

7 Supplementary Appendix

A supplementary appendix can be found at <<http://www.davidreinstein.wordpress.com/>>

7.1 Literature review supplement: previous models

List II: Multi-Charity Name, Author, Year	Utility forms and Related Models Utility/Expenditure Function
1. Andreoni et al. ('04) (Quadratic)	$U(x, m, wh, l) = U(\mathbf{Q}) = \alpha' \mathbf{Q} - \frac{1}{2} \mathbf{Q}' \beta \mathbf{Q}$ m : \$gifts, w : imputed volunteer wage, h : volunteer hours ; l : leisure
In empirical model:	$\mathbf{Q} = (x, m, wh)$ (leisure not observed)
2. Andreoni et al. ('03) “...by Married Couples...”	$U_i = U(x_i, g, \theta_i(g_1, g_2))$; $i = h, w$ h : husband; wife; g : marriage-specific public good
Considers extreme cases:	$\theta_h = \theta_w = d_1$; $\theta_h = d_1, \theta_w = d_2$; $\theta_h = -\theta_w = d_1 - d_2$
3. Harbaugh's (1998b) (Stone-Geary)	$u_i = \ln(x_i) + b \ln(\pi(g_i) + k_1) + c \ln(g_i + k_2)$ where $\pi(g_i)$ = prestige, k 's: constants
4. Cobb-Douglas, mixed	$u_i = \alpha_0 \ln(x_i) + \alpha' \tilde{\mathbf{G}} + \beta' \tilde{\mathbf{g}}_i$ where: $\alpha_0 = 1 - \sum_{k=1}^K \alpha_k - \sum_{k=1}^K \beta_k$
5. Leontief, pure warm glow	$u_i = \min(\alpha x_i, \beta_1 g_{i1}, \beta_2 g_{i2}, \dots, \beta_K g_{iK})$
6. Multi-Stage Budgeting	$U(q_i \dots q_j) = u(v_1(q_1 \dots q_{J1}), v_G(q_{J1} \dots q_J))$

This table offers some related models from the literature (adapted to my notation – discussed in section 2) as well as some proposed multi-charity models of my own. No previous works offer a robust model of giving to multiple causes. Andreoni et al. (2003), (model 2, above) consider only extreme cases (in the context of couples' decision-making). Andreoni et al. (1996), offer the most useful example, estimating a model of giving and volunteering based on a quadratic utility form.⁶⁵

⁶⁵Their utility function could be extended to a model with a second charity (rather than volunteering). However, it is easier for them to observe distinct prices of giving and volunteering than it is for me to observe distinct prices for different charities. The quadratic form can be justified as a second-order approximation of any utility. It includes linear and squared terms and interactions between the choice variables.

7.2 Supplementary results, construction of results

Table 17: Pooled cross-section linear regressions

	(1) Total	(2) Relig	(3) Nonrelig	(4) Combo	(5) Needy	(6) Health	(7) Educ	(8) Other
Net income	.0113** (.0014)	.0045** (8.8e-04)	.0069** (.001)	.0019** (3.9e-04)	.0019** (2.6e-04)	6.3e-04** (1.4e-04)	.0011 (6.5e-04)	.0014** (4.2e-04)
Square net income	-9.0e-09** (2.1e-09)	-4.8e-09** (1.1e-09)	-4.3e-09* (2.0e-09)	-1.2e-09 (7.7e-10)	-1.5e-09** (3.0e-10)	-5.2e-10** (1.5e-10)	1.9e-10 (1.4e-09)	-1.2e-09** (2.8e-10)
Bonus income	.0204* (.01)	.0057 (.0041)	.0146* (.0072)	.0021 (.0019)	.0038+ (.0021)	.0058 (.0036)	9.0e-04 (.0015)	.002 (.0015)
Wealth w.o. house	-6.2e-04 (3.8e-04)	2.9e-04 (2.2e-04)	-9.1e-04** (2.7e-04)	4.1e-05 (8.4e-05)	-2.8e-05 (4.8e-05)	-3.0e-04** (6.4e-05)	-2.0e-04 (1.4e-04)	-4.4e-04** (1.3e-04)
Wealth w. house	.001** (3.4e-04)	-2.1e-04 (2.2e-04)	.0012** (2.2e-04)	7.9e-05 (5.9e-05)	3.9e-05 (4.7e-05)	3.2e-04** (6.9e-05)	3.6e-04** (9.3e-05)	4.6e-04** (1.3e-04)
Price	-3133** (260)	-2412** (201)	-710** (147)	-253** (63.3)	-241** (54.5)	-109** (33.9)	-26.7 (80.9)	-83.9 (55.7)
Head's age	16.8** (1.37)	14.5** (1.05)	2.53** (.804)	1.24** (.335)	1.15** (.291)	.236 (.196)	-878+ (.479)	.83** (.277)
Wife's age	5.9** (1.45)	5.42** (1.14)	.461 (.876)	-.377 (.374)	.647+ (.359)	.0378 (.168)	-.326 (.557)	.531+ (.295)
Nmr. kids in hshld.	56.3* (26.1)	47.3* (21.3)	11.2 (12.4)	-.083 (5.77)	20.2** (6.05)	-8.74** (2.95)	-1.56 (5.34)	1.08 (4.55)
Head coll. degree	504** (59.4)	291** (49.5)	214** (30.7)	65.2** (12.6)	55.3** (13.2)	5.01 (7.45)	31+ (17.5)	58.4** (10.3)
Head is Black	316** (77.2)	314** (71)	9.84 (27.5)	23.2+ (13.1)	-21.1 (13.5)	5.88 (8.01)	18.9+ (10)	-18.8* (8.43)
Head is married	266** (68.8)	334** (54.8)	-67.4+ (38.9)	26 (18.5)	-33.6+ (18.7)	-19.9* (8.64)	-11.2 (17.5)	-29.4* (14.7)
Northeast region	-22.4 (172)	192 (123)	-214 (131)	-30.1 (44.2)	-21.7 (34.6)	15.4 (19)	6.71 (17.8)	-183* (91.2)
Northcentral region	502** (172)	588** (123)	-82.8 (131)	6.16 (44.2)	-5.37 (33.5)	23.1 (18.5)	36.8* (16.8)	-142 (91.6)
Southern region	746** (172)	825** (123)	-71.1 (131)	-10.7 (43.7)	17.2 (33.4)	17.5 (18.5)	42.5* (17.2)	-137 (91.4)
Western region	621** (176)	655** (128)	-30.3 (132)	-20.1 (44.2)	44.5 (35.1)	24.2 (20)	57.4** (18.1)	-136 (91.6)
Urban	-17.6 (47.9)	-156** (40.2)	135** (24.2)	48.8** (10.2)	63** (11.5)	-.545 (5.72)	7.76 (9.07)	19.6* (9.69)
Constant	1512** (322)	1021** (236)	466* (211)	160+ (81.7)	125+ (67.9)	74.6+ (41.5)	-31.7 (90.6)	139 (111)
Observations	11560	11518	11518	11513	11508	11510	11533	11549
R ²	0.238	0.117	0.268	0.144	0.062	0.088	0.145	0.071

Additional (hidden) controls: year dummies.

Standard errors in parentheses

+ p<0.10, * p<0.05, ** p<0.01

Pooled data (2000-2006), 1968 cross-scen sample (SRC), unweighted.

Giving outliers & households with changing composition removed: details in sec. 4

Table 18: Pooled cross-section Poisson exponential regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total	Relig	Nonrelig	Combo	Needy	Health	Educ	Other
Log net income	.51** (4.3e-04)	.399** (5.5e-04)	.69** (7.0e-04)	.695** (.0013)	.556** (.0014)	.533** (.0022)	.853** (.0019)	.669** (.0015)
Log bonus income	.0013** (9.1e-05)	-.0119** (1.2e-04)	.0174** (1.3e-04)	.0238** (2.5e-04)	.0135** (2.6e-04)	.0424** (3.9e-04)	-.001** (3.5e-04)	.0072** (3.2e-04)
Log wealth w.o. house	.0305** (1.4e-04)	.0232** (1.6e-04)	.0427** (2.5e-04)	.0198** (4.4e-04)	.0447** (4.4e-04)	.024** (7.9e-04)	.0865** (.001)	.0463** (5.5e-04)
Log wealth	.0337** (1.8e-04)	.0267** (2.1e-04)	.0588** (3.5e-04)	.0826** (6.5e-04)	.0193** (5.7e-04)	.163** (.0013)	.209** (.0016)	.0296** (7.4e-04)
Log price	-1.45** (.0018)	-1.66** (.0023)	-1.1** (.0029)	-1.09** (.0055)	-1.04** (.0057)	-1.98** (.0091)	-1.08** (.0074)	-.955** (.0064)
Head's age	.0166** (2.2e-05)	.0182** (2.7e-05)	.0129** (3.8e-05)	.011** (7.2e-05)	.0085** (7.1e-05)	.0179** (1.2e-04)	7.9e-04** (1.1e-04)	.023** (8.1e-05)
Nmr. kids in hshld.	.0874** (2.6e-04)	.116** (3.3e-04)	.0404** (4.5e-04)	.0099** (8.5e-04)	.131** (7.9e-04)	-.121** (.0015)	-.0029* (.0012)	.063** (1.0e-03)
Head coll. degree	.28** (5.4e-04)	.192** (6.8e-04)	.431** (9.1e-04)	.419** (.0017)	.284** (.0017)	.233** (.0027)	.83** (.0027)	.519** (.002)
Northeast region	.0994** (.0049)	.529** (.0078)	-.441** (.0063)	-.213** (.013)	-.184** (.014)	.263** (.0226)	1.52** (.0592)	-1.23** (.0093)
N-central region	.446** (.0049)	1.06** (.0078)	-.321** (.0063)	.0258* (.013)	-.109** (.0139)	.11** (.0226)	1.65** (.0592)	-1.09** (.0092)
Southern reg.	.653** (.0049)	1.34** (.0078)	-.271** (.0063)	-.0932** (.013)	.0518** (.0139)	.113** (.0226)	1.87** (.0591)	-1.02** (.0091)
Western reg.	.562** (.0049)	1.1** (.0078)	-.099** (.0063)	-.0895** (.013)	.203** (.0139)	.37** (.0226)	2.21** (.0591)	-.855** (.0092)
Urban	-.0075** (5.2e-04)	-.224** (6.8e-04)	.344** (8.7e-04)	.337** (.0016)	.422** (.0017)	.256** (.0026)	.334** (.0024)	.317** (.0019)
Year 2002	.0856** (7.2e-04)	.102** (8.9e-04)	.0576** (.0012)	-.0627** (.0022)	.111** (.0024)	-.0081* (.0036)	.19** (.0034)	.121** (.0028)
Year 2004	.176** (7.1e-04)	.147** (8.9e-04)	.227** (.0012)	-.0023 (.0022)	.313** (.0023)	.0458** (.0036)	.391** (.0033)	.419** (.0026)
Year 2006	.0927** (7.1e-04)	.0751** (8.9e-04)	.127** (.0012)	-.106** (.0022)	.231** (.0023)	-.0108** (.0035)	.213** (.0033)	.336** (.0026)
Constant	-.776** (.0066)	-.432** (.0097)	-3.47** (.0096)	-4.76** (.0188)	-2.94** (.0201)	-5.64** (.0318)	-11.6** (.0618)	-4.4** (.0184)
Observations	11560	11518	11518	11513	11508	11510	11533	11549
Pseudo R^2	0.306	0.183	0.388	0.252	0.183	0.252	0.371	0.231

Standard errors in parentheses

+ p<0.10, * p<0.05, ** p<0.01

Pooled data (2000-2006), 1968 cross-scen sample (SRC), unweighted.

Giving outliers & households with changing composition removed; details in sec. 4

Table 19: Correlations: residuals from Poisson FE regressions.

Variables	Religion	Combination	Needy	Education	Health	Other
Combination	0.018 (0.056)	1.000				
Needy	0.025 (0.008)	-0.022 (0.016)	1.000			
Education	0.017 (0.067)	-0.110 (0.000)	0.011 (0.254)	1.000		
Health	-0.011 (0.254)	-0.072 (0.000)	-0.014 (0.136)	-0.038 (0.000)	1.000	
Other	0.008 (0.399)	-0.051 (0.000)	-0.019 (0.041)	0.041 (0.000)	-0.015 (0.109)	1.000

P-values (for standard 2-tailed tests of significance) in parentheses.

Pooled data (2000-2006), 1968 cross-scen sample (SRC), unweighted, 11,476-11,524 obs.

Giving outliers & households with changing composition removed:

details in sec. 4

Tsunami giving results

Although the Tsunami presents an intuitive example of a temporary “shock” motivating giving to disaster victims in late December 2004 and early 2005,⁶⁶ this data offers little help in identifying expenditure substitution. While the Tsunami itself was an exogenous event, and 2005 giving to the Tsunami clearly precedes 2006 giving, the problem of omitted variable bias remains even after controlling for household-fixed effects: an increase in generosity or unobserved wealth in 2005 is likely to persist into 2006 and thus lead both to more Tsunami giving in 2005 and to other types of giving in 2006. While a negative coefficient could be interpreted as evidence of expenditure substitution following the “sign of bias” argument of section 3.1, my own analysis of this data reveals a *positive* relationship between 2005 Tsunami giving and 2006 total giving. Furthermore, the tsunami was a unique event, and news coverage of the tsunami that may have impacted donors’ preferences and world view in ways that could have influenced their future philanthropy, and this effect may not be the same in future major disasters. Finally, and most crucially, for 2005 only Tsunami-related donations are observed in COPPS; thus the expenditure-substitution effect on other 2005 giving cannot be measured. If 2005 tsunami giving “crowded out” other giving in 2005, households might compensate for this by increasing 2006 giving to the causes they neglected in 2005.

The results in table 20 suggest this did not occur. In this table I present the results of fixed-effect regressions of giving (to various categories) on the standard set of controls and controls for “giving to the tsunami in the previous year,” which is naturally set to zero for all years except 2006. These estimates have the advantage that the Furthermore, the news coverage of the tsunami that influence people to donating to this cause may have impacted their preferences and world view in other ways that could have influenced their future philanthropy. As the Tsunami was an unusually deadly and dramatically reported event, we do not know if future disasters will have the same affects on people’s motivations. Finally, this measure will be influenced by the “supply response” of charitable organizations that may have increased the strength of their appeals to prevent their fundraising from being overshadowed by the tsunami.⁶⁷ Still, the strength of the observed effect suggest

⁶⁶Although the COPPS/PSID typically interviews respondents about their behavior in the previous complete calendar year only, in 2005 respondents were asked to report their donations to help victims of the December 26, 2004 Indian ocean tsunami, While they were asked to report their year-2004 giving for other categories specifically excluding any “tsunami gifts,” they were asked to report their total donations to tsunami relief *up to the point of interview*. Interviews ran from March to September 2005; although the amounts reported do differ by month of interview, there is no evidence that later reporters reported more than earlier ones

⁶⁷There is evidence that some charities did respond in this way. “Tsunami aid ‘threat’ to charities,” BBC News, Saturday, 15 January, 2005, 10:31 GMT.

that the tsunami did not have a serious detrimental effect on contributions to other causes in the following year.

Table 20: Fixed effects regressions: Responses to Tsunami Giving in prior year

	(1) Total	(2) Relig	(3) Nonrelig	(4) Combo	(5) Needy	(6) Health	(7) Educ	(8) Other
Tsunami gvg	1.06** (.237)	.845** (.161)	.446* (.186)	.124 (.082)	.0303 (.0837)	.0369 (.0499)	-.0398 (.0876)	.0344 (.0789)
Net income	.0037** (3.7e-04)	8.8e-04** (2.5e-04)	.0032** (2.9e-04)	5.5e-04** (1.3e-04)	2.9e-04* (1.3e-04)	2.8e-04** (7.8e-05)	.0018** (1.4e-04)	-1.5e-05 (1.2e-04)
Price	-854** (176)	-568** (120)	-230+ (139)	-71.2 (61.3)	-91.7 (62.4)	-74.4* (37.2)	-14 (65.1)	10.7 (58.7)
Wealth w.o. house	-2.0e-04 (2.1e-04)	-5.1e-05 (1.4e-04)	-3.9e-04* (1.7e-04)	3.3e-04** (7.4e-05)	-1.3e-04+ (7.5e-05)	-6.5e-06 (4.5e-05)	-2.3e-04** (7.9e-05)	-1.0e-04 (7.1e-05)
Wealth w. house	1.6e-04 (2.1e-04)	8.4e-05 (1.4e-04)	3.1e-04+ (1.7e-04)	-2.6e-04** (7.4e-05)	1.2e-04+ (7.5e-05)	-2.5e-05 (4.5e-05)	1.0e-04 (7.9e-05)	1.3e-04+ (7.0e-05)
Year 2002	91.2** (34.2)	85.2** (23.3)	41.5 (27)	-12.5 (11.9)	7.11 (12.1)	3.56 (7.21)	11.5 (12.6)	3.43 (11.4)
Year 2004	236** (35.1)	118** (23.9)	169** (27.7)	7.55 (12.2)	36.5** (12.4)	10.1 (7.4)	31.4* (13)	34.5** (11.7)
Year 2006	211** (36.1)	105** (24.6)	191** (28.5)	-1.75 (12.5)	35.1** (12.8)	11.1 (7.63)	26+ (13.4)	37.5** (12)
Constant	1793** (164)	1245** (111)	466** (129)	185** (56.9)	173** (58)	109** (34.6)	-16.5 (60.5)	64.4 (54.5)
Observations	11404	11255	11255	11301	11278	11339	11366	11390

Standard errors in parentheses

+ p<0.10, * p<0.05, ** p<0.01

Pooled data (2000-2006), 1968 cross-scen sample (SRC), unweighted.

Giving outliers & households with changing composition removed: details in sec. 4

7.3 Further results mentioned in text

- “Standard ols regressions on the de-meanded variables (available by request) also lead to similar results”
 - Link to file: “[olsdemeanded_online.txt](#)”

- “As shown in table 5, most households donate to more than one category of charity, and many donate to several categories (especially among large givers; details in the online appendix.)”
 - Link to “[largegiversnumbercats.txt](#)”

- “This is not surprising, as the predicted values of the charitable gifts are highly correlated across specifications; e.g., the correlation between the predictions for religious giving using zero-inflated Poisson and OLS specifications is above 0.9 (see online appendix).”
 - Link to “[similarcrosssecnests.txt](#)”

- “However, none of the key results are sensitive to the the inclusion of wealth in the regression analysis...”
 - Link to “[nowealthresults.txt](#)”