Journal of Development Economics 167 (2024) 103250

Contents lists available at ScienceDirect

Journal of Development Economics

journal homepage: www.elsevier.com/locate/devec

Regular article

Wealth and charitable giving – Evidence from an Ethiopian lottery ☆

Andreas Kotsadam [a,1], Vincent Somville [b,c,*,1]

[a] Ragnar Frisch Centre for Economic Research, Norway
[b] Department of Economics, NHH Norwegian School of Economics, Norway
[c] Chr. Michelsen Institute, Norway

ARTICLE INFO

JEL classification:
D64
D90

Keywords:
Charitable giving
Altruism
Wealth
Ethiopia

ABSTRACT

Does wealth make people more selfish or more generous? While this question has been at the center stage of the research on charitable giving, causal evidence is lacking. We offer winners and losers of a large Ethiopian housing lottery the opportunity to give to charities. Winners experience a very large increase in wealth, yet they are not more likely to donate money. They give slightly higher amounts to charities in absolute monetary value but nothing more in proportion to their income. We conclude that in this context charitable giving at the extensive margin is insensitive to exogenous wealth changes and that wealthier people do not become more selfish.

1. Introduction

Humans are generous. In the U.S., in 2019 alone, charities received more than USD 427 billion (Giving USA, 2019). Charitable giving is not only common in rich countries. Low-income countries such as Nigeria, Ghana and Uganda are now in the top 10 of the most charitable countries, and in Ethiopia, where we conduct this study, more than a third of the population donated money to a charity in 2020 (Charities Aid Foundation, 2021). The market for charitable giving is expanding and social scientists are striving to identify the factors that explain this generosity (List, 2011).

Wealth and income are presumably first-order determinants of giving. The estimated correlation between income and charitable giving varies a lot however, sometimes positive, sometimes negative, flat or non-linear (see Meer and Priday, 2021, for a recent discussion of these estimates). Selection bias, omitted variables, and measurement errors are thought to explain these inconsistencies (Meer and Priday, 2021) and the literature struggles to provide plausibly causal estimates of how wealth affects charitable giving.

We bring new evidence on the causal effects of wealth by combining a natural experiment that leads to large increases in individual wealth, a housing lottery, with first-hand data collected two years later among the winners and losers of the lottery. The housing lottery is part of a large urbanization program providing highly subsidized apartments to the poor through public lotteries. So far, more than 200,000 apartments have been distributed through the lotteries. Winners experience a very large increase in wealth (through real-estate ownership), and in income (mostly through rentals). According to our estimates, winners are twenty times wealthier than losers two years after the lottery.

We gave a random sample of winners and losers an opportunity to give to charities. We used a modified version of the dictator game (Kahneman et al., 1986) where the winner, or loser, is the dictator and can choose to give some of her endowment to a charity that we pre-selected. This provides an opportunity to estimate the causal effect of winning the lottery on charitable giving.

We find that, despite their much larger wealth, winners are not more likely to give than losers and the groups give very similar amounts. In both groups, 79 percent choose to give some of their endowment. On average, the losers give ETB 18 (USD 1.91, PPP adjusted) out of the ETB 50 (USD 5.30, PPP adjusted) endowment.[2] The winners give ETB 1.36 more on average and the difference is significantly different from zero (p-value = 0.02). In proportion to their incomes, however, the

☆ This research has been funded by strategic funds from the Frisch Centre and by NHH småforsk. Somville acknowledges support from the Research Council of Norway (262675). We would like to thank Jonathan Meer, Gabrielle Salazar and K. Pun Winichakul for valuable comments on an earlier version of the paper, and Jesita Wida Ajani who provided research assistance. A pre-analysis plan is registered at the AEA RCT registry (AEARCTR-0003579) and all deviations from the plan are noted in the text. The pre-analysis plan can be found here. The project was reviewed by the IRB of NHH (NHH-IRB 01/19).

* Corresponding author at: Department of Economics, NHH Norwegian School of Economics, Norway.
E-mail address: vincent.somville@nhh.no (V. Somville).

[1] Contributed equally to all parts of the manuscript.

[2] In 2018, the ETB–USD PPP conversion factor used by the World Bank was equal to 9.441 (https://data.worldbank.org/indicator/PA.NUS.PRVT.PP?locations=ET).

https://doi.org/10.1016/j.jdeveco.2023.103250
Received 27 June 2023; Received in revised form 25 December 2023; Accepted 26 December 2023
Available online 2 January 2024

winners do not give more than the losers. Both groups give on average an amount equivalent to 21 percent of their daily income.

In order to interpret these results, and to claim that the richer winners have become more or less generous, we need to clarify what we mean with *generosity* and invoke some assumptions about preferences. Using the classical impure–altruism model (Cornes and Sandler, 1984; Steinberg, 1987; Andreoni, 1989, 1990), we can show that the evidence is consistent with the claim that winning the lottery does not make people more selfish. In particular, with a Cobb–Douglas utility function of the form $U_i(c_i, G, g_i) = c_i^{\alpha} G^{\beta} g_i^{\gamma}$ (with c_i being the private consumption, G the consumption of the charity's output, a public good, and g_i, i's own giving—the warm glow effect), the amount given is a constant share of income. An increase in income leads to an increase in both giving and consumption of the private good, but *giving relative to income* only changes if the preference parameters α, β or γ change. The fact that the winners give slightly more, but give the same amount *relative to their income* is therefore consistent with unchanged preferences, and richer people giving more because they want to consume more of all normal goods (including the charity's public good and the warm glow from giving), and not because they care more about the public good or experience a warmer glow.

The claim that winning the lottery did not change the winners' preferences is not only valid under the Cobb–Douglas assumption, but comes from the more general assumption of homothetic preferences (income elasticity of one). Is this a reasonable assumption? Several authors have estimated the income elasticity of charitable giving (mostly using US tax and survey data). The first important studies found income elasticities of 0.76 to 0.99 (Feldstein and Clotfelter, 1976; Feldstein and Taylor, 1976).[3] The most recent and complete analysis in that strand of the literature uses the PSID and concludes that the percent of income given is flat across the income distribution (Meer and Priday, 2021). Given the estimates found in the literature, it seems reasonable to assume that the income elasticity of giving is equal to, or slightly smaller than, one. If their preferences are unchanged, we should therefore expect the lottery winners to give the same share of income (or slightly more). Hence, we interpret the fact that they give the same share of income as evidence that their preferences have not changed.

Our findings contribute directly to the understanding of how charitable giving relates to wealth and income. While wealth and income should clearly be first order determinants of giving, the empirical investigation of their causal effects is still very limited. It is difficult to find a setting in which the variation in wealth or income is exogeneous to charitable giving and one can make firm causal claims.[4] This is why the literature is so far limited to sampling richer and poorer people and observe if they behave differently (Fisman et al., 2015; Smeets et al., 2015; Andreoni et al., 2017a; Blanco and Dalton, 2019; Meer and Priday, 2021; Kessler et al., 2019) or to introducing limited variation in a lab setting (Erkal et al., 2011; Chowdhury and Jeon, 2014; Tonin and Vlassopoulos, 2017; Bartling et al., 2018; Kubilay, 2021). A recent exception is the work by Haushofer et al. (2023), who investigate the effects of cash transfers on social preferences of children aged 6 to 17. They find no indications that treated children became more generous, but they do not find persistent economic effects of the treatment either.

Another important contribution from our paper is to bring solid evidence from a new context. The literature is largely dominated by studies from high-income and Western contexts and we have very little knowledge and understanding of charitable giving in more general contexts (Apicella et al., 2020). As we already mentioned, charitable giving is not the prerogative of rich countries and its importance in low- and middle-income countries is rapidly rising (Charities Aid Foundation, 2021).

Our main interpretation of the lottery's effect is in terms of wealth and income changes. The lottery may however have other effects on giving. In particular, since winning this lottery involves getting an apartment it could be the case that moving or neighborhoods affect charitable giving. We rely on the fact that only 30 percent of the winners actually move, and we show that the effects are similar for non-movers. We also discuss alternative interpretations after presenting our main results.

We are aware of three studies based on this housing lottery. Franklin (2019) investigates how winners respond to an earlier round of the lottery and their willingness to move to their new homes, Andersen et al. (2023) shows that winning the lottery had no effects general attitudes towards redistribution and inequality aversion but winners become more resistant to housing taxes and their beliefs about the causes of poverty change, and Andersen et al. (2022) show that winning the lottery affects well-being but not psychological distress. Andersen et al. (2023, 2022) and this paper rely on the same survey. All three papers share the same pre-analysis plan with explicit statements about our intention to write different papers, tackling very different research questions.[5] The lottery's effects on wealth and income presented here are also reported in the other papers.

In the next section we describe the lottery and the context of the study. We write about the data in Section 3 and explain our empirical strategy in Section 4. The results are in Section 5. We discuss other potential channels in Section 6 and then conclude.

2. The housing lottery

The housing lottery is officially called "The Integrated Housing and Developing Programme" (IHDP). High-quality condominium apartments are built in Addis Ababa, the capital of Ethiopia. When completed, the apartments are sold at highly subsidized prices. The demand for these apartments largely exceeds the supply, and the apartments are allocated through a public lottery.

The program was introduced in 2005, and there has been 13 lotteries so far. We study the 11th lottery that took place in 2016. It allocated the purchase rights for 12,027 apartments to participants who had all registered for a studio, one- or two-bedroom apartment when the program was introduced.

To be eligible for the lottery, applicants must satisfy three criteria: (i) having resided in Addis Ababa the previous six months; (ii) not owning any other house or lease land; and (iii) having a savings account with the Commercial Bank of Ethiopia (CBE) and having deposited the required savings for at least 29 months.

There are separate lotteries for each type of apartment (studio, one- or two-bedroom) and in each lottery there are quotas for women (30 percent), civil servants (20 percent), and people with disabilities (5

[3] The well-known article of Randolph (1995) found a larger elasticity of about 1.14–1.30, but Auten et al. (2002) estimate the elasticity at 0.87 with an extended dataset.

[4] Most of the previous research in fact focuses on other factors that may influence giving. On the charities' side, special attention is paid to the effects of competition (Schmitz, 2021), earmarking (Fuchs et al., 2020), seed money and refunds (List and Lucking-Reiley, 2002), lottery incentives (Landry et al., 2006), matching grants (Karlan and List, 2007; Meier, 2007; Huck and Rasul, 2011; Karlan et al., 2011; Charness and Holder, 2019), thank-you gifts (Chao, 2017), payment modalities and characteristics of the donation solicitors (Landry et al., 2006; Meer and Rosen, 2011; Soetevent, 2011), the race of the recipients (Fong and Luttmer, 2011) and increased information about recipients more generally (Fong and Oberholzer-Gee, 2011; Null, 2011). On the donors' side, research examines the importance of identity (Kessler and Milkman, 2018), empathy and social pressure (DellaVigna et al., 2012; Andreoni et al., 2017b; Jung et al., 2017), inequality (Côté et al., 2015; Bechtel et al., 2018; Schmukle et al., 2019), tax incentives (Fack and Landais, 2010) and even genetic and environmental influences (Cesarini et al., 2009) and the fronto-mesolimbic networks activity (Moll et al., 2006).

[5] The preplan can be found here: https://andreaskotsadam.files.wordpress.com/2019/02/pre-analysis-plan-housing-in-addis.pdf.

percent). These quotas were decided after the initial registration but before the lottery draw. Hence, the chances of winning the lottery is only random conditional on these strata variables.

The lottery winners must make a 20 percent down payment before they can sign the contract and receive the keys to their apartment. Around 95 percent of the winners did so. The lottery winners are not required to move into their apartment. They can rent it out, but not sell it within the first five years.[6] A majority of the apartments are either rented out (31 percent) or kept empty (32 percent), while only 30 percent of winners have actually moved into their apartment two years after the lottery. Most individuals that left the apartment empty plan to move there in the future and cite lack of infrastructure as a barrier for not having moved yet. The housing program targets relatively poor households but not the poorest as people must be able to have some savings. Comparing the wealth of the lottery participants to the Ethiopian population, Andersen et al. (2023) show that people enrolled in the lottery are indeed slightly poorer than the average household of Addis Ababa, but richer than people in other urban areas. Andersen et al. (2022) further show that winning the lottery reduces financial distress but mortgage payments increase so liquidity constraints may be present also for winners.

3. Data

We study the behavior of winners and losers of the lottery held in 2016. The Ethiopian Development Research Institute (EDRI) obtained two separate lists from the Addis Ababa Housing Development and Administration Agency (AAHDAA), one of winners and one of losers. We randomly sampled 2200 individuals among the winners. The list of winners contains information about the apartment type, gender, and public sector employment at the time of the registration. It did not include information about physical disability status at registration, so we had asked the participants to report that during the survey.

We drew a random sample of 2200 losers. The list of losers includes information about the type of apartment the individuals applied for and about physical disability status. We obtained employment status and gender during the survey.

We then aggregate the winners' and losers' samples and randomize their order. We create a new ID variable and kept only the people's ID, names, and phone numbers before sending the list to the data collection team. In this way, the enumerators did not know the individual status (winner or loser) and we avoid issues with confounding factors due to different timing and different enumerators. EDRI interviewed the sampled individuals by phone. The survey took around 20 min to answer and the respondents were given ETB 50 in compensation (USD 5.30, PPP adjusted). EDRI stopped after around 3000 completed interviews. The response rate is 92 percent (EDRI contacted 3318 people and completed interviews with 3049 individuals). The data was collected in late 2018, over two years after the lottery was held.

All coding choices and analyses follow the pre-analysis plan. The pre-analysis plan is registered at the AEA RCT registry (AEARCTR-0003579) and can be found \textbf{here}.

The survey respondents were paid with mobile money directly after the interview was conducted. We used this compensation of ETB 50 to offer the participants the opportunity to give some of it to a charity. More precisely, we used the following script (translated into English here):

As we stated earlier, you will be given 50 birr in airtime that we send to your phone. You are given the possibility to donate a share of this money to ***(charity's name)****. If you want to donate, we will send the money to the organization. Do you want to donate any of the airtime? If yes, how much would you like to donate?*

[6] Four percent of the winners in our sample sold their apartment despite these rules.

Table 1
Descriptive statistics.

	Loser (N=1564)	Winner (N=1485)	Total (N=3049)
Strata variables			
Female	0.40 (0.49)	0.45 (0.50)	0.42 (0.49)
Government employee	0.14 (0.34)	0.30 (0.46)	0.22 (0.41)
Disabled	0.00 (0.06)	0.06 (0.23)	0.03 (0.17)
Studio	0.19 (0.39)	0.20 (0.40)	0.20 (0.40)
One-bedroom	0.55 (0.50)	0.53 (0.50)	0.54 (0.50)
Two-bedroom	0.26 (0.44)	0.26 (0.44)	0.26 (0.44)
Other control variables			
Age	42.26 (9.52)	43.38 (9.66)	42.81 (9.60)
Orthodox	0.74 (0.44)	0.77 (0.42)	0.76 (0.43)
Muslim	0.13 (0.34)	0.09 (0.29)	0.11 (0.32)
Protestant	0.11 (0.31)	0.12 (0.33)	0.12 (0.32)
Amhara	0.37 (0.48)	0.38 (0.49)	0.37 (0.48)
Gurage	0.18 (0.39)	0.15 (0.35)	0.17 (0.37)
Oromo	0.17 (0.38)	0.16 (0.36)	0.16 (0.37)
Tigray	0.07 (0.26)	0.09 (0.29)	0.08 (0.28)
Born in Addis	0.49 (0.50)	0.42 (0.49)	0.45 (0.50)
Born in Amhara	0.16 (0.37)	0.19 (0.39)	0.18 (0.38)
Born in Oromia	0.14 (0.35)	0.16 (0.36)	0.15 (0.36)
Born in SNNP	0.14 (0.35)	0.14 (0.34)	0.14 (0.35)
Born in Tigray	0.05 (0.22)	0.08 (0.27)	0.06 (0.24)
Earnings 2005 (at reg.)	5.05 (3.20)	5.22 (3.18)	5.13 (3.19)
Earnings 2015	6.97 (3.04)	7.14 (3.02)	7.05 (3.03)
Partner earnings 2005 (at reg.)	0.93 (2.48)	0.92 (2.45)	0.92 (2.47)
Partner earnings 2015	1.54 (3.21)	1.61 (3.28)	1.57 (3.25)
Partner 2005 (at reg.)	0.32 (0.47)	0.31 (0.46)	0.32 (0.46)
Partner 2015	0.52 (0.50)	0.49 (0.50)	0.50 (0.50)

Notes: The Table shows the mean and standard deviation (in parenthesis) of the strata variables and individual background characteristics in the full sample and separately among the lottery winners and losers. Note that the earnings variables are reported after an inverse hyperbolic sine transformation.

We used two different charitable organization with a good reputation in the city: Mekodonia and Mary Joy.[7] We randomized which organization was used in which interview. The script would display *Mary Joy (an organization supporting poor people)* or *Mekodonia (disabled and elderly association)* where "charity's name" stands. In order to limit the risk of experimenter demand effects, we asked this question before we asked any questions about winning the lottery, the characteristics of their new homes, and about whether they had moved or not.

Our main pre-specified outcome is the continuous measure of how much people donate. We use the amount donated for those answering yes and replace the value by zero for those answering no. In addition we will measure giving at the extensive margin and giving as a share of income. We therefore use three measures of charitable giving:

1. the amount given,
2. a binary indicator equal to one if the participant decided to give,
3. the amount given divided by the participant's daily income.

In addition to the question on charitable giving, the survey also includes demographic characteristics, questions on wealth and income, and questions about attitudes. Table 1 presents descriptive statistics for the overall sample and for the winners and losers separately. The mean age of respondents is around 43 years (which implies that they were on average 29–30 when they signed up in 2005), the most common religion is Orthodox (76 percent), the most common ethnic group is Amhara (37 percent), and the most common birth region is Addis Ababa (45 percent). We see that 42 percent of the respondents are female, while the shares registered for a studio, a one-, and a two-bedroom apartment are 20, 54, and 26 percent, respectively. The shares of civil servants and people with physical disabilities are higher among

[7] You can obtain more information about the charities, and even donate yourself, by visiting their websites: https://mekedoniahomes.org/ and http://www.maryjoy-ethiopia.org/.

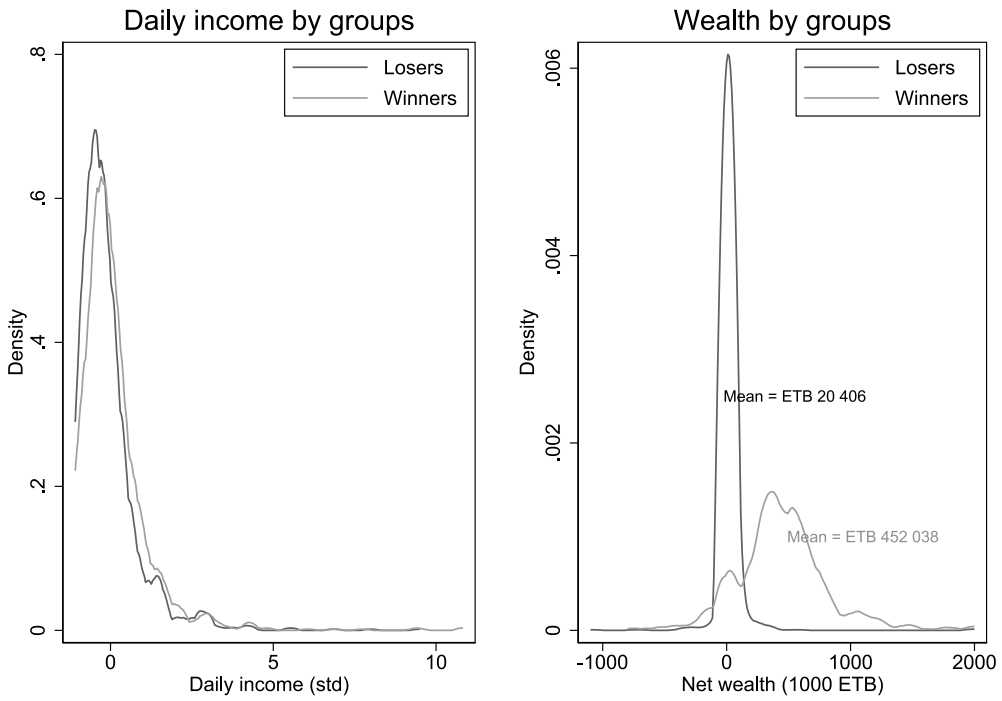

Fig. 1. Effects of winning on income and wealth.
Note: The figures show the distribution of daily income and total wealth among winners and losers of the lottery. Wealth is in ETB 1000. Income is standardized.

winners (30 and 6 percent, respectively) than among losers (14 and 0 percent, respectively), which is not surprising given the quotas for these groups.

Finally, the survey included questions about all sources of income, as well as savings and assets, in order to measure income and wealth. We see that there are differences across winners and losers on many of the control variables and we show results both with and without additional controls.

4. Empirical strategy

To test the effects of winning the lottery on individual i's charitable giving, we calculate intention-to-treat estimates by regressing the outcome of interest Y_i on T_i, a dummy variable equal to one if the individual has won the lottery, while controlling for the set of strata covariates S_i (gender, government employee, disabled, and apartment type):

$$Y_i = \beta T_i + \theta S_i + \varepsilon_i \quad (1)$$

We use robust standard errors and all our estimates are obtained by ordinary least squares. This is our main, pre-specified, estimation. We tested for balance across treatment and control by regressing Treatment (Winning) on the controls and the strata variables both one by one and all together (see Appendix Table A.1). We note that winning is correlated with some of the variables, at least when they are included one by one. We therefore also present results with control variables in Appendix.

5. Results

Winning the lottery has clear effects on both wealth and income as we see in Fig. 1.[8] Winners are on average 20 times wealthier than losers and, as documented in Andersen et al. (2023), they also answer that they are relatively richer as compared to the general population than what losers report.

Note that the results in Fig. 1 are not adjusted for strata variables so there are also compositional differences across the groups. In Panel A of Table 2 we show the results when controlling for strata variables and we note that the effect on income is large and the effect on wealth is very large.

In Panel B of Table 2 we describe the giving behavior in our sample, and how it correlates with income and wealth in the control group. In columns one and two we see that there is a strong positive correlation between giving and daily income, but in columns three and four we see that the correlation with wealth is weaker. One reason for this weaker correlation with wealth may be that very few individuals in the control group have any wealth at all.

Moving over to the effects of winning on donations, in Table 3, we report the estimates of winning the lottery on different measures of giving (β in Eq. (1)). We use three outcomes: (1) a binary variable equal to one if the respondent chose to donate a positive amount and equal to zero if she chose not to give, (2) the amount given in ETB, and (3) the amount given as a share of daily income.

Among the lottery losers, 79 percent decided to give to one of the charities. This proportion is almost exactly the same among the winners and the difference is not statistically significant. On average, the losers give ETB 17.91 and the winners give ETB 1.36 more. This difference is significantly different from zero (p-value = 0.02) but appears very small relative to the large increase in wealth experienced by the lottery winners. The amount given represents 21 percent of the givers daily income, in both the losers and winners groups.[9]

[8] The right panel of Fig. 1 is reproduced from Andersen et al. (2022).

[9] Adding control variables makes the effect on the amount given smaller and no longer statistically significant as we show in Appendix Table A.2. This is, however, driven by the reduction in observations due to missing data on some of the control variables. Estimating the regression without control variables but with the same sample as the regression with control variables also produces a smaller and non-significant coefficient. More importantly, we see in Table A.3 that including missing dummies and recoding missing as zero for the control variables (to not lose observations) yields results that are almost identical to those in Table 3.

Table 2
Effects of lottery on income and wealth and correlations with donations.

A. Effects of lottery on income and wealth	Daily income	Daily income (std)	Net wealth	Net wealth (std)
Lottery winner	23.357***	0.189***	418667.304***	1.240***
	(4.358)	(0.035)	(19231.991)	(0.057)
Mean among lottery losers	122.57	−0.09	20 406.53	−0.40
Observations	2929	2929	1533	1533
R^2	0.16	0.16	0.37	0.37
Strata	Yes	Yes	Yes	Yes
B. Correlations between income, wealth and donations	Binary	Amount	Binary	Amount
Daily income (std)	0.047***	4.502***		
	(0.010)	(0.547)		
Net wealth (std)			0.023**	0.831
			(0.010)	(0.718)
Mean among lottery losers	0.79	17.91	0.79	17.91
Observations	1507	1507	1051	1051
R^2	0.01	0.07	0.00	0.00
Strata	No	No	No	No

Notes: Panel A reports the effects of winning the lottery on daily income, standardized daily income, net wealth, and standardized net wealth. Panel B shows the correlation between standardized daily income as well as standardized net wealth with the two main measures of donations (the likelihood of giving and the average amount given) for the control group. Robust standard errors are in parentheses. P-values are $\leq 0.01^{***}$, $\leq 0.05^{**}$, and $\leq 0.1^{*}$.

Table 3
Impact of winning the lottery on charitable giving.

	Binary	Amount	Share of income
Lottery winner	0.007	1.358**	−0.010
	(0.015)	(0.582)	(0.015)
Mean among lottery losers	0.79	17.91	0.21
Observations	3049	3049	2741
R^2	0.01	0.04	0.01
Strata	Yes	Yes	Yes

Notes: The table reports the effect of winning the lottery on the likelihood of giving, the average amount given and the average amount given as a share of income. Robust standard errors are in parentheses. P-values are $\leq 0.01^{***}$, $\leq 0.05^{**}$, and $\leq 0.1^{*}$.

In Fig. 2 we show the distribution of the amounts given by the losers and by the winners. The distributions are very similar, with peaks at zero, 10 and 50 (the maximum amount), as well as 25, where the participants split the endowment equally between themselves and the charity. Note that the results in Fig. 2 are not adjusted for strata variables so there are also compositional differences across the groups.

6. Heterogeneous effects

This section serves two purposes. First, we want to test other mechanisms than the income/wealth channel that could explain why the lottery would affect giving. Second, we want to check whether the average effects described so far mask important heterogeneity in how people respond to winning the lottery, or not.

We have interpreted the effect that winning the lottery has on giving as driven by the large differences in wealth and income that we observe between winners and losers. The lottery could, however, have other effects on the winners' behavior. In particular, the winners of the lottery get an apartment in a new neighborhood, so perhaps any effects would be driven by these aspects rather than by wealth. For instance, there may be peer and neighborhood effects from new neighbors or winners that move may have less interaction with poor people. One important observation is that only around 30 percent of the winners actually moved to their new flats at the time of the survey (the majority rent it out instead). We estimate the effects of winning the lottery separately for winners who did not move to their new apartment. There is of course a risk of bias in those estimates, given the self-selection into moving, but we believe that they can be informative nonetheless. As shown in the Appendix Table A.4, we find that the estimates are very similar in the group that did not move, compared to the overall effects reported in Table 3. This evidence suggests that the lottery effects are not due to moving to a new apartment.

We also test for heterogeneous treatment effects by interacting winning with each of the Strata variables one by one (except disability status, because of the small number of disabled people in the sample), while still controlling for the other Strata variables. The results are available in the Appendix, Table A.5. In line with the findings of Andreoni and Vesterlund (2001), women are less likely to give, give lower amounts, but a larger share of their income than men. There is no statistically significant difference in the effects of winning by sex, however. Government employees are not reacting differently to winning the lottery either. Our last strata variable is the size of the apartment that people applied for: one- or two-bedrooms (compared the missing category, a studio). These correlate with income. We see that people who applied for a larger apartment are also giving more on average, but do not react differently to winning the lottery.

We also test if there are heterogeneous treatment effects by pre-lottery earnings by interacting winning with the reported earnings of the respondents in 2015 (Appendix Table A.6). While earnings are positively correlated with giving and the amount given, they are negatively correlated with the share of income given and there are no differential effects of winning with respect to earnings. In Appendix Table A.7 we also show the effects by the two different NGOs. We see that for one of the NGOs (Mary Joy), the effects of winning on the likelihood of giving as well on the amount given are statistically significant at the 10 percent level. As we are testing many hypotheses we do not put much weight on this result.

The evidence from the heterogeneity analysis reinforce our main findings: the average effects described in Table 3 are not masking important heterogeneous effects that we could detect.

7. Conclusions

Previous literature has shown that richer people donate more money, does wealth make people more generous? We use the combination of a large natural experiment with a dictator game to causally identify the effect of wealth on charitable giving. The literature is almost exclusively limited to sampling richer and poorer people and observe if they behave differently (Fisman et al., 2015; Smeets et al., 2015; Andreoni et al., 2017a; Blanco and Dalton, 2019; Meer and Priday, 2021; Kessler et al., 2019) or to introducing limited variation in an experimental setting (Erkal et al., 2011; Chowdhury and Jeon, 2014;

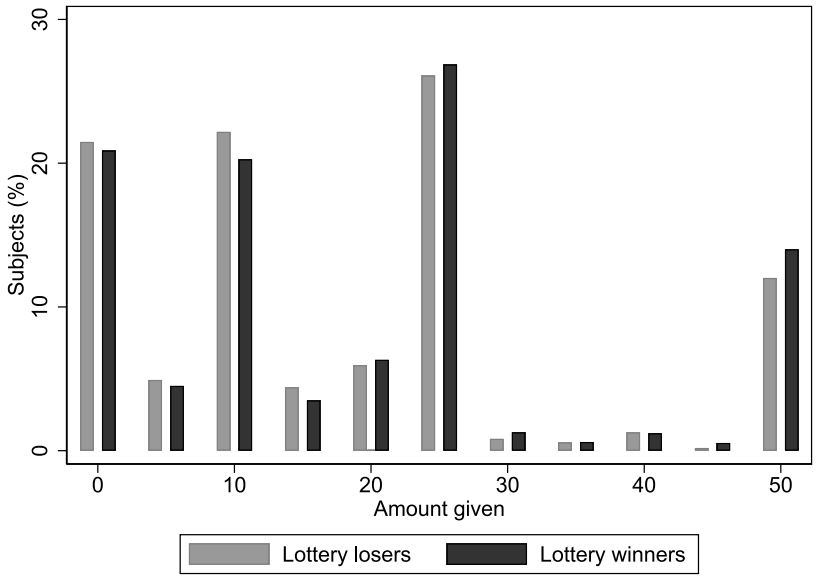

Fig. 2. Amount donated by groups. Note: The figure shows the distribution of the amounts given by the lottery winners and losers.

Tonin and Vlassopoulos, 2017; Bartling et al., 2018).[10] We observe people who randomly became much richer, and we can therefore make a plausible causal claim about the effect of wealth on charitable giving.

We offer respondents the opportunity to donate any share of their compensation for participating (50 ETB) to a charity. Almost 80 percent of the respondents choose to donate money, and although winners are not more likely to donate, they donate slightly more than losers on average (ETB 1.4 out of ETB 50). In a standard dictator game, a higher donation amount is often interpreted in terms of altruism (Fehr and Schmidt, 2006; Andreoni and Miller, 2002). In the literature on philanthropy, however, it is common to separate between pure and impure altruism (see Monnet and Panizza, 2017, for a recent overview). People may derive a private utility from giving in the form of joy, pride, social status, or a *warm-glow* reward (Ribar and Wilhelm, 2002; Andreoni, 1989). As such, it is unclear whether the increase in giving reflects altruism or simply that philanthropy is a normal good. In combination with the results in Andersen et al. (2023), which find no differences in attitudes toward redistribution between winners and losers, and since the difference in giving is very small relative to the difference in wealth, we lean towards the latter interpretation.

As our results come from a lottery, the internal validity is strong. There are, however, several important caveats and limitations to our study that one should bear in mind in generalizing the effects we find. First of all, our winners do not only become wealthier but they also win a house in a new neighborhood. We show that our main results are driven by the people that have not moved yet, and these are the majority in our sample, but it could still be that the type of wealth they won matters.

Another limitation is that we do not have data on all individual actions the respondents take and the winners may give more money to relatives, friends or even to other charities, outside of our study. The complete "altruism budget" (Gee and Meer, 2020) is notoriously difficult to observe, but even if the winners are more (or less) generous than the losers outside of our study, it is not clear that people would give less in one context because they have been giving more at an earlier point in time. There is in fact strong evidence suggesting that some additional giving at one point in time generally does not lead to less giving in the future (see e.g. Adena and Huck, 2019; Cairns and Slonim, 2011; Castillo et al.; Landry et al., 2010; Scharf et al., 2022; Shang and Croson, 2009). Therefore, it seems reasonable to assume that the behavior we observe in this study is a good reflection of the participants' generosity in general.

An additional limitation, following Ribar and Wilhelm (2002), is that given the large population potentially affected by the charities, and how small the gifts are compared to the total output, we can expect the "empathy" motive to play little role (people know their donation will not make a difference). Giving is then rather explained by the warm glow. If this is the case, our results would indicate that the warm glow part of the utility function is not affected by the lottery, but we could not test whether the other part (consumption of the public good) has changed or not.

Finally, we know that the source of wealth (luck or merit in particular) is an important factor determining people's aversion to inequality and willingness to redistribute (Alesina and Glaeser, 2004; Alesina and Angeletos, 2005; Alesina and Giuliano, 2011; Alesina et al., 2018; Almås et al., 2020; Cohn et al., 2022; Fong, 2001). In our case, the source of wealth is luck and we cannot know whether the effects measured would have been different otherwise. We hope that more studies of random wealth shocks will be conducted in other settings and with other measures, as well as further investigations of how the sources of wealth affect charitable giving.

CRediT authorship contribution statement

Andreas Kotsadam: Conceptualization, Formal analysis, Funding acquisition, Investigation, Project administration, Writing – original draft, Writing – review & editing. **Vincent Somville:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Project administration, Writing – original draft, Writing – review & editing.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.jdeveco.2023.103250.

[10] One notable exception is List (2011) who document how individual giving responds to booms and busts in the stock market.

References

Adena, Maja, Huck, Steffen, 2019. Giving once, giving twice: A two-period field experiment on intertemporal crowding in charitable giving. J. Public Econ. 172, 127–134.

Alesina, Alberto, Angeletos, George-Marios, 2005. Fairness and redistribution. Am. Econ. Rev. 95 (4), 960–980.

Alesina, Alberto, Giuliano, Paola, 2011. Preferences for redistribution. In: Handbook of Social Economics, vol. 1, Elsevier, pp. 93–131.

Alesina, Alberto, Glaeser, Edward, 2004. Fighting Poverty in the US and Europe: A World of Difference. Oxford University Press.

Alesina, Alberto, Stantcheva, Stefanie, Teso, Edoardo, 2018. Intergenerational mobility and preferences for redistribution. Amer. Econ. Rev. 108 (2), 521–554.

Almås, Ingvild, Cappelen, Alexander W., Tungodden, Bertil, 2020. Cutthroat capitalism versus cuddly socialism: Are Americans more meritocratic and efficiency-seeking than Scandinavians? J. Polit. Econ. 128 (5), 1753–1788.

Andersen, Asbjørn G., Franklin, Simon, Getahun, Tigabu, Kotsadam, Andreas, Somville, Vincent, Villanger, Espen, 2023. Does wealth reduce support for redistribution? Evidence from an Ethiopian housing lottery. J. Public Economics 224, 104939.

Andersen, Asbjørn G., Kotsadam, Andreas, Somville, Vincent, 2022. Material resources and well-being — Evidence from an Ethiopian housing lottery. J. Health Econ. 83, 102619.

Andreoni, James, 1989. Giving with impure altruism: Applications to charity and Ricardian equivalence. J. Polit. Econ. 97 (6), 1447–1458.

Andreoni, James, 1990. Impure altruism and donations to public goods: A theory of warm-glow giving. Econ. J. 100 (401), 464–477.

Andreoni, James, Miller, John, 2002. Giving according to GARP: An experimental test of the consistency of preferences for altruism. Econometrica 70 (2), 737–753.

Andreoni, James, Nikiforakis, Nikos, Stoop, Jan, 2017a. Are the Rich More Selfish than the Poor, or Do They Just Have More Money? A Natural Field Experiment. Technical Report, Cambridge, MA.

Andreoni, James, Rao, Justin M., Trachtman, Hannah, 2017b. Avoiding the ask: A field experiment on altruism, empathy, and charitable giving. J. Polit. Econ. 125 (3), 625–653.

Andreoni, J., Vesterlund, L., 2001. Which is the fair Sex? Gender differences in altruism. Q. J. Econ. 116 (1), 293–312.

Apicella, Coren, Norenzayan, Ara, Henrich, Joseph, 2020. Beyond WEIRD: A review of the last decade and a look ahead to the global laboratory of the future. Evol. Hum. Behav. 41 (5), 319–329, Beyond Weird.

Auten, Gerald E., Sieg, Holger, Clotfelter, Charles T., 2002. Charitable giving, income, and taxes: An analysis of panel data. Am. Econ. Rev. 92 (1), 371–382.

Bartling, Björn, Valero, Vanessa, Weber, Roberto A., 2018. Is social responsibility a normal good? SSRN Electron. J..

Bechtel, Michael M., Liesch, Roman, Scheve, Kenneth F., 2018. Inequality and redistribution behavior in a give-or-take game. Proc. Natl. Acad. Sci. 115 (14), 3611–3616.

Blanco, Mariana, Dalton, Patricio, 2019. Generosity and Wealth: Experimental Evidence from Bogotà Stratification. TISEM Working Paper.

Cairns, Jason, Slonim, Robert, 2011. Substitution effects across charitable donations. Econom. Lett. 111 (2), 173–175.

Castillo, Marco, Petrie, Ragan, Samek, Anya, Time to Give: A Field Experiment on Intertemporal Charitable Giving. Technical Report.

Cesarini, David, Dawes, Christopher T., Johannesson, Magnus, Lichtenstein, Paul, Wallace, Björn, 2009. Genetic variation in preferences for giving and risk taking *. Q. J. Econ. 124 (2), 809–842.

Chao, Matthew, 2017. Demotivating incentives and motivation crowding out in charitable giving. Proc. Natl. Acad. Sci. USA 114 (28), 7301–7306.

Charities Aid Foundation, 2021. CAF World Giving Index 2021. Technical Report 2021, Charities Aid Foundation, Kent and London, UK.

Charness, Gary, Holder, Patrick, 2019. Charity in the laboratory: Matching, competition, and group identity. Manage. Sci. 65 (3), 1398–1407.

Chowdhury, Subhasish M., Jeon, Joo Young, 2014. Impure altruism or inequality aversion?: An experimental investigation based on income effects. J. Public Econ. 118, 143–150.

Cohn, Alain, Jessen, Lasse J., Klasnja, Marko, Smeets, Paul, 2022. The wealth gap in fairness preferences: Evidence from America's top 5%. SSRN 3395213.

Cornes, Richard, Sandler, Todd, 1984. Easy riders, joint production, and public goods. Econ. J. 94 (375), 580–598.

Côté, Stéphane, House, Julian, Willer, Robb, 2015. High economic inequality leads higher-income individuals to be less generous.. Proc. Natl. Acad. Sci. USA 112 (52), 15838–15843.

DellaVigna, S., List, J.A., Malmendier, U., 2012. Testing for altruism and social pressure in charitable giving. Q. J. Econ. 127 (1), 1–56.

Erkal, Nisvan, Gangadharan, Lata, Nikiforakis, Nikos, 2011. Relative earnings and giving in a real-effort experiment. Amer. Econ. Rev. 101 (7), 3330–3348.

Fack, Gabrielle, Landais, Camille, 2010. Are tax incentives for charitable giving efficient? Evidence from France. Am. Econ. J.: Econ. Policy 2 (2), 117–141.

Fehr, Ernst, Schmidt, Klaus M., 2006. The economics of fairness, reciprocity and altruism–experimental evidence and new theories. In: Handbook of the Economics of Giving, Altruism and Reciprocity, vol. 1, Elsevier, pp. 615–691.

Feldstein, Martin, Clotfelter, Charles, 1976. Tax incentives and charitable contributions in the United States: A microeconometric analysis. J. Public Econ. 5 (1), 1–26.

Feldstein, Martin, Taylor, Amy, 1976. The income tax and charitable contributions. Econometrica 44 (6), 1201–1222.

Fisman, Raymond, Jakiela, Pamela, Kariv, Shachar, Markovits, Daniel, 2015. The distributional preferences of an elite. Science 349 (6254).

Fong, Christina, 2001. Social preferences, self-interest, and the demand for redistribution. J. Public Econ. 82 (2), 225–246.

Fong, Christina M., Luttmer, Erzo F.P., 2011. Do fairness and race matter in generosity? Evidence from a nationally representative charity experiment. J. Public Econ. 95 (5), 372–394.

Fong, Christina M., Oberholzer-Gee, Felix, 2011. Truth in giving: Experimental evidence on the welfare effects of informed giving to the poor. J. Public Econ. 95 (5), 436–444.

Franklin, Simon, 2019. The demand for government housing: Evidence from lotteries for 200,000 homes in Ethiopia. Mimeo.

Fuchs, Christoph, de Jong, Martijn G., Schreier, Martin, 2020. Earmarking donations to charity: Cross-cultural evidence on its appeal to donors across 25 countries. Manage. Sci. 66 (10), 4820–4842.

Gee, Laura K., Meer, Jonathan, 2020. 24. The altruism budget: Measuring and encouraging charitable giving. In: Powell, Walter W., Bromley, Patricia (Eds.), The Nonprofit Sector: A Research Handbook, third ed. Stanford University Press, Redwood City, pp. 558–565.

Giving USA, 2019. Giving USA 2019: The Annual Report on Philantropy for the Year 2018.

Haushofer, Johannes, Larreboure, Magdalena, Lowes, Sara, Mait, Leon, 2023. Cash Transfers and Social Preferences of Children. Technical Report, National Bureau of Economic Research.

Huck, Steffen, Rasul, Imran, 2011. Matched fundraising: Evidence from a natural field experiment. J. Public Econ. 95 (5), 351–362. http://dx.doi.org/10.1016/j.jpubeco.2010.10.005.

Jung, Minah H., Nelson, Leif D., Gneezy, Uri, Gneezy, Ayelet, 2017. Signaling virtue: Charitable behavior under consumer elective pricing. Mark. Sci. 36 (2), 187–194.

Kahneman, Daniel, Knetsch, Jack L., Thaler, Richard, 1986. Fairness as a constraint on profit seeking: Entitlements in the market. Am. Econ. Rev. 76 (4), 728–741.

Karlan, Dean, List, John A., 2007. Does price matter in charitable giving? Evidence from a large-scale natural field experiment. Amer. Econ. Rev. 97 (5), 1774–1793.

Karlan, Dean, List, John A., Shafir, Eldar, 2011. Small matches and charitable giving: Evidence from a natural field experiment. J. Public Econ. 95 (5), 344–350.

Kessler, Judd B., Milkman, Katherine L., 2018. Identity in charitable giving. Manage. Sci. 64 (2), 845–859.

Kessler, Judd B., Milkman, Katherine L., Zhang, C. Yiwei, 2019. Getting the rich and powerful to give. Manage. Sci. 65 (9), 4049–4062.

Kubilay, Elif, 2021. The effect of wealth shocks on donations: Evidence from children. Mimeo.

Landry, C.E., Lange, A., List, J.A., Price, M.K., Rupp, N.G., 2006. Toward an understanding of the economics of charity: Evidence from a field experiment. Q. J. Econ. 121 (2), 747–782.

Landry, Craig E., Lange, Andreas, List, John A., Price, Michael K., Rupp, Nicholas G., 2010. Is a donor in hand better than two in the bush? Evidence from a natural field experiment. Amer. Econ. Rev. 100 (3), 958–983.

List, John A., 2011. The market for charitable giving. J. Econ. Perspect. 25 (2), 157–180.

List, John A., Lucking-Reiley, David, 2002. The effects of seed money and refunds on charitable giving: Experimental evidence from a university capital campaign. J. Polit. Econ. 110 (1), 215–233.

Meer, Jonathan, Priday, Benjamin A., 2021. Generosity across the income and wealth distributions. Natl. Tax J. 74 (3), 655–687.

Meer, Jonathan, Rosen, Harvey S., 2011. The ABCs of charitable solicitation. J. Public Econ. 95 (5), 363–371.

Meier, Stephan, 2007. Do Subsidies increase charitable giving in the long run? Matching donations in a field experiment. J. Eur. Econom. Assoc. 5 (6), 1203–1222.

Moll, Jorge, Krueger, Frank, Zahn, Roland, Pardini, Matteo, de Oliveira-Souza, Ricardo, Grafman, Jordan, 2006. Human fronto-mesolimbic networks guide decisions about charitable donation. Proc. Natl. Acad. Sci. USA 103 (42), 15623–15628.

Monnet, Nathalie, Panizza, Ugo, 2017. A Note on the Economics of Philanthropy. Technical Report, Graduate Institute of International and Development Studies Working Paper.

Null, C., 2011. Warm glow, information, and inefficient charitable giving. J. Public Econ. 95 (5), 455–465.

Randolph, William C., 1995. Dynamic income, progressive taxes, and the timing of charitable contributions. J. Polit. Econ. 103 (4), 709–738.

Ribar, David C., Wilhelm, Mark O., 2002. Altruistic and joy-of-giving motivations in charitable behavior. J. Polit. Econ. 110 (2), 425–457.

Scharf, Kimberley, Smith, Sarah, Ottoni-Wilhelm, Mark, 2022. Lift and shift: The effect of fundraising interventions in charity space and time. Am. Econ. J.: Econ. Policy 14 (3), 296–321.

Schmitz, Jan, 2021. Is charitable giving a zero-sum game? The effect of competition between charities on giving behavior. Manage. Sci. 67 (10), 6333–6349.

Schmukle, Stefan C., Korndörfer, Martin, Egloff, Boris, 2019. No evidence that economic inequality moderates the effect of income on generosity. Proc. Natl. Acad. Sci. USA 201807942.

Shang, Jen, Croson, Rachel, 2009. A field experiment in charitable contribution: The impact of social information on the voluntary provision of public goods. Econ. J. 119 (540), 1422–1439.

Smeets, Paul, Bauer, Rob, Gneezy, Uri, 2015. Giving behavior of millionaires. Proc. Natl. Acad. Sci. USA 112 (34), 10641–10644.

Soetevent, Adriaan R., 2011. Payment choice, image motivation and contributions to charity: Evidence from a field experiment. Am. Econ. J.: Econ. Policy 3 (1), 180–205.

Steinberg, Richard, 1987. Voluntary donations and public expenditures in a federalist system. Am. Econ. Rev. 77 (1), 24–36.

Tonin, Mirco, Vlassopoulos, Michael, 2017. Sharing one's fortune? An experimental study on earned income and giving. J. Behav. Exp. Econ. 66, 112–118. http://dx.doi.org/10.1016/j.socec.2016.04.014.