Supplementary Online Material

Subsidizing Unit Donations: Matches, Rebates, and Discounts Compared

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Appendix A Ordered Probit Model

Consider an individual, i, who decides how many units, g_i, of the charitable good to provide. Since the individual has a limited endowment and only complete units of the good can be provided, the individual faces a discrete and ordered choice set. For example, subjects who are assigned to the control condition can give 0, 1, 2, 3 or 4 packages. We estimate an Ordered Probit Model with the individual choice as dependent variable, which is subsequently employed to analyze the effect of the different subsidies on the level of charity receipts. This is possible, since, given a subsidy scheme, the individual choice directly translates into a level of charity receipts. The advantage of this procedure will become clear after explaining the model in more detail.

The model is based on a latent variable

$$g_i^* = x_i'\beta + s_i'\gamma + \epsilon_i \tag{1}$$

where x_i is a vector of covariates, including a constant, s_i is a vector consisting of a dummy for each subsidy type as well as subsidy type specific dummies for whether the offered subsidy rate is high and therefore the effective price is low (\$0.25), β and γ are vectors of parameters to be estimated and ϵ_i is an i.i.d. standard normally distributed error term. In general, each of the possible choices an individual can make, $g_i \in \{g^1, ..., g^J\}$, is associated with a certain interval of the latent variable:

$$g_i = g^j \qquad \text{if } \alpha_{j-1} < g_i^* \leq \alpha_j \qquad \text{for } j = 1, ..., J \tag{2}$$

where α_0 and α_J are set to $-\infty$ and ∞, respectively, $\alpha_1 = 0$ and $\alpha_2, ..., \alpha_{J-1}$ are threshold parameters to be estimated.

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A specific feature of the experimental design that we need to account for in the estimation is that the choice sets differ across treatments. For subjects facing a match, rebate, or no subsidy, each selected unit requires an expenditure of \$0.5. Although in case of the rebate, part of this expenditure is refunded, this refund cannot be donated (similar to most money donation experiments). Since the endowment is \$2, the maximum number of packages that can be selected in those treatment conditions is four. In contrast, each unit selected in the discount treatments requires an expenditure of only \$0.33 or \$0.25 since the nominal price per unit is discounted upfront. Therefore, subjects can select up to six or eight packages, depending on whether the discount rate is low or high (see Table B3 in Appendix B).

We account for this by adding censoring to the model. Since we do not observe a choice of seven packages in our data, we cannot include this category in the model. Furthermore, only a single subject provided five packages. In our main analysis, we treat this observation as if the subject had donated six packages. Results are similar if we explicitly include the choice category of five packages or omit the observation.[1] Consequently, the choice sets in the following analysis are $g_i \in \{0, 1, 2, 3, 4, 6, 8\}$ for the 50% discount treatment, $g_i \in \{0, 1, 2, 3, 4, 6\}$ for the 33% discount treatment and $g_i \in \{0, 1, 2, 3, 4\}$ for all other treatments. Table B1 in Appendix B illustrates how the latent variable translates into a certain choice conditional on the treatment.

Let g_i^{max} be the maximum number of packages an individual i can give, which depends on the treatment the individual is assigned to. The probability to observe a choice g_i from the set $\{g^1, ..., g^7\} = \{0, 1, 2, 3, 4, 6, 8\}$ is then given by

$$\begin{aligned} Pr(g_i = g^j | x_i, s_i) = \; & \mathbb{1}\{g^j < g_i^{max}\}\{\Phi(\alpha_j - x_i'\beta - s_i'\gamma) \\ & - \Phi(\alpha_{j-1} - x_i'\beta - s_i'\gamma)\} \\ & + \mathbb{1}\{g^j = g_i^{max}\}\{1 - \Phi(\alpha_{j-1} - x_i'\beta - s_i'\gamma)\} \\ & \text{for } j = 1, ..., 7 \end{aligned} \tag{3}$$

The parameters $\theta = (\beta, \gamma, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6)$ are estimated by maximum likelihood, without and with covariates. The covariates include indicator variables for gender, marital status, whether the individual holds a college degree, whether children under the age of 16 live in the household, whether the individual is a registered voter, whether the individual frequently attends religious services, whether the individual works for a not-for-profit organization, and for task order. We also include categorical variables for age, income, residential environment, and religion as well as scores for the Big Five personality dimensions and risk preferences.

To check for misspecification of the model we use the Lagrange Multiplier test derived by Glewwe (1997). In both model specifications, the Null of normally distributed error terms cannot be rejected ($p > 0.35$ and $p > 0.90$, without and with covariates, respectively). We also find little evidence that the results are substantively affected by allowing for heteroscedasticity.[2]

[1] Results are available from the authors upon request

[2] We expand the model in column 2 of Table 4 by modeling the variance as $exp(z_i'\rho)$. We

We use the estimated coefficients of the model to calculate the average marginal effect of each subsidy on charity receipts. The formulas used to calculate these effects are based on the deterministic relationship between the individual choice and charity receipts. Using the individual choice as dependent variable simplifies the estimation procedure: If the choice sets of any two treatments differ, one is a subset of the other, and the smaller set is simply censored from above. Furthermore, the selected number of packages represents subjects' immediate choice and therefore is probably the most intuitive concept for modeling the decision process. The average marginal effects are calculated as follows. We can explicitly write s_i in equation (1) as

$$s_i = \begin{pmatrix} rebate_i \\ match_i \\ discount_i \\ rebate_i \times low\ price_i \\ match_i \times low\ price_i \\ discount_i \times lowprice_i \end{pmatrix},$$

where $rebate_i$, $match_i$, and $discount_i$ are dummies for whether individual i faces a particular subsidy type, $rebate_i \times low\ price_i$, $match_i \times low\ price_i$, and $discount_i \times lowprice_i$ are subsidy type specific dummies indicating whether the subsidy rate is high and the effective price is low ($0.25).

We use the estimated parameters $\hat{\theta}$ and the deterministic relationship between the selected number of packages g_i (individual's choice) and charity receipts cr_i to calculate the expected level of charity receipts $\hat{E}_i$ that is predicted by the model for each individual under each treatment condition. For example, to receive individual i's expected level of charity receipts under the 50% rebate we set $s_{i,r25} = (1, 0, 0, 1, 0, 0)'$ – the subscript $r25$ indicates the subsidy type and the implied effective price in cents – and calculate the predicted value of the latent variable according to equation (1):

$$\hat{g}^*_{i,r25} = x_i'\hat{\beta} + s_{i,r25}'\hat{\gamma}$$

Afterwards, we estimate the expected level of charity receipts by

$$\begin{aligned}\hat{E}_{i,r25} &= \sum_{k=0}^{8} k\hat{P}(cr_i = k|x_i, s_i = s_{i,r25}) = \sum_{k=0}^{4} k\hat{P}(g_i = k|x_i, s_i = s_{i,r25}) \\ &= 4 - \Phi(\hat{a}_4 - \hat{g}^*_{i,r25}) - \Phi(\hat{a}_3 - \hat{g}^*_{i,r25}) - \Phi(\hat{a}_2 - \hat{g}^*_{i,r25}) - \Phi(-\hat{g}^*_{i,r25})\end{aligned}$$

estimate this model with different sets of covariates included in z_i. Set 1 includes age, income, gender, whether the individual frequently attends religious services, and task order. Set 2 additionally contains the Big Five personality dimensions and risk preferences. Set 3 includes all covariates. Only if we use the whole set of covariates to explicitly model heteroscedasticity, the model with homoscedasticity is rejected ($p < 0.01$). Still, rebates and matches do not significantly differ in the level of charity receipts at the low subsidy rate, but the difference approaches marginal significance at the high subsidy rate (where charity receipts are higher under matches). One should be careful with relying on this expanded model specification as it is sensitive to small changes in the set of covariates included. Results are available from the authors upon request.

where $\hat{P}(cr_i = k|x_i, s_i = s_{i,r25}) = 0$ for $k > 4$ since the maximum level of charity receipts under the rebate is four. The second equality then follows from the fact that for all treatment conditions except matches, the individual choice (in physical units) is equal to the level of charity receipts (in physical units). The last equality follows from using equation (3) to calculate $\hat{P}(y_i = k|x_i, s_i = s_{i,r25})$. The expected levels of charity receipts for the other six conditions (no subsidy, 33% rebate, 1:2 match, 1:1 match, 33% discount, and 50% discount) are accordingly calculated as

$$\begin{aligned}
\hat{E}_{i,n50} &= 4 - \Phi(\hat{a}_4 - \hat{g}^*_{i,n50}) - \Phi(\hat{a}_3 - \hat{g}^*_{i,n50}) - \Phi(\hat{a}_2 - \hat{g}^*_{i,n50}) - \Phi(-\hat{g}^*_{i,n50}) \\
\hat{E}_{i,r33} &= 4 - \Phi(\hat{a}_4 - \hat{g}^*_{i,r33}) - \Phi(\hat{a}_3 - \hat{g}^*_{i,r33}) - \Phi(\hat{a}_2 - \hat{g}^*_{i,r33}) - \Phi(-\hat{g}^*_{i,r33}) \\
\hat{E}_{i,m33} &= 6 - 2\Phi(\hat{a}_4 - \hat{g}^*_{i,m33}) - \Phi(\hat{a}_3 - \hat{g}^*_{i,m33}) - 2\Phi(\hat{a}_2 - \hat{g}^*_{i,m33}) - \Phi(-\hat{g}^*_{i,m33}) \\
\hat{E}_{i,m25} &= 8 - 2\Phi(\hat{a}_4 - \hat{g}^*_{i,m25}) - 2\Phi(\hat{a}_3 - \hat{g}^*_{i,m25}) - 2\Phi(\hat{a}_2 - \hat{g}^*_{i,m25}) - 2\Phi(-\hat{g}^*_{i,m25}) \\
\hat{E}_{i,d33} &= 6 - 2\Phi(\hat{a}_5 - \hat{g}^*_{i,d33}) - \Phi(\hat{a}_4 - \hat{g}^*_{i,d33}) - \Phi(\hat{a}_3 - \hat{g}^*_{i,d33}) - \Phi(\hat{a}_2 - \hat{g}^*_{i,d33}) \\
&\quad - \Phi(-\hat{g}^*_{i,d33}) \\
\hat{E}_{i,d25} &= 8 - 2\Phi(\hat{a}_6 - \hat{g}^*_{i,d25}) - 2\Phi(\hat{a}_5 - \hat{g}^*_{i,d25}) - \Phi(\hat{a}_4 - \hat{g}^*_{i,d25}) - \Phi(\hat{a}_3 - \hat{g}^*_{i,d25}) \\
&\quad - \Phi(\hat{a}_2 - \hat{g}^*_{i,d25}) - \Phi(-\hat{g}^*_{i,d25})
\end{aligned}$$

We use the expected level of charity receipts to calculate average marginal effects (AMEs) for introducing a subsidy type at the low rate (rebate, match, discount) and for changing the subsidy rate for a specific subsidy type from low to high (rebate × low price, match × low price, discount × low price):

$$\begin{aligned}
AME_{rebate} &= \frac{1}{N}\sum_{i=1}^{N} \hat{E}_{i,r33} - \hat{E}_{i,n50} \\
AME_{match} &= \frac{1}{N}\sum_{i=1}^{N} \hat{E}_{i,m33} - \hat{E}_{i,n50} \\
AME_{discount} &= \frac{1}{N}\sum_{i=1}^{N} \hat{E}_{i,d33} - \hat{E}_{i,n50} \\
AME_{rebate\ \times\ low\ price} &= \frac{1}{N}\sum_{i=1}^{N} \hat{E}_{i,r25} - \hat{E}_{i,r33} \\
AME_{match\ \times\ low\ price} &= \frac{1}{N}\sum_{i=1}^{N} \hat{E}_{i,m25} - \hat{E}_{i,m33} \\
AME_{discount\ \times\ low\ price} &= \frac{1}{N}\sum_{i=1}^{N} \hat{E}_{i,d25} - \hat{E}_{i,d33}
\end{aligned}$$

These average marginal effects are presented in column 1 and 2 of Table 4. Standard errors are calculated based on the delta method.

Appendix B Additional Figures and Tables

Table B1: Latent variable and individual choice

Latent variabel g_i^*	Individual choice (g_i) in ...		
	no subsidy control, 33% rebate, 1:2 match, 50% rebate, 1:1 match	33% discount	50% discount
$(-\infty, 0]$	0	0	0
$(0, \alpha_2]$	1	1	1
$(\alpha_2, \alpha_3]$	2	2	2
$(\alpha_3, \alpha_4]$	3	3	3
$(\alpha_4, \alpha_5]$	4	4	4
$(\alpha_5, \alpha_6]$	4	6	6
(α_6, ∞)	4	6	8

Table B2: Summary statistics

Variable	Full sample			Control			33% rebate			1:2 match			33% discount			50% rebate			1:1 match			50% discount			F-test
	μ	σ	N	μ	σ	N	μ	σ	N	μ	σ	N	μ	σ	N	μ	σ	N	μ	σ	N	μ	σ	N	p-value
Female	0.48	0.50	558	0.45	0.50	83	0.49	0.50	71	0.48	0.50	85	0.44	0.50	90	0.55	0.50	58	0.44	0.50	80	0.53	0.50	91	0.75
Age (years):																									
18–25	0.25	0.44	558	0.22	0.41	83	0.28	0.45	71	0.26	0.44	85	0.27	0.44	90	0.36	0.48	58	0.28	0.45	80	0.16	0.37	91	0.17
26–34	0.37	0.48	558	0.39	0.49	83	0.38	0.49	71	0.34	0.48	85	0.37	0.48	90	0.31	0.47	58	0.40	0.49	80	0.41	0.49	91	0.90
35–54	0.29	0.46	558	0.29	0.46	83	0.30	0.46	71	0.34	0.48	85	0.29	0.46	90	0.24	0.43	58	0.23	0.42	80	0.35	0.48	91	0.53
$\geq$ 55	0.08	0.27	558	0.11	0.31	83	0.04	0.20	71	0.06	0.24	85	0.08	0.27	90	0.09	0.28	58	0.10	0.30	80	0.08	0.27	91	0.70
Married	0.34	0.47	554	0.35	0.48	82	0.30	0.46	71	0.30	0.46	84	0.38	0.49	90	0.31	0.47	58	0.28	0.45	79	0.41	0.49	90	0.49
Children[a]	0.30	0.46	558	0.34	0.48	83	0.25	0.44	71	0.29	0.46	85	0.24	0.43	90	0.31	0.47	58	0.28	0.45	80	0.40	0.49	91	0.37
College degree	0.47	0.50	558	0.49	0.50	83	0.46	0.50	71	0.49	0.50	85	0.43	0.50	90	0.47	0.50	58	0.44	0.50	80	0.48	0.50	91	0.97
Income[b] (US$):																									
<10,000	0.09	0.28	540	0.07	0.26	81	0.10	0.31	68	0.07	0.26	84	0.10	0.31	86	0.07	0.26	56	0.14	0.35	77	0.06	0.23	88	0.62
<10,000–19,999	0.11	0.31	540	0.09	0.28	81	0.09	0.29	68	0.13	0.34	84	0.10	0.31	86	0.11	0.31	56	0.13	0.34	77	0.11	0.32	88	0.96
<20,000–29,999	0.12	0.33	540	0.14	0.34	81	0.16	0.37	68	0.08	0.28	84	0.08	0.28	86	0.07	0.26	56	0.10	0.31	77	0.19	0.40	88	0.20
<30,000–39,999	0.11	0.32	540	0.10	0.30	81	0.12	0.32	68	0.19	0.40	84	0.09	0.29	86	0.11	0.31	56	0.09	0.29	77	0.10	0.30	88	0.63
<40,000–49,999	0.15	0.35	540	0.05	0.22	81	0.12	0.32	68	0.18	0.39	84	0.19	0.39	86	0.18	0.39	56	0.21	0.41	77	0.11	0.32	88	0.01
<50,000–74,999	0.21	0.41	540	0.33	0.47	81	0.13	0.34	68	0.15	0.36	84	0.22	0.42	86	0.21	0.41	56	0.18	0.39	77	0.24	0.43	88	0.08
<75,000–99,999	0.09	0.28	540	0.07	0.26	81	0.09	0.29	68	0.08	0.28	84	0.12	0.32	86	0.14	0.35	56	0.06	0.25	77	0.07	0.25	88	0.76
$\geq$ 100,000	0.12	0.32	540	0.15	0.36	81	0.19	0.40	68	0.11	0.31	84	0.09	0.29	86	0.11	0.31	56	0.08	0.27	77	0.11	0.32	88	0.52
Residential environment:																									
Rural	0.20	0.40	558	0.16	0.37	83	0.20	0.40	71	0.22	0.42	85	0.21	0.41	90	0.12	0.33	58	0.24	0.43	80	0.22	0.42	91	0.48
Suburban	0.51	0.50	558	0.60	0.49	83	0.56	0.50	71	0.41	0.50	85	0.50	0.50	90	0.53	0.50	58	0.45	0.50	80	0.53	0.50	91	0.21
Urban	0.29	0.45	558	0.24	0.43	83	0.24	0.43	71	0.36	0.48	85	0.29	0.46	90	0.34	0.48	58	0.31	0.47	80	0.25	0.44	91	0.46
Registered voter	0.86	0.34	552	0.83	0.38	82	0.91	0.28	70	0.85	0.36	84	0.82	0.39	89	0.86	0.35	58	0.89	0.32	79	0.89	0.32	90	0.53
Not-for-profit[c]	0.06	0.23	558	0.02	0.15	83	0.03	0.17	71	0.08	0.28	85	0.04	0.21	90	0.07	0.26	58	0.10	0.30	80	0.05	0.23	91	0.31
Religious[d]	0.13	0.34	548	0.07	0.26	82	0.10	0.30	71	0.17	0.38	82	0.15	0.36	86	0.10	0.31	58	0.14	0.35	80	0.16	0.37	89	0.38
Religion:																									
Atheist	0.38	0.49	533	0.37	0.49	81	0.40	0.49	65	0.42	0.50	83	0.46	0.50	85	0.32	0.47	57	0.33	0.47	75	0.32	0.47	87	0.44
Agostic	0.08	0.28	533	0.10	0.30	81	0.14	0.35	65	0.07	0.26	83	0.07	0.26	85	0.05	0.23	57	0.07	0.25	75	0.08	0.27	87	0.76
Roman-Catholic	0.12	0.32	533	0.10	0.30	81	0.12	0.33	65	0.06	0.24	83	0.07	0.26	85	0.14	0.35	57	0.16	0.37	75	0.17	0.38	87	0.15
Protestant	0.18	0.38	533	0.12	0.33	81	0.12	0.33	65	0.23	0.42	83	0.20	0.40	85	0.25	0.43	57	0.16	0.37	75	0.16	0.37	87	0.34
Other Christian	0.13	0.33	533	0.15	0.36	81	0.11	0.31	65	0.13	0.34	83	0.07	0.26	85	0.09	0.29	57	0.17	0.38	75	0.15	0.36	87	0.36
Other	0.12	0.33	533	0.16	0.37	81	0.11	0.31	65	0.08	0.28	83	0.13	0.34	85	0.16	0.37	57	0.11	0.31	75	0.11	0.32	87	0.78
Big Five (scale 1–7):																									
Extraversion	3.18	1.60	520	3.14	1.55	77	3.00	1.41	67	3.42	1.69	77	3.07	1.66	85	3.41	1.69	54	3.14	1.57	74	3.16	1.60	86	0.67
Agreeableness	5.04	1.24	523	4.92	1.25	77	4.94	1.16	68	5.14	1.35	81	4.77	1.32	86	5.28	1.04	53	5.23	1.05	74	5.08	1.33	84	0.11
Conscientioussn.	5.13	1.30	525	5.04	1.38	78	5.01	1.40	68	5.05	1.33	81	5.15	1.24	85	5.46	1.04	56	5.13	1.32	75	5.16	1.33	82	0.35
Emotional stab.	4.62	1.53	531	4.57	1.38	79	4.62	1.44	68	4.63	1.65	80	4.42	1.64	86	4.73	1.58	56	4.78	1.55	76	4.66	1.46	86	0.86
Openness	4.67	1.29	532	4.71	1.15	80	4.67	1.22	69	4.77	1.21	77	4.86	1.21	87	4.73	1.20	56	4.76	1.50	76	4.25	1.40	87	0.10
Risk pref. (scl. 1–6)	4.06	1.78	554	3.96	1.82	83	4.25	1.80	71	4.05	1.77	84	4.18	1.73	89	3.83	1.74	58	4.20	1.75	80	3.94	1.87	89	0.76
Task order[e]	0.52	0.50	558	0.43	0.50	83	0.52	0.50	71	0.45	0.50	85	0.58	0.50	90	0.59	0.50	58	0.59	0.50	80	0.53	0.50	91	0.24
Manipulationon check questions(scale 1-5):																									
Clarity[f]	4.58	0.67	551	4.56	0.69	82	4.54	0.70	70	4.60	0.60	84	4.57	0.75	89	4.60	0.60	55	4.64	0.53	80	4.55	0.79	91	0.97
Anonymity[g]	4.49	0.72	551	4.48	0.63	82	4.56	0.71	70	4.46	0.72	84	4.51	0.76	89	4.64	0.56	55	4.47	0.67	80	4.41	0.89	91	0.52
Trust exp.[h]	4.04	0.93	549	4.08	0.87	80	4.07	1.02	71	4.13	0.92	84	4.02	0.97	88	4.02	0.82	56	4.05	0.95	79	3.93	0.96	91	0.90
Trust charity[i]	4.13	0.90	550	4.17	0.78	80	4.17	0.93	71	4.24	0.89	84	4.01	1.02	89	4.09	0.86	56	4.18	0.87	79	4.08	0.93	91	0.75
Deserving recip.[j]	4.48	0.82	549	4.47	0.74	81	4.43	0.94	70	4.52	0.75	84	4.40	0.91	89	4.71	0.53	55	4.58	0.63	79	4.32	0.99	91	0.03

The last column reports p-values from regressing each variable on treatment dummies and conducting an F-test for the joint significance of the regressors. [a]Has children under age 16 living in household. [b]Household income. [c]Works for a not-for-profit organization. [d]Frequently attends religious services. [e]1 if the subject encountered the donation task after the questionnaire, 0 if before. [f]"The instructions, questions, and tasks in this survey were clear and easy to understand." [g]"The procedures followed in this experiment preserved your anonymity." [h]"The money you donated to the charity will be given to the charity." [i]"The charity will use the money to provide the chosen number of nutrition packages." [j]"The recipients of the donations are deserving of support."

Table B3: Choice set by treatment

Treatment	Individual choice [units]	Corresponding net donations [$]	Corresponding charity receipts [units]
No subsidy	0	0	0
	1	0.5	1
	2	1	2
	3	1.5	3
	4	2	4
33% rebate	0	0	0
	1	0.33	1
	2	0.66	2
	3	0.99	3
	4	1.32	4
1:2 match	0	0	0
	1	0.5	1
	2	1	3
	3	1.5	4
	4	2	6
33% discount	0	0	0
	1	0.33	1
	2	0.66	2
	3	0.99	3
	4	1.32	4
	5	1.65	5
	6	1.98	6
50% rebate	0	0	0
	1	0.25	1
	2	0.5	2
	3	0.75	3
	4	1	4
1:1 match	0	0	0
	1	0.5	2
	2	1	4
	3	1.5	6
	4	2	8
50% discount	0	0	0
	1	0.25	1
	2	0.5	2
	3	0.75	3
	4	1	4
	5	1.25	5
	6	1.5	6
	7	1.75	7
	8	2	8

Table B4: Robustness check for charity receipts censored at 4 packages

Treatment	Charity receipts	
	unconditional (units)	conditional (units)
	(1)	(2)
A. Mean values (S.D.)		
No subsidy	1.169	2.256
	(1.413)	(1.177)
33% rebate	1.690	2.400
	(1.545)	(1.294)
1:2 match	1.271	2.571
	(1.538)	(1.192)
33% discount	1.233	2.313
	(1.446)	(1.188)
50% rebate	1.931	2.732
	(1.705)	(1.379)
1:1 match	1.800	3.064
	(1.702)	(1.009)
50% discount	1.495	2.473
	(1.615)	(1.372)
B. Tests of subsidy types: p-values		
B1. At effective price of $0.33		
33% rebate vs. 1:2 match	0.09	0.51
33% rebate vs. 33% discount	0.06	0.73
1:2 match vs. 33% discount	0.87	0.31
B2. At effective price of $0.25		
50% rebate vs. 1:1 match	0.65	0.21
50% rebate vs. 50% discount	0.12	0.36
1:1 match vs. 50% discount	0.23	0.01
C. Tests of subsidized prices: p-values		
50% vs. 33% rebate	0.41	0.24
1:1 vs. 1:2 match	0.04	0.04
50% vs. 33% discount	0.25	0.53
D. Tests of subsidized vs. unsubsidized prices: p-values		
D1. Low subsidy rate		
33% rebate vs. no subsidy	0.03	0.58
1:2 match vs. no subsidy	0.66	0.22
33% discount vs. no subsidy	0.77	0.82
D2. High subsidy rate		
50% rebate vs. no subsidy	0.01	0.09
1:1 match vs. no subsidy	0.01	0.00
50% discount vs. no subsidy	0.16	0.40

Panel A shows mean values of the donation variables for each treatment (standard deviations in parentheses). Column 1 shows unconditional charity receipts with each number of packages above four recoded to four. Column 2 shows the corresponding numbers for charity receipts conditional on being a donor. Shown in panels B and C are p-values of two-tailed t-tests with unequal variances.

Appendix C Instructions

In this survey, each participant will have the opportunity to provide nutritional packages for malnourished children in the African country of South Sudan.

Decades of civil war have ravaged South Sudan, and many children are severely malnourished. The nutritional packages will be delivered by Sign of Hope, an accredited relief organization that operates two hospitals in South Sudan.

In 2010, Sign of Hope won the Transparency Award for German non-profit organizations. Eighty cents out of every dollar they receive go directly to relief efforts, while the remaining twenty cents cover their overhead costs. You can read more about the organization on http://www.hoffnungszeichen.de/sign-of-hope-africa.html.

One nutritional package, which feeds one malnourished child for one day, can be provided by the charity for a donation of $0.50. The package consists of a specially designed paste and high-energy cookies to help the children gain weight.

In this survey, you will be able to provide these nutritional packages for **$0.25** apiece (a third party will fund the remaining $0.25). You may use all, part, or none of your reward of $2.00 for this HIT to provide packages. Thus, you may choose any number between 0 and 8 packages. $0.25 per package will be subtracted from your reward.

Please indicate your choice below:

Figure C1: Example donation appeal, 50% discount treatment. The final paragraph differed between treatments.

Appendix D Within-Subjects Design

If the results of the within-subjects (WS) design mirrored the results of the between-subjects (BS) design, the WS variation could be used to learn more about how those results come about. However, as we will show, the results of the WS design substantially differ. Although under these circumstances we rank the external validity of the BS design higher, the WS data can provide insights into subjects' decision process when they are forced to compare different conditions.

In the experiment, 146 subjects were randomly assigned to the WS treatment in which all seven treatment conditions were jointly displayed on the donation call page in random order (Figure D1). Instructions informed subjects that one of the conditions would be randomly selected through a lottery and implemented. Subjects then entered, for each condition, an integer number indicating their desired number of units. 119 subjects completed the survey of which 6 were subsequently removed because of duplicate IP addresses. Table D1 shows summary statistics of the sample, including p-values from pairwise comparisons with the sample that was assigned to the BS design.

Table D2 presents the main results analogously to Table 3. Beginning with the unconditional level of charity receipts in column 3, we observe that under a WS design, matches and discounts are more effective in providing the charitable good than rebates. This finding is most pronounced for the low price of \$0.25. Potentially, the discontinuities in the match – the first and third unit funded not resulting in an additional matched unit – discourage giving at the effective price of \$0.33. For net donations, we observe in column 2 that introducing matches and discounts significantly crowds in net donations while an increase in the rebate rate induces crowding-out.

At first glance the discrepancy in results compared to the BS sample might come as a surprise, but a closer look at the extensive and intensive margins in columns 4 and 5 offers a simple explanation for most differences. Unlike in the BS design, we find that for a given effective price, subsidies are equally successful in attracting donors at the extensive margin. We speculate that under a WS design, subjects may not decide whether to donate for each subsidy separately, but rather make a single participation choice across all subsidies with a similar rate and then respond to the subsidy type mostly at the intensive margin. This explanation is also supported by looking at the decision of whether to give at the individual level: 91 and 82 percent of individuals make the same decision of whether to give across the different subsidy types at the high and low subsidy rate, respectively. In contrast, the introduction of a subsidy and the height of its rate seem to be highly relevant for the participation decision, regardless of its type. This behavior is very different from the one observed in the BS design and likely to be affected by demand effects from "nudging" subjects to compare options in the WS design (Charness et al., 2012). We therefore follow the literature and ascribe higher external validity to the results in the between-subjects design.

In this survey, each participant will have the opportunity to provide nutritional packages for malnourished children in the African country of South Sudan.

Decades of civil war have ravaged South Sudan, and many children are severely malnourished. The nutritional packages will be delivered by Sign of Hope, an accredited relief organization that operates two hospitals in South Sudan.

In 2010, Sign of Hope won the Transparency Award for German non-profit organizations. Eighty cents out of every dollar they receive go directly to relief efforts, while the remaining twenty cents cover their overhead costs. You can read more about the organization on http://www.hoffnungszeichen.de/sign-of-hope-africa.html.

One nutritional package, which feeds one malnourished child for one day, can be provided by the charity for a donation of $0.50. The package consists of a specially designed paste and high-energy cookies to help the children gain weight.

In this survey, you may use all, part, or none of your reward of $2.00 for this HIT to provide these nutrition packages.

Below, you find seven different price conditions. For each condition, please indicate the number of packages you choose to provide under this condition.

One of the seven price conditions will be implemented in real. This condition will be randomly selected through a lottery after this survey. So, since each case may become real with equal probability, you will want to answer each condition as if it is the condition that will be implemented .

	Your choice:
Condition C: In this condition, you will be able to provide these nutritional packages for **$0.50 apiece**. Thus, you may choose any number between 0 and 4 packages. $0.50 per package will be subtracted from your reward.	
Condition E: In this condition, you will be able to provide these nutritional packages for **$0.33** apiece (a third party will fund the remaining $0.17). Thus, you may choose any number between 0 and 6 packages. $0.33 per package will be subtracted from your reward.	
Condition D: In this condition, you will be able to provide these nutritional packages for **$0.25** apiece (a third party will fund the remaining $0.25). Thus, you may choose any number between 0 and 8 packages. $0.25 per package will be subtracted from your reward.	
Condition R: In this condition, you will be able to provide these nutritional packages for $0.50 apiece. Thus, you may choose any number between 0 and 4 packages. $0.50 per package will be subtracted from your reward. A third party has agreed to fund a **33% rebate** for each package you provide. Upon completion of the survey, the rebate ($0.17 per package provided) will be added to your reward.	
Condition S: In this condition, you will be able to provide these nutritional packages for $0.50 apiece. Thus, you may choose any number between 0 and 4 packages. $0.50 per package will be subtracted from your reward. A third party has agreed to fund a **50% rebate** for each package you provide. Upon completion of the survey, the rebate ($0.25 per package provided) will be added to your reward.	
Condition M: In this condition, you will be able to provide these nutritional packages for $0.50 apiece. Thus, you may choose any number between 0 and 4 packages. $0.50 per package will be subtracted from your reward. A third party has agreed to **match every two packages you provide**, at no additional cost to you. So, for example, if you choose to provide 2 packages, Sign of Hope will receive 3.	
Condition N: In this condition, you will be able to provide these nutritional packages for $0.50 apiece. Thus, you may choose any number between 0 and 4 packages. $0.50 per package will be subtracted from your reward. A third party has agreed to **match each package you provide**, at no additional cost to you. So, for example, if you choose to provide 2 packages, Sign of Hope will receive 4.	

Figure D1: Donation appeal in the WS design

Table D1: Summary statistics for BS sample, WS sample, and combined sample

Variable	Combined sample			BS sample			WS sample			Comparison
	Mean	SD	N	Mean	SD	N	Mean	SD	N	p-value
Female	0.48	0.50	671	0.48	0.50	558	0.46	0.50	113	0.70
Age (years):										
18–25	0.25	0.43	671	0.25	0.44	558	0.21	0.41	113	0.34
26–34	0.38	0.49	671	0.37	0.48	558	0.43	0.50	113	0.23
35–54	0.29	0.45	671	0.29	0.46	558	0.27	0.45	113	0.68
≥ 55	0.08	0.27	671	0.08	0.27	558	0.08	0.27	113	0.98
Married	0.33	0.47	667	0.34	0.47	554	0.27	0.45	113	0.20
Children[a]	0.30	0.46	671	0.30	0.46	558	0.26	0.44	113	0.33
College degree	0.48	0.50	670	0.47	0.50	558	0.54	0.50	112	0.19
Income[b] (US$):										
<10,000	0.09	0.28	649	0.09	0.28	540	0.07	0.26	109	0.60
10,000–19,999	0.11	0.31	649	0.11	0.31	540	0.11	0.31	109	0.98
20,000–29,999	0.12	0.33	649	0.12	0.33	540	0.14	0.35	109	0.62
30,000–39,999	0.13	0.34	649	0.11	0.32	540	0.20	0.40	109	0.01
40,000–49,999	0.15	0.35	649	0.15	0.35	540	0.15	0.36	109	0.99
50,000–74,999	0.20	0.40	649	0.21	0.41	540	0.12	0.33	109	0.03
75,000–99,999	0.09	0.29	649	0.09	0.28	540	0.09	0.29	109	0.92
$\geq 100,000$	0.12	0.32	649	0.12	0.32	540	0.12	0.33	109	0.98
Residential environment:										
Rural	0.20	0.40	671	0.20	0.40	558	0.19	0.39	113	0.75
Suburban	0.52	0.50	671	0.51	0.50	558	0.54	0.50	113	0.57
Urban	0.29	0.45	671	0.29	0.45	558	0.27	0.45	113	0.73
Registered voter	0.87	0.34	663	0.86	0.34	552	0.88	0.32	111	0.56
Not-for-profit[c]	0.05	0.22	671	0.06	0.23	558	0.03	0.16	113	0.18
Religious[d]	0.13	0.34	659	0.13	0.34	548	0.14	0.34	111	0.87
Religion:										
Atheist	0.37	0.48	643	0.38	0.49	533	0.36	0.48	110	0.79
Agostic	0.09	0.28	643	0.08	0.28	533	0.10	0.30	110	0.55
Roman-Catholic	0.12	0.32	643	0.12	0.32	533	0.14	0.34	110	0.56
Protestant	0.18	0.38	643	0.18	0.38	533	0.17	0.38	110	0.93
Other Christian	0.12	0.33	643	0.13	0.33	533	0.11	0.31	110	0.63
Other	0.12	0.33	643	0.12	0.33	533	0.12	0.32	110	0.91
Big Five (scale 1–7):										
Extraversion	3.21	1.62	626	3.18	1.60	520	3.32	1.73	106	0.45
Agreeableness	5.02	1.23	628	5.04	1.24	523	4.91	1.20	105	0.34
Conscientiousness	5.11	1.29	630	5.13	1.30	525	4.97	1.24	105	0.23
Emotional stability	4.65	1.52	638	4.62	1.53	531	4.79	1.49	107	0.30
Openness	4.70	1.29	640	4.67	1.29	532	4.83	1.32	108	0.25
Risk pref. (scale 1–6)	4.00	1.79	667	4.06	1.78	554	3.65	1.79	113	0.03
Task order[e]	0.51	0.50	671	0.52	0.50	558	0.46	0.50	113	0.22
Manipulation check questions (scale 1-5):										
Clarity[f]	4.56	0.68	663	4.58	0.67	551	4.46	0.70	112	0.11
Anonymity[g]	4.48	0.73	663	4.49	0.72	551	4.43	0.78	112	0.42
Trust experiment[h]	4.04	0.93	660	4.04	0.93	549	4.01	0.93	111	0.73
Trust charity[i]	4.13	0.90	662	4.13	0.90	550	4.13	0.92	112	0.94
Deserving recipients[j]	4.47	0.81	661	4.48	0.82	549	4.42	0.79	112	0.49

The last column reports p-values from comparing each variable across the two samples based on a χ^2-test if the variable is binary and a t-test with unequal variances if the variable is not binary. [a]Has children under age 16 living in household. [b]Household income. [c]Works for a not-for-profit organization. [d]Frequently attends religious services. [e]1 if the subject encountered the donation task after the questionnaire, 0 if before. [f]"The instructions, questions, and tasks in this survey were clear and easy to understand." [g]"The procedures followed in this experiment preserved your anonymity." [h]"The money you donated to the charity will be given to the charity." [i]"The charity will use the money to provide the chosen number of nutrition packages." [j]"The recipients of the donations are deserving of support."

Table D2: Descriptive results, within-subjects design

Treatments			Donation variable				
Condition	Nominal unit price ($)	Effective unit price ($)	Individual choice (units)	Net donation ($)	Charity receipt, uncond. (units)	Charity receipt, cond. (units)	Prob. of donation
			(1)	(2)	(3)	(4)	(5)
A. Mean values (S.D.)							
No subsidy	0.50	0.50	0.558	0.279	0.558	1.750	0.319
			(1.026)	(0.513)	(1.026)	(1.105)	(0.468)
33% rebate	0.50	0.33	0.867	0.286	0.867	2.130	0.407
			(1.278)	(0.422)	(1.278)	(1.147)	(0.493)
1:2 match	0.50	0.33	0.699	0.350	0.965	2.535	0.381
			(1.085)	(0.542)	(1.614)	(1.695)	(0.488)
33% discount	0.33	0.33	0.982	0.324	0.982	2.362	0.416
			(1.547)	(0.510)	(1.547)	(1.580)	(0.495)
50% rebate	0.50	0.25	0.991	0.248	0.991	2.196	0.451
			(1.373)	(0.343)	(1.373)	(1.233)	(0.500)
1:1 match	0.50	0.25	0.805	0.403	1.611	3.434	0.469
			(1.109)	(0.554)	(2.218)	(2.052)	(0.501)
50% discount	0.25	0.25	1.363	0.341	1.363	2.906	0.469
			(1.996)	(0.499)	(1.996)	(2.003)	(0.501)
B. Tests of subsidy types: p-values							
B1. At effective price of $0.33							
33% rebate vs. 1:2 match			0.01	0.03	0.27	0.19	0.32
33% rebate vs. 33% discount			0.08	0.08	0.08	0.42	0.56
1:2 match vs. 33% discount			0.00	0.25	0.80	0.62	0.16
B2. At effective price of $0.25							
50% rebate vs. 1:1 match			0.04	0.00	0.00	0.00	0.56
50% rebate vs. 50% discount			0.00	0.00	0.00	0.03	0.59
1:1 match vs. 50% discount			0.00	0.05	0.05	0.18	1.00
C. Tests of subsidized prices: p-values							
50% vs. 33% rebate			0.06	0.05	0.06	0.79	0.10
1:1 vs. 1:2 match			0.13	0.13	0.00	0.02	0.01
50% vs. 33% discount			0.00	0.24	0.00	0.13	0.06
D. Tests of subsidized vs. unsubsidized prices: p-values							
D1. Low subsidy rate							
33% rebate vs. no subsidy			0.00	0.78	0.00	0.13	0.00
1:2 match vs. no subsidy			0.01	0.01	0.00	0.02	0.02
33% discount vs. no subsidy			0.00	0.02	0.00	0.04	0.00
D2. High subsidy rate							
50% rebate vs. no subsidy			0.00	0.32	0.00	0.08	0.00
1:1 match vs. no subsidy			0.00	0.00	0.00	0.00	0.00
50% discount vs. no subsidy			0.00	0.01	0.00	0.00	0.00

Panel A shows mean values of the donation variables for each treatment (standard deviations in parentheses). Column 1 reports the number of packages that subjects selected to give at the nominal price. Column 2 shows the net dollar contribution implied by subjects' choices, i.e., column 1 evaluated at the nominal price minus the rebate (if any). Column 3 reports the overall number of packages received by the charity, i.e., column 1 plus matched units (if any). Column 4 reports the same measure as column 3 but conditional on giving (intensive margin). Column 5 reports the share of subjects who donated at least one package (extensive margin). Panels B to D show pairwise tests between treatment conditions. Panel B compares subsidy types conditional on the effective price. Panel C compares the two subsidized prices, $0.25 and $0.33, conditional on subsidy type. Panel D compares the unsubsidized price with the subsidized price arising from the low subsidy rate for each subsidy type. In panels B to D, columns 1 to 3 report p-values of two-tailed paired t-tests, column 4 reports p-values of two-tailed unpaired t-tests with unequal variances, and column 5 reports p-values of McNemar's χ^2 tests for paired binary data.

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