETEX loan.  
Family loan.  
Family resources.  
Job  
Other source of financing (specify).

16- Do you currently work?

Yes, I do work, xxx hours per week.  
No, I just study.

17- Did you know about the existence of TECHO before participating in this experiment?

Yes  
No

If your answer to the previous question was YES, please answer questions 18 to 20. If your answer was NO, go directly to questionnaire B.

18- From 1 to 5, 1 being the lowest and 5 the highest, how do you rate the social contribution of the TECHO activity?

19- Had you ever donated money to TECHO before participating in this experiment?

Yes, once.  
Yes, more than once.  
No, Never.

20- Have you ever participated in any activity of TECHO?

Yes, once.

Yes, more than once.

No, Never.

### **QUESTIONNAIRE B**

21- Do you believe:

That it is possible to be a successful person without anyone's help, or

That it is necessary to have a group of people who supports each other to be a successful person.

19- Do you think having money is important to be happy?

Money is indispensable to be happy.

Money is very important to be happy.

Money is important to be happy.

Money is not important to be happy.

20- In general, people who put effort into their jobs end:

Much better than people who do not put effort.

Better than people who do not put effort.

Worse than people who do not put effort.

Much worse than people who do not put effort.

21- In your opinion, which of these reasons is the main cause for a person to be poor?

(check only one reason)

The person did not put enough effort.

The person was not lucky enough.

22- In your opinion, which of these reasons is the main cause for a person to be rich?

(check only one reason)

The person put enough effort.

The person was lucky.